

THE ECOLOGY OF FREEDOM

THE
EMERGENCE
AND
DISSOLUTION
OF
HIERARCHY

Murray Bookchin

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Contents

Acknowledgements	viii
Introduction	1 ✓
1	
The Concept of Social Ecology	16 ✓
2	
The Outlook of Organic Society	43 ✓
3	
The Emergence of Hierarchy	62
4	
Epistemologies of Rule	89
5	
The Legacy of Domination	119 ✓
6	
Justice—Equal and Exact	140
7	
The Legacy of Freedom	167
8	
From Saints to Sellers	192 ✓
9	
Two Images of Technology	219
10	
The Social Matrix of Technology	240
11	
The Ambiguities of Freedom	267
12	
An Ecological Society	315
Epilogue	348
Notes	367
Index	376

reason to attain a free society. None has had a court of appeal more supreme than the sovereignty of thought and insight. The material dispensation that capitalism has created for the future is *itself* a "freedom"—one that has arisen, ironically, from the very context of bourgeois social relations. It is a freedom not merely to choose the kinds of goods society should produce (the freedom of a productivist utopia), but to choose from among the extravagant, often irrational array of needs that capitalism has created (the freedom of a consumerist utopia). When these two freedoms are melded into a still higher one, the utopian dream that lies ahead can be neither strictly productivist nor consumerist. In light of the freedom to choose products and needs, both as producer *and* consumer, one can envision a higher ideal of freedom—one that removes the taint of economism and restores the ethical basis of past times, and that is infused with the options opened by technical achievement. Potentially, at least, we are faced with the broadest conception of freedom known thus far: *the autonomous individual's freedom to shape material life in a form that is neither ascetic nor hedonistic, but a blend of the best in both—one that is ecological, national, and artistic.*

The emergence of a possibility, to be sure, is not a guarantee that it will become an actuality. To draw upon Pottier's lines in his inspired revolutionary hymn, "The Internationale," how will a new society "rise on new foundations"? Under what "banner" can humanity "be all" again? In view of the stark alternatives that faced the Adamites and "military" or "war" communism in modern, authoritarian contexts, how can human society now produce a sufficiency of goods for everyone (rather than an elite) and provide the individual the freedom to choose among needs as well as products? Within the material realm of life, this is the most complete form of human autonomy that we can ever hope to achieve—both as an expression of rational criteria for making choices and of the rational *competence* of the individual to do so. Indeed, if we can believe in the competence of free individuals to determine policy in the civil realm, we can also believe in the competence of free individuals to determine their needs in the material realm as well.

In any case, the backward look toward a golden age has itself been absorbed by the very past into which it tried to peer. Once capitalism came into the world and tainted it with a "sense of scarcity," one now had to look forward—not only upward toward the heavens but also downward toward the earth—to the material world of technology and production.

9

Two
Images of
Technology

I

In trying to examine technology and production, we encounter a curious paradox. We are deeply riven by a great sense of promise about technical innovation, on the one hand, and by a thorough sense of disenchantment with its results, on the other. This dual attitude not only reflects a conflict in the popular ideologies concerning technology but also expresses strong doubts about the nature of the modern technological imagination itself. We are puzzled that the very instruments our minds have conceived and our hands have created can be so easily turned against us, with disastrous results for our well-being—indeed, for our very survival as a species.

It is difficult for young people today to realize how anomalous such a conflict in technical orientation and imagery would have seemed only a few decades ago. Even such a wayward cult hero as Woody Guthrie once celebrated the huge dams and giant mills that have now earned so much opprobrium. The people whom Guthrie and his radical companions of the 1930s addressed had a deep reverence for technology, specifically those skills and devices that we place under the rubric of "technics." New machines, like artistic works, were objects of display that radiantly enraptured not only the connoisseur of futurism, the manufacturer, and the specialist, but the general public in all walks of life. Popular American utopias were unreeling in monumental technocratic images; they embodied power, a preening mastery of nature, physical gigantism, and dazzling mobility. The largely technical "New World of Tomorrow," celebrated in the last of the truly great fairs—New York

World's Fair of 1939—fascinated millions of visitors with its message of human achievement and hope. In fact, technics had become as much a cultural artifact as a mechanical one. The early part of the century witnessed the emergence of an intensely social and messianic art (Futurism, Expressionism, the Bauhaus, to cite the most celebrated ones) that was overwhelmingly technological in its exhortations and in its derogation of more leisurely, reflective, craft-oriented, and organic traditions.

The hold of technics on the social imagery of that time was more fetishistic than rational. Even the First World War, which witnessed a massive use of the new technological armamentarium to slaughter millions of people, did not dispel this technical mythos. Only in the sequelae of the second of these worldwide conflicts, with all its terrifying results, did we begin to witness chilling doubts in the popular mind over the wisdom of technical innovation. Nuclear weaponry, perhaps more than any single factor, has created a popular fear of a "technics-run-wild." The 1960s began to exhibit a pronounced antitechnical bias of its own that has since turned into a complex duel between the "high" or "hard" technologies (those associated with fossil and nuclear fuels, industrial agriculture, and synthetics) and the so-called "appropriate" or "soft" technologies (those structured around solar, wind, and hydraulic sources of energy, organically grown food, and human-scale, craftlike industries).

What clearly renders "appropriate" technology increasingly attractive today is not any popular celebration of its achievements or promise; rather, it is a growing fear that we are irretrievably committing ourselves to destructive systems of mass production and widespread problems of environmental pollution. The artistic messiahs of a technocratic society are gone. Humanity now seems to feel that technology has ensnared it; it has the mein of a victim rather than a beneficiary. If the first half of the century witnessed the emergence of "high" technology as a popular "art-form" because the great majority of the industrialized world's population still lived in small communities with almost antique technical artifacts, the end of the century is witnessing the emergence of "appropriate" technology as a popular "art-form" precisely because "high" technology has placed a gilded cage over the suffocating millions who now clutter the cities and highways of the western world.

The grim fatalism slowly permeating western humanity's response to technics derives in large part from its ethical ambivalence toward technical innovation. The modern mind has been taught to identify technical sophistication with a "good life" and, to a large extent, with a social progressivism that culminates in human freedom. But none of these images has been suitably clarified, at least not from a historical perspective. Today, by far the great majority of

people view the "good life" or "living well" (terms that date back to Aristotle) as a materially secure, indeed highly affluent life. Reasonable as this conclusion may seem in our own time, it contrasts sharply with its Hellenic origins. Aristotle's classic distinction between "living only" (a life in which people are insensately driven to the limitless acquisition of wealth) and "living well" or within "limit" epitomizes classical antiquity's notion of the ideal life, however much its values were honored in the breach. To "live well" or live the "good life" implied an ethical life in which one was committed not only to the well-being of one's family and friends but also to the *polis* and its social institutions. In living the "good life" within limit, one sought to achieve balance and self-sufficiency—a controlled, rounded, and all-sided life. But self-sufficiency, which for Aristotle seems to embody this conceptual constellation of ideals, does "not mean that which is self-sufficient for a man himself, for one who lives a solitary life, but also for parents, children, wife, and in general for his friends and fellow citizens, since man is born for citizenship."

The dichotomy between the modern image of a materially affluent life and the classical ideal of a life based on limit parallels the dichotomy between modern and classical concepts of technics. To the modern mind, technics is simply the ensemble of raw materials, tools, machines, and related devices that are needed to produce a usable object. The ultimate judgment of a technique's value and desirability is operational: it is based on efficiency, skill, and cost. Indeed, cost largely summarizes virtually all the factors that prove out the validity of a technical achievement. But to the classical mind, by contrast, "technique" (or *techné*) had a far more ample meaning. It existed in a social and ethical context in which, to invoke Aristotle's terms, one asked not only "how" a use-value was produced but also "why." From process to product, *techné* provided both the framework and the ethical light by which to form a metaphysical judgment about the "why" as well as the "how" of technical activity. Within this ethical, rational, and social framework, Aristotle distinguished between the "master workers in each craft" who are "more honourable, and know in a truer sense and are wiser than the manual workers." In contrast to their strictly operational subordinates, "who act without knowledge of what they do, as fire burns," master workers act with an insight and ethical responsibility that renders their craft rational.

Techné, moreover, covered a wider scope of experience than the modern word technics. As Aristotle explains in *Nicomachean Ethics*, "All art [*techné*] is concerned with coming into being, that is, with contriving and considering how something may come into being which is capable of either being or not being, and whose origin is in the maker and not in the thing made." Here he distinguishes the crafted product—even artistic works such as architectural masterpieces and sculpture—from natural phenomena, which "have their origins in themselves." Accordingly, *techné* is a "state concerned with making, involving a true

course of reasoning. . . . It is "potency," an essential that *techné* shares with the ethical "good." All "arts, i.e., productive forms of knowledge, are potencies; they are originaive sources of change in another thing or in the artist himself considered as other."

These far-reaching ethical and metaphysical remarks indicate how much the classical image of *techné* contrasts with the modern image of technics. The goal of *techné* is not restricted to merely "living well" or living within limit. *Techné* includes living an ethical life according to an originaive and ordering principle conceived as "potency." Viewed even in an instrumental sense, *techné* thus encompasses not merely raw materials, tools, machines, and products but also the producer—in short, a highly sophisticated subject from which all else originates.* To Aristotle, the "master-craftsman" is distinguished subjectively from his apprentices or assistants by virtue of honor, a sense of "why" products are created, and generally a wisdom of things and phenomena. By starting with the rationality of the subject, Aristotle establishes a point of departure for bringing rationalization to the production of the object.

Modern industrial production functions in precisely the opposite way. Not only is the modern image of *techné* limited to mere technics in the instrumental sense of the term, but also its goals are inextricably tied to unlimited production. "Living well" is conceived as limitless consumption within the framework of a totally unethical, privatized level of self-interest. Technics, moreover, includes not the producer and his or her ethical standards (proletarians, after all, service the modern industrial apparatus in total anonymity) but the *product* and its constituents. The technical focus shifts from the subject to the object, from the producer to the product, from the creator to the created. Honor, a sense of "why," and any general wisdom of things and phenomena have no place in the world required by modern industry. What really counts in technics is efficiency, quantity, and an intensification of the labor process. The specious rationality involved in producing the object is foisted on the rationalization of the subject to a point where the producer's subjectivity is totally atrophied and reduced to an object among objects.

In fact, the objectification of subjectivity is the *sine qua non* of mass production. Here, "thought or word becomes a tool [and] one can dispense with actually 'thinking' it, that is, with going through the logical

* The extent to which Aristotle's image of *techné* influenced Marx is hard to judge, particularly in terms of Marx's own image of technology and design. But these classical insights appear in most of the Marxian problematics we group under the category of "alienation," the distinction between human labor and animal activity, and the notion of the "humanization of nature" in Marx's early writings. Aristotle, far from being a "primitive" in economics and technics, was in fact highly sophisticated; his views, far from "preceding" Marx's, actually anticipated them.

acts involved in verbal formulation of it," notes Horkheimer. He also observes:

As has been pointed out, often and correctly, the advantage of mathematics—the model of all neo-positivistic thinking—lies in just this "intellectual economy." Complicated logical operations are carried out without actual performance of all the intellectual acts upon which the mathematical and logical symbols are based. Such mechanization is indeed essential to the expansion of industry; but if it becomes the characteristic feature of mind, if reason itself is instrumentalized, it takes on a kind of materiality and blindness, becomes a fetish, a magic entity that is accepted rather than intellectually experienced.

Horkheimer's remarks, while seemingly occupied with the impact of a new technics on a waning traditional subjectivity, might easily be read as an account of the effects of a new subjectivity on a waning traditional technics. I do not mean to say that the technics that emerged from this subjectivity did not reinforce it. But if I read the historical record correctly, it is fair to say that long before mass manufacture came into existence, there had already been widespread destruction of community life and the emergence of uprooted, displaced, atomized, and propertyless "masses"—the precursors of the modern proletariat. This development was paralleled by science's evocation of a new image of the world—a lifeless physical world composed of matter and motion that preceded the technical feats of the Industrial Revolution.

Technics does not exist in a vacuum, nor does it have an autonomous life of its own. Hellenic thought, which appropriately linked craft and art under the rubric of *techné*, also linked both with the value system and institutions of its society. From this standpoint, a given body of sensibilities, social relations, and political structures were no less the components of technics than the material intentions of the producer and the material needs of society. In effect, *techné* was conceived holistically, in the sense that we today describe an ecosystem. Skills, devices, and raw materials were interlinked in varying degrees with the rational, ethical, and institutional ensemble that underpins a society; insofar as *techné* was concerned, all were regarded as an integrated whole. Today, if such "extratechnical" aspects like rationality, ethics, and social institutions seem barren and more inorganic by comparison with those of earlier times, it is because technology in the modern sense of the term is more inorganic. And not because modern technics now determines the "supratechnical," but rather because society has devolved toward the inorganic in terms of its own "social tissue" and structural forms.

For the present, we need a clearer image of what is meant by "technics": the problems of sensibility it raises, the functions it performs, and, of course, the dangers and promises latent in technical innovation. To confine the discussion merely to advances in skills, implements, and

the discovery of raw materials is to commit ourselves to a very shallow account of all these issues. Without examining the changes in society that variously opened or closed it to technical innovation, we would have great trouble explaining why a vast body of newly discovered technical knowledge failed to influence one body of social relations, yet seemingly "determined" their form elsewhere or at another time. To say that one society was "ready" for the compass, movable type, or the steam engine, while another was not, blatantly ignores the question of the relationship of society to technology. In the following chapter I shall show more thoroughly that it is neither technical change nor Marx's "production relations" that changed society, but rather an immanent dialectic within given societies themselves, where organized coercion was not directly involved.



Let me begin my exploration of technics and the contrasting images that shape its form and destiny by examining the ideologies that exist around labor—that most human of all technical categories. Short of sexuality, no subject has been more intractable to a reasonably unprejudiced analysis and more encrusted by highly embattled ideologies. Labor, perhaps even more than any single human activity, underpins contemporary relationships among people on every level of experience—whether in terms of the rewards it brings, the privileges it confers, the discipline it demands, the repressions it produces, or the social conflicts it generates. To critically examine these encrustations in their most sophisticated ideological form (notably, Marx's remarkable analysis of labor) is perhaps the most authentic point of departure for approaching the subject.

Here, in contrast to the procedure I have honored so far, the past does not illuminate the present nearly as much as the present illuminates the past and gives it often startling relevance to the future. Owing to our weighty emphasis on the "domination of nature," our economization of social life, our proclivities for technical innovation, and our image of labor as homogeneous "labor-time," modern society may be more acutely conscious of itself as a world based on labor than any society before it. Hence we may occasionally look backward but only to penetrate the mists that obscure our vision.

To the modern mind, labor is viewed as a rarefied, abstract activity, a process extrinsic to human notions of genuine self-actualization. One usually "goes to work" the way a condemned person "goes" to a place of confinement: the workplace is little more than a penal institution in which mere existence must pay a penalty in the form of mindless labor. Expressions like a "nine-to-five job" are highly revealing; they tell us that work, labor, or toil (today one can use any of these words as equivalents) is external to "real life," whatever that may mean. We "measure"

labor in hours, products, and efficiency, but rarely do we understand it as a concrete human activity. Aside from the earnings it generates, labor is normally alien to human fulfillment. It can be described in terms of that new suprahuman world of "energetics"—be it psychic, social, "cosmic," or even ecological (if the systems-theorists are correct)—that is comprehensible in the form of the rewards one acquires by submitting to a work discipline. By definition, these rewards are viewed as incentives for submission, rather than for the freedom that should accompany creativity and self-fulfillment. We commonly are "paid" for supinely working on our knees, not for heroically standing on our feet.

Even Marx, who first articulated the abstract character of labor, tends to mystify it as a precondition for "freedom" rather than submission—ironically, by tinting labor with humanistic metaphors that it no longer possesses. *Capital* has a famous comparison between the unconscious activity of the animal and the conscious activity of human beings. Here Marx opposes the worker

to Nature as one of her own forces, setting in motion arms and legs, head and hands, the natural forces of his body, in order to appropriate Nature's productions in a form adapted to his own wants. By thus acting on the external world and changing it, he at the same time changes his own nature.

Marx then adduces the illustration of the spider and the bee, which can put to shame many a weaver and architect, but he notes that

what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour-process, we get a result that already existed in the imagination of the labourer at its commencement. He not only effects a change in form of the material on which he works but he also realizes a purpose of his own that gives the law to his *modus operandi*, and to which he must subordinate his will.

The apparent "innocence" of this description is highly deceptive. It is riddled by ideology—an ideology that is all the more deceptive because Marx himself is unaware of the trap into which he has fallen. The trap lies precisely in the *abstraction* that Marx imparts to the labor process, its ahistorical autonomy and character as a strictly technical process. From the outset, one may reasonably ask whether it is meaningful any longer to say that, at the "commencement" of "every labour process," the laborer is permitted to have an imagination, much less to bring it to bear on the production of use-values. Even the process of design by today's architects and other professionals has become a stereotyped process of rational techniques. Moreover, "mindless labor" is not merely a result of mechanization; as I shall reveal, it is the calculated and deliberate product of subordination and control. Finally, is it correct to believe that a

multitude of spontaneous creations of human "labour," from cathedrals to shoes, were often guided more by cerebral designs than by esthetic, often undefinable impulses in which art was cojoined with craft.* As I also shall note, the vocabulary of technics is a good deal more than cerebral.

Marx's largely technical interpretation of labor clearly reveals itself when he describes the interaction between labor and its materials with the most "organic" metaphors at his command:

Iron rusts and wood rots. Yarn with which we neither weave nor knit, is *wasted*. Living labour must *seize* upon these things and rouse them from their *death-sleep*, change them from mere possible use-values into *real* and *effective* ones. Bathed in the *fire* of labour, they are *appropriated* as part and parcel of labour's organism, and, as it were, made *alive* for the *performance* of their functions in the process, as elementary constituents of new use-values, of new products, ever ready as means of subsistence for individual consumption, or as means of production for some new labour-process.

The terms I have emphasized in this passage reveal the extent to which Marx's own imagination is completely tainted by Promethean, often crassly bourgeois, design images that seemingly prefigure the "use-values" he seeks to "liberate" from the "death-sleep" of nature. Like the island of the Lotus-eaters in the *Odyssey*, the dreamlike world of nature is presumably a "wasted" one until a Homeric hero, empowered by a Fichtean "Ego," fires nature from within itself into the "non-Ego" or "otherness" of a challenging antagonist. Hence, despite Marx's fervent references to William Petty's concept of a "marriage" between nature and labor, there is no authentic marriage other than a coercive patriarchy that sees the wedding compact as a license from Yahweh to place all of reality under the iron will of the male elders.

The concepts reared by the human imagination in productive activity, as distinguished from the instinctive drives of the spider and bee, are *never* socially neutral. Nor can they *ever* be cast in strictly technical terms. From the very outset of the design process, the technical imagination is potentially problematical in even the best of social circumstances. To leave it unquestioned is to ignore the most fundamental problems of humanity's interaction with nature. I say this not from any conviction that the mind is necessarily fixed by any innate, neo-Kantian

* One wonders, in fact, how fully the Surrealists understood Marx—or perhaps even their own program for the sovereignty of fantasy—when they entered Marxist movements in such large numbers. By the same token, one cannot help but ask how the Parisian students of 1968 could have emblazoned such slogans as "Imagination to Power!" on the red flags of socialism. Today, when the liberation of imagination involves the recovery of the productive process itself as an ecological mediation of humanity with nature, the inconsistencies that cling to ostensibly "sophisticated" minds (particularly those which have lost their very materiality in the corridors of the academy) boggles human intelligence.

structures that define the imaginative process as such. Rather, I contend that the mind and certainly the technical imagination, short of attaining the self-consciousness that western philosophy has established as its most abiding ideal, remain highly vulnerable not only to society's on-going barrage of cultural stimuli, but also to the very imagery that forms the language of the imagination itself.

To Marx, both the labor process and the cerebral design that guides it are essentially utilitarian: they have an irreducible technical ground, a *modus operandi*, that acquires the neutrality and rigor of scientific lawfulness. While their effectiveness may be enhanced or diminished by history, the design and the labor processes that execute it are to him ultimately a physical interaction. Indeed, without such an underlying, socially neutral interaction, Marx's theory of "historical materialism"—with its *deus ex machina* called the "means of production"—would be as meaningless in Marxian social theory as Hegel's ruthless teleological system would be without the Hegelian notion of "Spirit." Both systems must be moved by something that is not itself bogged down in the contingent. Hence the design process and the labor process are necessarily equipped with a suprahistorical refuge from which they can preside over history—and into which Marx retreats from time to time with all the second thoughts that riddle so much of his theoretical corpus.

That Marx and many of his Victorian contemporaries disparaged "nature idolatry" in extremely harsh terms is not accidental. The Romantic movement of the nineteenth century echoed a much broader and ancient sensibility: the view that production should be a symbiotic, not an antagonistic, process. Although the movement was primarily aesthetic, it combined with anarchist theories of mutualism—notably Kropotkin's extraordinarily prescient writings—to ferret out a much broader "natural design": a "marriage" between labor and nature that was conceived not as a patriarchal domination of "man" over nature but as a productive relationship based on harmony, fertility, and creativity. Libertarian and aesthetic movements in the nineteenth century were still heir to the image of a fecund interaction between humanity's craft and nature's potentialities. But labor was seen not as "fire," or industry as a "furnace." The imagery of these movements was drastically different. Labor was viewed as the midwife, and tools as the aids, in delivering nature's offspring: use-values.

Such a view implied that the very "imagination" in which the "architect raises his structure" is socially and ethically derivative. Perceived reality involves an epistemology of domination—or liberation—that cannot be reduced to technical grounds alone. Hence the design images of production, the very figures reared in the minds of engineers, architects, artisans, or laborers, are not socially or ethically neutral. There is no irreducible technical ground from which to formulate a value-free theory of technics and of labor. The images of labor as "fire" and of natural phenomena as enshrouded by a "death-sleep" are formed from

the visual reservoir of a highly domineering sensibility. The imagery of modern technical design has its origins in the epistemologies of rule; it has been formed over a long period of time by our very specific way of "knowing" the world—both one another and nature—a way that finds its ultimate apotheosis in industrial agriculture, mass production, and bureaucracy.

Implicit in virtually every contemporary image of labor is a unique image of *matter*—the material on which labor presumably exercises its "fiery" powers to transform the world. To the modern mind, matter essentially constitutes the fundament of an irreducible "being," whether we choose to make it interchangeable with energy, particles, a mathematical principle, or simply a convenient functional premise. Whatever our choice, we see matter as the base level of substance, the substrate of reality. Indeed, once matter achieves specificity by virtue of its interactions, it ceases by definition to be "matter" and acquires the form of a "something," a reducible particular.

Conceived in this sense, matter completely accords with a quantitative interpretation of reality. It may be fragmented but it remains undifferentiated. Hence, it can be weighed and counted, but without regard to any differences that vitiate its homogeneity for the purposes of enumeration. It may be kinetic but it is not developmental. Hence it poses no problems that demand qualitative interpretation. From a philosophical viewpoint, matter may interact internally, but it lacks immanence or self-formation. Thus, it has reality but lacks subjectivity. Matter, in the modern mind, is not merely despiritized; it constitutes the very antithesis of spirit. Its objectivity is the source of contrast that illuminates our concept of subjectivity. The conventional definition of matter betrays this utterly spiritless conception in a generally despiritized world. It is the stuff that occupies space—the homogeneous material whose presence can be quantitatively determined by its weight and volume.

Our image of labor, in turn, is the despiritized counterpart of matter, located within the dimension of time. Perhaps no view expresses this metaphysical fugue of labor and matter more incisively than Marx's discussion of abstract labor in the opening portions of *Capital*. Here, abstract labor, measurable by the mere flow of time, becomes the polar conception of an abstract matter, measurable by its density and the volume of space it occupies. Descartes' *res extensa*, in effect, is complemented by Marx's *res temporalis*—a conceptual framework that shapes his analysis not only of value but of freedom, whose "fundamental premise" is the "shortening of the working day." Indeed, there is as much Cartesian dualism in Marx's work as there is Hegelian dialectic.

To follow Marx's discussion further, if we strip away the qualitative features of commodities—features which satisfy concrete human wants—then

they have only one common property left, that of being products of labor. But even the product of labor itself has undergone a change in our hands. If we make abstraction from its use-value, we make abstraction at the same time from the material elements and shapes that make the product a use-value; we see in it no longer a table, a house, yarn, or any other useful things. Its existence as a material thing is put out of sight. Neither can it any longer be regarded as the product of the labor of the joiner, the mason, the spinner, or of any other definite kind of productive labour. . . . A use-value, or useful article . . . has value only because human labour in the abstract has been embodied or materialized in it. How, then, is the magnitude of this value to be measured? Plainly, by the quantity of the value-creating substance, the labour contained in the article. The quantity of labour, however, is measured by its duration, and labour-time in its turn finds its standard in weeks, days, and hours.

Leaving aside their functions as part of the critique of political economy, these lines are a mouthful in terms of Marx's analytical procedure, his philosophical antecedents, and his ideological purposes. There is nothing "plainly" conclusive about Marx's results because he is neither analyzing a commodity nor strictly generalizing about it. Actually, he is *idealizing* it—possibly beyond the degree of "ideality" that every generalization requires to transcend its clinging welter of particulars.

The degree of "abstraction" that Marx makes from a commodity's "use value"—from the "material elements and shapes that turn the product into a use-value"—is so far-reaching in terms of what we know about the anthropology of use-values that this very theoretical process must itself be socially justified. In effect, Marx has removed the commodity from a much richer social context than he may have realized, given the scientific prejudices of this time. Not only is he dealing with the commodity form of use-values, but he also is dealing *unreflectively* with socially constituted and historically developed traditions and fact—more precisely, presuppositions about technics, labor, nature, and needs that may very well render his analytical procedure and conclusions specious. We do not know whether we get to the "essence" of a commodity—of a use-value produced for the purposes of exchange—if we divest it of its concrete attributes so that its "existence as a material thing" can really be "put out of sight." Perhaps even more fundamental to a commodity are precisely those concrete attributes—its form as a "use-value"—that provide the *utopian* dimension, the "principle of hope," inherent within every desirable product of nature and technics (its dimension of the "marvelous," as André Bréton might have put it). Herein may lie the ultimate contradiction within the commodity—the contradiction between its abstract nature as an exchange-value and its

"fecundity" as a use-value in satisfying desire—from which the most basic historical contradictions of capitalism have been spawned.

In any case, Marx's process of idealization yields a more far-reaching result than he could have anticipated clearly. Abstract labor can only produce abstract matter—matter that is totally divested of the "material elements and shapes that make the product a use-value." Neither Marx nor the political economists of his time were in any position to realize that abstract matter, like abstract labor, is a denial of the utopian features—indeed, the sensuous attributes—of concrete matter and concrete labor. Hence "use-value" as the materialization of desire and "concrete labor" as the materialization of play were excluded from the realm of economic discourse; they were left to the utopian imagination (particularly the anarchic realm of fantasy as typified by Fourier) for elaboration. Political economy had lost its artfulness. Its adepts became a body of "worldly thinkers" whose world, in fact, was defined by the parameters of bourgeois ideology.

For Marx, this development toward a disenchanting "science" was theoretically and historically progressive. Adorno may have said more than he realized when he sardonically accused Marx of wanting to turn the whole world into a factory. For Marxian theory, the reduction of concrete labor into abstract labor is a historical as well as theoretical desideratum. Abstract labor may be a creature of capitalism but, like capitalism itself, it is a necessary "moment" in the dialectic of history. Not only is it a medium for rendering exchange ratios possible on an extensive scale, but, from an even larger perspective, it becomes part of the technical substrate of freedom. By its very plasticity, abstract labor renders human activity interchangeable, the rotation of industrial tasks possible, and the use of machinery flexible. Its capacity to flow through the veins of industry as mere undifferentiated human energy renders the manipulation and reduction of the working day possible and, concurrently, the expansion of the "realm of freedom" at the expense of the "realm of necessity." If Marx's communism was meant to be a "society of artists," he was not prepared to recognize that the colors on their canvases might be limited to varying tints of gray.

To compare the outlook of organic society to this ensemble of ideas is literally to enter a qualitatively different realm of imagery and a richly sensuous form of sensibility. Organic society's image of the world contrasts radically in almost every detail with Marxian, scientific, and frankly bourgeois notions of matter, labor, nature, and technics—indeed, with the very structure of the technical imagination it brings to bear upon experience. To speak of organic society's "outlook" toward these issues or even its "sensibility" rarely

does justice to the polymorphous sensitivity of its epistemological apparatus. As my discussion of animism has shown, this sensory apparatus elevated the inorganic to the organic, the nonliving to the living. Even before nature was spiritized, it was personified. But not only was the natural "object" (living or not) a subject in its own right; so, too, were the *tools* that mediated the relationship between the workers and the material on which they worked. The "labor process" itself assumed the organic character of a unified activity in which work appeared as an element in a gestative process—literally an act of reproduction, of birth.

To be more specific, the technical imagination of organic society—its very mode of conceptualization—far from being strictly utilitarian, exhibited an enchanted synthesis of creative activity. No subject and object were placed in opposition to each other, nor did a linear sequence of events follow one upon the other. Rather, the materials, work process, and transformed result became an organic whole, an ecotechnic synthesis, which more closely approximated a gestative, reproductive activity than the abstract exercise of human powers we denote as "labor" or "work." Like a medium that encompassed both "producer" and "materials," the labor process flowed between the two and annealed them into a common result in which neither the craftsperson nor the materials preempted the other. Labor-time, much less "abstract labor," would have been conceptually unformulatable. Time, like Bergson's *durée*, was physiological and could not be anchored in notions of linearity. Labor, now wedded to the specificity of its activity and the concreteness of its "product," had no meaning beyond its concreteness as a sensuous activity—hence the vast world of phenomena, like land, which were "priceless" (to use our limping terminology) and beyond the equations of exchange.

Accordingly, it would have been meaningless to use the word "product" in its modern sense when, instead of a result existing apart from craftsperson and material, organic society actually meant a new fusion of human and natural powers. Aristotle's notions of "material cause," "privation," and "formal cause"—actually, a causal *pattern* that involves the participation of the material itself in an immanent striving to achieve its potentiality for a specific form—are redolent with the characteristics of this earlier organic epistemology of production. In effect, the labor process was not a form of production but rather of reproduction, not an act of fabrication but rather of procreation.

How much this orientation toward the labor process permeated the sensuous outlook of preliterate communities is fully revealed by anthropological and mythological data. No less than agriculture, other productive activities (most notably metallurgy, which yields the most dramatic transformation of materials) were viewed as sacrosanct activities that involved a highly sexualized activity between the human workers and a feminine earth. As Mircea Eliade observes:

Very early we are confronted with the notion that ores "grow" in the belly of the earth after the manner of embryos. Metallurgy thus takes on the character of obstetrics. Miner and metal-worker intervene in the unfolding of subterranean embryology: they accelerate the rhythm of the growth of ores, they collaborate in the work of Nature and assist it to give birth more rapidly. In a word, man, with his various techniques, gradually takes the place of Time: his labours replace the work of Time.

Eliade's emphasis on "time," here, is grossly misplaced. In fact, as he himself notes, what is really at issue in this imagery of embryonic ores is a notion of "matter" that is held "to be alive and sacred. . . ." In effect, "matter" is *active*. It strives to realize itself, its latent potentialities, through a *nîsus* that finds fulfillment in wholeness. To use a more organic terminology, the self-realization of matter finds its very exact analogy in the processes of gestation and birth.

To speak, as Marx does, of the worker's "appropriation" of "Nature's productions in a form adapted to his own wants" is to assume that there is no developmental synchronicity between human "wants" and natural "wants." A sharp disjunction is thereby created between society, humanity, and "needs" on the one side, and nature, the nonhuman living world, and ecological ends on the other. By contrast, organic society contains the conceptual means for functionally distinguishing the differences between society and nature without polarizing them. Insofar as production is also reproduction, insofar as creation is also gestation and the product is the child of this entire process rather than an "appropriated" thing, a "marriage" does indeed exist between nature and humanity that does not dissolve the identity of the partners into a universal, ethereal "Oneness."

Labor fully participates in this development by pursuing "the transformation of matter, its perfection and its transmutation," to use Eliade's formulation. It would be as if labor were a causal principle inherent in gestating matter, not a "force" external to it. Accordingly, labor is more than a "midwife" of "Nature's productions": it is one of "Nature's productions" in its own right and coterminous with nature's fecundity. If society flows out of nature with the result that it, like mind, has its own natural history, so labor flows out of nature and also has its own natural history.

Accordingly, labor's destiny is irrevocably tied to the primordial vision of the earth as a living being. Nonhuman life labors together with humanity just as bears are believed to cooperate with hunters; hence both are drawn into a magic sphere of cooperation that daily nourishes primordial mores of usufruct and complementarity. In organic society, it would seem that no one could fully "possess" a material bounty that had been *bestowed* as much as created. Thus, nature itself was the grand "leveller" that provided the compensatory rationale for adjusting the equality of unequals in the material world, like "natural law" and "natu-

ral man" were to be for adjusting the inequality of equals in the juridical and political worlds. A providing nature was one whose "labor" was manifestly expressed in the rich variety of phenomena that clothed the natural landscape.

So strongly did this animistic sensibility fasten itself upon the human mind that, as late as the fifth century B.C., at the high tide of classical Hellenic philosophy, Anaxagoras could seriously reject the "four-element" and atomic theories of nature on the ground that hair could not "come from what is not hair" nor "flesh from what is not flesh." In this theory of *homeomeriæ*, as Aristotle tells us,

Anaxagoras says the opposite to Empedocles [theory of four elements], for he calls the *homeomeriæ* elements (I mean flesh and bone and each of these things), and air and fire he calls mixtures of these and of all other "seeds"; for each of these things is made of the invisible *homeomeriæ* all heaped together.

The *homeomeriæ*, in fact, comprise a philosophical sophistication of a more primordial view that the substance of the earth is the earth itself with all its variegated minerals, flora, and fauna.

Concrete labor thus confronted concrete substance, and labor merely participated in fashioning a reality that was either present or latent in natural phenomena. Both labor and the materials on which it "worked" were *coequally* creative, innovative, and most assuredly artistic. The notion that labor "appropriates" nature in any way whatever—a notion intrinsic to both Locke's and Marx's conceptual framework—would have been utterly alien to the technical imagination of organic society and inconsistent with its compensatory and distributive principles. So crucial was the coequality of substance with labor, in any understanding of this early technical imagination, that work was distinguished by its capacity to discover the "voice" of substance, not simply to fashion an inert "natural resource" into desired objects. Among the old Anvilik Eskimo, ivory carvers "rarely tried to impose a pattern on nature, or their own personalities on matter," observes Rene Dubos. Holding the "raw ivory" in his hand, the craftsman

turned it gently this way and that way, whispering to it, "Who are you? Who hides in you?" The carver rarely set out consciously to shape a particular form. Instead of compelling the fragment of ivory to become a man, a child, a wolf, a seal, a baby walrus, or some other preconceived object, he tried subconsciously to discover the structural characteristics and patterns inherent in the material itself. He continuously let his hand be guided by the inner structure of the ivory as it revealed itself to the knife. The form of the human being or animal did not have to be created; it was there from the beginning and only had to be released.

Work was thus revelation as well as realization, a synchronicity of

subject and object. Only later was it to bifurcate into a tyranny of subject over object—initially, by reducing human beings to objects themselves. Absorbed within the totality of organic society, the tool was part of the “Way” of the craftsperson, not a frozen instrumental component of a vocational “tool-kit.” The term “Way,” universal to the language of all early communities, united ethos, ritual, sensibility, duty, and lifestyle with cosmogony and with the substances that made up the world. To set one apart from the other was simply incomprehensible to the extraordinary sensibility of that remote era. Work, in turn, had an almost choral quality: it was incantative and evocative, and it soothed and coaxed the substance that the tool had organically cojoined with the craftsperson.

Rarely, to this day, do preliterate people work silently. They whisper, hum, sing, or quietly chant; they nurse and nurture the material by gently rocking and undulating their bodies, by stroking it as though it were a child. The imagery of the mother with a nursing child is perhaps more evocative of the true process of early craftwork than is the smith striking the glowing iron between hammer and anvil. Even later, at the village level, food cultivators were buoyed by choral songs and festivities, however arduous may have been their labor in sowing and harvesting grain. The “work song,” a genre that still lived a century ago in nearly all preindustrial occupations, is the historic echo of the primal chant, itself a technics, that elicited spirit from substance and inspirited the artisans and their tools.

We know quite well that ores do not reproduce themselves in exhausted mines, that ivory does not conceal an animate being, and that animals do not obligingly respond to hunting ceremonies. But these fancies may serve to inculcate a human respect for nature and cause people to cherish its bounty as more than exploitable “natural resources.” Ceremony and myth may enhance that respect and foster a rich sensitivity for the artistic and functional integrity of a crafted object. Group ceremonies, in fact, deepen group solidarity and make a community more effective in the pursuit of its ends. But the modern mind is unlikely to believe that mythopoeic notions of hunting and crafting are solidly rooted in natural phenomena. Function should not be mistaken for fact. And however effective mythopoeic functions may be in achieving certain practical, often aesthetic ends, their success does not validate their claims to intrinsic truth.

But experience has thoroughly deflated scientific images of matter as a merely passive substrate of reality, technics as strictly “technical,” and abstract labor as a social desideratum. The fact that the natural world is orderly (at least on a scale that renders modern science and engineering possible) has long suggested the intellectually captivating

possibility that there is a logic—a rationality if you will—to reality that may well be latent with meaning. For some three centuries now, a scientific vision of reality has been solidly structured around the presupposition that we can interpret reality’s orderliness in the form of a scientific logic, rigorously answerable to such rationally demanding systems as mathematics. But no assumption or even suggestion has been made that logic and reason inheres in the world itself. Science, in effect, has been permitted to live a lie. It has presupposed, with astonishing success, that nature is orderly, and that this order lends itself to rational interpretation by the human mind, but that reason is *exclusively* the subjective attribute of the human observer, not of the phenomena observed. Ultimately, science has lived this lie primarily to avoid the most unavoidable “pitfalls” of metaphysics—that an orderly world that is also rational may be regarded as a meaningful world.

The term meaning, of course, is redolent with animism. It is suggestive of purpose, consciousness, intentionality, subjectivity—in short, the qualities we impart to humanity as *distinguished* from nature, not to humanity as an expression of nature whose mind is deeply rooted in natural history. The logical consequences of the very logic of scientism threaten to subvert the distance science has carefully created between itself and the wealth of phenomena it subjects to its analytic strategies. Science, in effect, has become a temple built on the foundation of seemingly animistic and metaphysical “ruins,” without which it would sink into the watery morass of its own contradictions.

Science’s defense against this kind of critique is that order may imply a rational arrangement of phenomena that lends itself to rational comprehension, but that none of this implies subjectivity, the capacity to *comprehend* a rational arrangement. To all appearances, nature is mute, unthinking, and blind, however orderly it may be; hence it exhibits neither subjectivity nor rationality in the human sense of self-directive and self-expressive phenomena. It may be sufficiently orderly to be thinkable, but *it* does not think. Nevertheless, subjectivity, even in its human sense, is not a newly born result, a terminally given condition. Subjectivity can be traced back through a natural history of its own to its most rudimentary forms as mere sensitivity in all animate beings and, in the view of philosophers such as Diderot, in the very reactivity (*sensibilité*) of the inorganic world itself. Although the human mind may be the expression of subjectivity in its most complex and articulate form, it has been increasingly approximated in graded forms throughout the course of organic evolution in organisms that were able to deal on very active terms with highly demanding environments. What we today call “mind” in all its human uniqueness, self-possession, and imaginative possibilities is coterminous with a long *evolution* of mind. Subjectivity has not always been absent from the course of organic and inorganic development until the emergence of humanity. To the contrary, it has always been present, in varying degrees, throughout natural history,

but as increasingly close approximations of the human mind as we know it today. To deny the existence of subjectivity in nonhuman nature is to deny that it can exist either in its given human form or in any form at all.

Moreover, human subjectivity itself can be defined as the very *history* of natural subjectivity, not merely as its product—in much the same sense that Hegel defined philosophy as its own history. Every layer of the human brain, every phase in the evolution of the human nervous system, every organ, cell, and even mineral component of the human body “speaks,” as it were, from its given level of organization and in the graded subjectivity of its development, to the external habitat in organic evolution from whence it came and to the internal habitat into which it has been integrated. The “wisdom of the body,” like the wisdom of the mind, speaks in a variety of languages. We may never adequately decipher these languages, but we know they exist in the varied pulsations of our bodies, in the beat of our hearts, in the radiant energy of our musculatures, in the electrical impulses emitted by our brains, and in the emotional responses generated by complexes of nerve and hormonal interactions. A veritable “music of the spheres” resonates within each living form and between it and other living forms.

We are also haunted by the possibility that a different order of subjectivity permeates our own. This subjectivity inheres in the *wholeness* of phenomena and their interrelationships. Is it far-fetched to ask whether an *organic* subjectivity that stems from the fullness, complexity, and self-regulating relationships of ecosystems exhibits a “mentality” in nature similar in principle to the *cerebral* subjectivity of human beings? When we speak of the “wisdom of the body”—or, for that matter, the “fecundity of life” and the “revenge of nature”—we speak a language that often goes beyond strictly metaphoric terms. We enter into a realm of “knowingness” from which our strictly cerebral processes have deliberately exiled themselves. In any case, to bring together the natural history of mind with the history of natural mind is to raise a host of questions that can probably be answered only by presuppositions. Here, we stand at a juncture in the long career of knowledge itself. We may choose to confine mentality strictly to the human cerebrum as a Galileo and Descartes would have done, in which case we have committed mentality completely to the vaults of our skulls. Or we may choose to include the natural history of mind and expand our vision of mind to include nature in its wholeness, a tradition that includes the era of philosophic speculation from the Hellenic to the early Renaissance. But let us not deceive ourselves that science has chosen its way on the basis of presuppositions that are stronger or more certain than those of other ways of knowing.

Unless human mentality validates its claim to “superiority” by acquiring a better sense of meaning than it has today, like it or not, we are little more than crickets in a field, chirping to one another. Certainly, our

words have no sense of coherence and destiny other than a preening claim to “superiority” that totally ignores our responsibilities to other human beings, to society, and to nature. Potentially, as Hans Jonas has beautifully put it, we may well make up in depth and insight what we lack in cosmic scope and the finality of achievement. But just as function must not be mistaken for fact, neither must potentiality be mistaken for actuality. The great bulk of humanity is not even remotely near an understanding of its potentialities, much less an intuitive grasp of the elements and forms of their realization. A humanity unfulfilled is not a humanity at all except in the narrowest biosocial sense of the term. Indeed, in this condition, a humanity unfulfilled is more fearsome than any living being, for it has enough of that mentality called mere “intelligence” to assemble all the conditions for the destruction of life on the planet.

Hence, it is not in the innocent metaphors, the magical techniques, the myths, and the ceremonies they generate that the animistic imagination has earned the right to a more rational review than it has received up to now. Rather, it is its hints of a more complete logic—a logic possibly complementary to that of science, but certainly a more organic logic—that render the animistic imagination invaluable to the modern mind. Anvilik Eskimos who believe that ivory conceals a vocal subject are in error, just as are Plains Indians if they believe that they can engage in a verbal dialogue with a horse. But both the Eskimo and Indian, by assuming subjectivity in the ivory and horse, establish contact with a truth about reality that mythic behavior obscures but does not negate. They correctly assume that there is a “Way” about ivory and horses, which they must try to understand and to whose claims they must respond with insight and awareness. They assume that this “Way” is an ensemble of qualitative features—indeed, as Pythagoras was to see, of form that every object uniquely possesses. Lastly, they assume that this form and these qualities comprise a “Way” that exists in a larger constellation of interrelationships—one that a strictly cerebral mentalism commonly overlooks. Perhaps most essentially, the Anvilik Eskimo and Plains Indian place themselves in an *order* of phenomena, an organized *organic* habitat, that never merely “falls” together as an accumulation of “objects,” but always—perhaps even by definition—*forms* an organism or an organic totality that derives from the nîsus of “matter.” Whether God plays dice with the world or not, to use Einstein’s pithy phrase, the world never “hangs loose.” This intuition is priceless even when we consider the least of things. Ivory *does* have its “grain,” its internal structure and form; good craftspeople must know *where* to carve and to shape if they are to bring a material to the height of its aesthetic perfection. Any result that is less and less perfect than it could be is a violation of that “grain” and an insult to its integrity. A horse, too, has its “grain” or its “Way”—its prickly nerves, its need for attention, its capacity to

fear, its delight in play. Behind its verbal muteness lies a wealth of sensibility that the rider must explore if the horse is to achieve its own capacity for perfection—if its potentialities are to be realized.

Humanity's habitat is thus latent with phenomena that "are," others that are "becoming," and still others that "will be." Our imagery of technics cannot evade the highly fluid nature of the world in which we live and the highly fluid nature of humanity itself. The design imagination of our times must be capable of encompassing this flow, this dialectic (to use a grossly abused term), not to cut across it with wanton arrogance and dogmatic self-confidence. To subserve our already fragile environment only to what humanity alone "can be"—and definitely still is not!—is to immerse the world in a darkness that is largely of our own making, to taint the clarity that its own age-old evolution of wisdom has produced. We are still a curse on natural evolution, not its fulfillment. Until we become what we *should* be in the constellation of life, we would do well to live with a fear of what we *can* be.

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rom order to reason to meaning; from the graded natural history of mind to the emergence of human mind; from the organic subjectivity of the whole to the cerebral subjectivity of some of its parts; from the mythic "Way" to the knowledgeable "Way"—all these developments, with their various presuppositions about knowledge and their insights into reality, do not negate the presuppositions and insights of conventional science. They simply question science's claims to universality.*

Greek thought too had its visions of knowledge and truth. Moira, the so-called goddess of destiny, who antedated the Olympian deities, combined Necessity and Right. She was the meaning that mere explanation lacked, the ethical point toward which a seemingly blind causality converged. There is nothing "primitive" or merely mythopoeic about this vision of causality. On the contrary, it may be too sophisticated and demanding for the mechanically oriented mind to comprehend.

To put the issue quite directly, the "how" of things is inadequate unless it can be illuminated by the "why." Events that lack the coherence of ethical meaning are merely random. They are alien not only to

* Lest there be any misunderstanding about this statement, I repeat that I am not questioning scientific insight and method as such but rather its preemptive, often metaphysical claims over the entire cosmos of knowledge. In this view I would stand with Hegel, whose distinction between "reason" and "understanding" has never been more valid than today. Speculative thought—imagination, art, and intuition—is no less a source of knowledge than are inductive-deductive reasoning, empirical verification, and scientific canons of proof. Wholeness should apply as much in our methods as it does in the evolution of reality.

science but also to nature, for even more than the proverbial "vacuum," nature abhors the incoherence of disorganization, the lack of meaning that comes with disorder. And it is hardly demeaning for science, in reconsidering its metaphysical presuppositions, to make room for other metaphysical presuppositions that can illuminate areas of subjectivity to which a strictly scientific outlook has proven to be blind.

These remarks are no more than a guidepost to a larger project—a philosophy of nature—that can hope to resolve the issues I have raised. Taken together, however, their bearing on technology is immense. To be sure, the industrial machine seems to have taken off on its own without the driver (to rephrase Horkheimer), but this metaphor tends to be an excuse to impute too much autonomy to the machine. The driver is still there. Even more than nature, we who have created this machine must be awakened from our own slumber. Before we fully developed the machine, we began to organize our sensibilities, relationships, values, and goals around a cosmic enterprise to mechanize the world. What we forgot in the process is that we too occupy the very world we have sought to mechanize.