

↳ *Towards Chaosmos*

Nothing distinguishes me ontologically from a crystal, a plant, an animal, or the order of the world; we are drifting together toward the noise and the black depths of the universe, and our diverse systemic complexions are flowing up the entropic stream, toward the solar origin, itself adrift. Knowledge is at most the reversal of drifting, that strange conversion of times, always paid for by additional drift; but this is complexity itself, which was once called being. Virtually stable turbulence within the flow. To be or to know from now on will be translated by: see the islands, rare or fortunate, the work of chance or necessity.

—Michel Serres

The Situation

In 1919 Paul Valéry claimed, in an essay entitled “The Crisis of the Mind,” that the civilization produced by modernity had reached its limits:

The illusion of European culture has been lost, and knowledge has been proved impotent to save anything whatever; science is mortally wounded in its moral ambitions and, as it were, put to shame by the cruelty of its applications; idealism is barely surviving, deeply stricken, and called to account for its dreams.¹

Modern civilization, by Valéry’s account, was neither dead nor alive. It had instead entered a shadowy period of uncertainty and suspense, a period between historical epochs: “No one can say what will be dead or alive tomorrow, in literature, philosophy, aesthetics” (97). Likening the ancient names of Elam, Nineveh, and Babylon to those of France, England, and Russia, Valéry saw modernity as if already in the half-tones of antiquity, yet another ruin in a history of ruins.

Despite the different ways this “crisis” has been described since 1919, we can probably recognize this posthumous or uncanny era as still our own. Within the last decade the term “postmodern” has absorbed and routinized these ambivalences while also assuming an aura of novelty. The term promises a break with the values of modernity, but it maintains a reassuring relationship with it; it promises a departure, but remains bound to modernity—if by nothing more substantial than a prefix.

Jean-François Lyotard claims that the word “postmodern” is “probably a very bad term, because it conveys the idea of a historical periodization. ‘Periodizing,’ however is still a ‘classic’ or ‘modern’ ideal.”² It is a “bad term,” however, only if one wishes to suggest that it does indeed signify something unique, and of this Lyotard’s banal description makes one increasingly dubious: “Postmodern’ simply indicates a mood or better, a state of mind. . . . [It is] a change in people’s relationship to the problem of meaning: simplifying a great deal, I would say that the postmodern is the sense of the absence of value in activities” (209). Compare Lyotard’s description of postmodernism in 1986 with Nietzsche’s definition of nihilism in 1886: “The end of the moral interpretation of the world, which no longer has any sanction after it has tried to escape into some beyond, leads to nihilism. ‘Everything lacks meaning.’”³ Like nihilism one hundred years earlier, it would appear that postmodernism is less an attempt to conceptualize a new (or different) cultural order than yet another symptom of the modern malaise described by Valéry. It is less a “post” modernism than an attenuation of modernism, a hypermodernism, characterized by a highly ironized, parodic, nearly weightless relationship to the philosophical and scientific assumptions of European modernity established by Descartes and Newton. It is for this reason that the movement has become older and older as theorists have attempted to give it intellectual definition. Jürgen Habermas, one of its major critics, thus locates the “entry into postmodernity” with Nietzsche.⁴

If philosophers like Lyotard and Habermas have shown that postmodernism, despite its recent appearance in critical discourse, is deeply involved with what used to be known as modernism,

perhaps the key to understanding the value of the term lies in less abstruse realms. The sociologist Todd Gitlin describes the popular meanings of postmodernism with reference to an inventory of journalistic clichés from the late seventies and eighties. Punk and new wave music and dress, for example, are an ironized form of fifties and sixties “modernity.” Postmodernity, as Gitlin sees it, is counter to the romantic and utopian visions of the sixties: where the sixties exulted in LSD and the ideal of expanding vision and consciousness, the postmodern eighties’ drug of choice was cocaine which, instead of giving visions, chills the brain and dries the throat. Gitlin’s description of postmodernism uncovers what I believe is its basic quality: the desperate attempt to claim that parody, attenuated self-consciousness, and skepticism about meaning represent a genuine historical transformation, a new “sensibility.”⁵ Whether one adheres to Lyotard, Habermas, or Gitlin’s definitions, one realizes that postmodernism is really a *symptom* of modernity, another symbolic rebellion—like romanticism, orientalism, nihilism, dada, beatism, and the sixties’ counterculture—against the crushing power of scientific and bureaucratic modernity.

These artistic and cultural revolts against modernity failed to alter the bleaker forms of modernization, from the gradual destruction of the environment in the name of industrialization to the infantilization of public discourse and the commercialization of spiritual, aesthetic, and folk experience. Explanations for these failures, from the romantic revolt of the early nineteenth century, through utopian and socialist projects of the nineteenth and twentieth centuries, to the apparent failures of the recent counterculture to renew the ways of life available even to the fortunate few in the advanced industrial countries, seem to center on a single dilemma: modern life can offer either practical but dispiriting compromises, which simply preserve the status quo, or ideal but dangerous reorganizations of culture, which probably endanger more than they can deliver. We can decay slowly and comfortably or quickly and with style.

For Habermas, modernity remains the only viable and rational enterprise of democratic institutions and industries. It is not a depleted idea but an “unfinished project” that carries the

traditional ambitions of liberal culture. To implement these values and projects, Habermas attempts to establish the protocols of a “communicative rationality” toward which modernism has been moving for centuries. Postmodernism, by contrast, is an “irrational” movement that has abandoned liberal values by its commitment to a retrograde “philosophy of the subject.” As a defender of the modern project, Habermas appears to picture himself as a virtuous parliamentarian resisting the advances of charismatic forces, here represented by Martin Heidegger and Jacques Derrida, who evoke the irrational authority of nostalgia and mysticism. In this attack Habermas is ready to see Heidegger’s complicity with fascism as an effect of his philosophic critique of modernity while also maintaining that Derrida’s deconstruction of metaphysics is allied to “Jewish mysticism.” Habermas thus implies that any critique of reason and modernity must invoke “mystical” or, again in Habermas’s phrasing, “pseudo-sacral powers.” Since he associates these powers with fascism, all critiques of rationality are not only irrational, ipso facto, they are also reactionary.⁶ The fact that philosophers and scientists (one thinks of Whitehead and Heisenberg immediately) demonstrated the internal contradictions and paradoxes (the usual earmarks of “irrational” or “sacral” discourses) of scientific reason goes unnoticed. We are presented with the choice between the liberal consensus achieved by the merger of scientific and technical values and the dangerous prospect of fascist-mystical authorities. Habermas’s argument demonstrates how modernism can always reinforce the deficiencies of “reason” with the rhetoric of coercion.

The crises of modernity, whether described by Nietzsche in 1886, Valéry in 1919, or Lyotard in 1986 have all more or less been in protest against the application of instrumental, technical reasoning to human beings and the products of their imagination. And each of these protests, and those that precede them in the romantic era, has revealed the persistent, if not always cumulative, disenchantment with the ideologies of progress and advancement promoted by those who have most to benefit from the real conditions of self-aggrandizement and exploitation that they conceal.

The project of modernization and, more importantly, the ideologies which naturalized and advanced their interests, have been breaking down for over a century. Postmodernism, as it is popularly imagined, is an impotent form of revolt because it accepts the modernist assumptions of the dilemma that Habermas presents and only simulates a response. Academic research has produced in response what could be called the political and philosophic poles of postmodernism. The political pole maintains that “history” is the sole determinant of human values and thus the analytic solvent for all reified and constituted “metaphysical” values that block the liberation of the masses. The major task of this postmodernism has been to expand the Western canon to include the discourses and perspectives of women and non-European peoples and to denaturalize and exhibit the historical determinations of humanist values. Philosophic postmodernism has focused its attention on the logic of European culture and tried to show the ways that Western idealism, from Plato through Heidegger, has privileged voice, masculinity, presence, and the center at the expense of writing, femininity absence, and the margins. Philosophic postmodernism has concentrated on deconstructing the exclusionary logic of Western metaphysics in the hopes of establishing a “different” way of thinking.⁷

The ironies of this admittedly simplistic sketch are obvious: political postmodernists see philosophic postmodernists as elite or aesthetic formalists, and philosophic postmodernists see the politicians as unreconstructed modernists still thinking in logocentric terms. Both of these positions reveal their own basically conservative, modernist, Eurocentric tendencies, but in different ways. The political postmodernists may critique modern capitalist society but can only imagine a society where everyone has fair and equal access to its material benefits. Only the poverty maintained in the Third World by First World economies prevents their enjoying the benefits of a denatured global society. The philosophic postmodernists, on the other hand, are involved in an interminable critique of Western logocentricism, but nonetheless remain hypnotized by a handful of German and French philosophers and the tradition of European classics. Nietzsche,

Heidegger, Lacan, and Derrida may point elsewhere—to Buddhism, or Taoism, or Vedanta, or Kabbalism, or hieroglyphic and ideogrammatic writing—but their readers and critics, for the most part, prefer to stay on the safer ground of critique rather than plunge into the dangerous currents of non-Western metaphysics and modes of thought. Despite their own suspicions about Western metaphysics, they remain strangely loyal to the narrowest line of Greco-Germanic philosophers.

Both poles of academic theory seem unable to dissociate their critiques of modern values from their commitment to the intellectual assumptions of modernist intellectual labor that remain disciplinary and critical rather than interdisciplinary and synthetic. Any movement beyond this stalemate of deconstructive complacency and political impotence will require a differentially integrated worldview that could inspire more than half-hearted or ironic intellectual work.

The ambivalence of both positions, which should not be confused with the many ways in which they are blended and balanced when articulated, derives from a certain disregard for the challenges to the ideologies of objectivity by philosophers of science and philosophizing scientists alike since the earlier decades of the century. For it is their implicit acceptance of the fundamental premises of mechanistic science, so evident in Marxian and Freudian thought, that confine critical theorists to their largely impotent position as critics of modernism. According to William Paulson, “One major reason why students of literature and society need to study cybernetics, emergence, order from fluctuation, and self-organization from noise is the potential pertinence of new kinds or concepts of causality.”⁸ Working only with the classical causality derived from Newtonian physics and the mechanistic presumptions of Cartesian science, intellectuals devoted to the philosophic and artistic imagination are limited in their ability to appreciate literary form and dynamics. Fixed, spatial, structural, mechanistic, and architectural models have dominated critical thinking in the twentieth century, while romantic theories, drawing on organic models and processes for aesthetics, have often been considered either naïve or simply “metaphorical.”

In order to sketch the coordinates of a culture and art truly beyond the confines of modernity, this book develops a concept of organicism and self-organization which draws on often widely separated and yet intimately related realms of thought: those areas of contemporary science attempting to break with the dualistic and mechanistic vision of nature, the traditions of Hinduism, Buddhism, and Taoism which anticipated the contemporary critique of the “subject” by thousands of years, poststructuralist and deconstructive analysis which undermines the textual ground for various idealisms, and the literary text as a complex formalization of possible worlds. This book has developed as an intertextual and interdisciplinary linkage of these various challenges to modernity. More than isolated challenges, however, they also form an alternative perspective, a countermodernism, which centers on the idea of a self-organizing world. Scientists such as Ilya Prigogine, Gregory Bateson, David Bohm, Erich Jantsch, Humberto Maturana, and Francisco Varela have questioned and moved beyond the assumptions of mechanization and objectivity that guide modern science and technology. Rather than working strictly in the traditions of Judeo-Christian and Cartesian dualism, these scientists conceive the world in fluid, self-organizing terms that suggest Taoist process at least as much as Newtonian mechanics. In moving towards this self-organizing view of the universe, these scientists break with a pronounced Western perspective that views nature as essentially brute matter, stuff, objectivity awaiting the formative intelligence of a God, a set of laws, a language, or a technology.

According to the historian of science Joseph Needham, Western science was insufficiently detached from its own religious and philosophical traditions to ever achieve its ideal of a purely rational and objective perspective on nature: “Europeans suffered from schizophrenia of the soul, oscillating for ever unhappily between the heavenly host on one side and the ‘atom and the void’ on the other.”⁹ By contrast, Needham writes, “The Chinese world-view depended upon an entirely different line of thought. The harmonious cooperation of all beings arose, not from the order of a superior authority external to themselves, but from the fact that they were all parts in a hierarchy of wholes

forming a cosmic and organic pattern" (36). Indeed Needham has argued that organicism is quite alien to the Judeo-Christian and Greek origins of Western thinking. As it manifested itself in Western philosophy and science, as well as the romantic movement, organicism required a different source and Needham claims that it is directly attributable to Leibniz's studies in the Chinese nature philosophy of neo-Confucianism.¹⁰

Until the nineteenth century, natural science in the West was confined largely to the placing of fixed, created "natural" artifacts into fixed categories.¹¹ It was Darwin's great philosophical and scientific achievement to make the evolution or self-fashioning of nature acceptable to Western science by postulating a "natural selection" that had the effect of an organicist process without discarding the traditional Western idea that nature and matter were "fallen," inert, and in need of external or divine intervention in order to achieve form. Darwin could do this only by accepting a dualistic world in which individual species were understood strictly in terms of their opposition to an environment that was alien to them. The mechanics of natural selection, as developed later by the neo-Darwinians, was based on accident, chance mutations in the replication of genes, that could lead to competitive and coherent evolutionary change.

Thus the orthodox evolutionary biologist, for example, must consider the efficient cause of the symmetrical placement and structure of the eyes, together with the stereoscopic vision they make possible, to be the result of chance mutations governed by the invisible hand of evolutionary mechanics. Even Darwin was worried by the challenge that vision presented to natural selection and sought to break up the process into stages.¹² The fact that two eyes can produce the illusion of depth and thus a third dimension cannot, from an orthodox perspective, be related to the symmetrical appearance of two eyes and the simultaneous evolution and refinement of two optic nerves which take their electric impulses to the brain. To do so would be to introduce teleological considerations of a final cause into the biological world. Instead the evolutionary development of stereoscopic vision must be understood strictly in terms of the

greater chances of survival that such vision confers. But only a consideration of a final cause can help one to understand the efficient cause here. How else can one understand the gradual evolution of parallel structures in two eyes that give the brain, not two confusing and contradictory visual fields, but the necessary input to form a “third” vision that deepens the seen world with a third dimension?

The natural world, according to the central dogma of neo-Darwinism, could be “self-organizing” only if the engine of organization was somehow alien to the intrinsic genetic code of an organism. Like a creating god, the agent of organization—chance—had to be extrinsic to the order of nature which could still be understood in traditional terms as brute stuff. According to the perspective of self-organization, the separation of intrinsic order and extrinsic chance is misleading: the “nature” of an organism could be seen as having or being certain “chaotic” functions which contribute to self-organization. Robert Wesson writes, “Evolution is infused with deterministic chaos, which converts stochastic molecular events into evolutionary change. Under natural selection, this implies something that may be reasonably called progress” (156).

If some contemporary scientists, artists, and philosophers have begun to see the world as a coincidence of processes *and* artifacts, of self-organization *and* mechanics, of the nameless Tao of nature and the exacting Logos of mind, perhaps this indicates something more than exoticism or wish fulfillment (as is so often claimed). It is possible that the development of a post-dualistic science of chaos and complexity, of an autopoietic chaosmos, will demand such hybrid models and languages made available by the appearance, confrontation, and creative interference of once-alien cultures.

Literature and Science

Descartes’ philosophic and scientific works established the primary and emblematic act of modern thought: the division between physical and spiritual forms of significance. In doing this

Descartes was merely repeating and “modernizing” the split between human beings and the world that characterizes Judeo-Christian and Platonic sources. The second of Descartes’ “rules” in *Discourse on Method* is “to divide each of the difficulties that I was examining into as many parts as might be possible and necessary in order best to solve it.”¹³ The primary “difficulty” that Descartes confronted was the world’s resistance to adequate and certain representation. Having decided that everything he had imagined knowing was not ultimately secure, Descartes set out to “divide the difficulties”: “I thereby concluded that I was a substance, of which the whole essence or nature consists in thinking, and which, in order to exist, needs no place and depends on no material thing; so that this I, that is to say, the mind, by which I am what I am, is entirely distinct from the body, and even that it is easier to know than the body, and moreover, that even if the body were not, it would not cease to be all that it is” (54).

Werner Heisenberg, the physicist whose work most conspicuously returned science to a consideration of the “uncertainty” that Descartes tried to expel, describes Cartesian methodology this way: “While ancient Greek philosophy had tried to find order in the infinite variety of things and events by looking for some fundamental unifying principle, Descartes tries to establish order through some fundamental division.”¹⁴ Descartes offers his methodology in a modest fashion as a simple solution to the difficulties besetting philosophers and scientists: “I hope it will be useful for some without being harmful to any, and that my frankness will be very well received by all” (P&P 29). But this was certainly not the case, for as Heisenberg writes, “This partition has penetrated deeply into the human mind during the three centuries following Descartes and it will take a long time for it to be replaced by a really different attitude toward the problem of reality” (P&P 81). Boileau registered the immediate effects when he said that Descartes had “cut poetry’s throat.”

In *Madness and Civilization* (1961) Michel Foucault describes the origins of neoclassicism figuratively as the “great confinement” of the mad in asylums. More than madness was involved, however, in this rounding up of suspects: poetry,

language, mind, and thought had all to be examined and disciplined by a rigorous rationalism.¹⁵ Indeed, seventeenth-century scholars and scientists undertook a thorough examination of Renaissance, medieval, and classical traditions and enforced their decisions according to a series of divisions and categorizations—from Descartes' bifurcation of man and his world to the decapitation of Charles I, men had learned to reason with the blade of a knife. Foucault writes in *The Order of Things* (1966), "the seventeenth century marks the disappearance of the old superstitions or magic beliefs and the entry of nature, at long last, into the scientific order . . . the whole domain of the sign is divided between the certain and the probable, that is to say, there can be no longer an unknown sign, a mute mark."¹⁶ The mass of forms and phenomena within the natural realm are thus either placed in the grid of a scientific order or banished from intellectual consideration and curiosity.

Language was the first among these troublesome elements which thrived within and without the boundaries of reason. Mathematics, although it had yet to conserve anything like moral law, seemed a preferable form of discourse. "Above all I enjoyed mathematics," Descartes writes in the *Discourse on Method*, "because of the certainty and self-evidence of its reasoning, but I did not yet see its true use and, thinking that it was useful only for the mechanical arts, I was astonished that on such firm and solid foundations nothing more exalted had been built, while on the other hand I compared the moral writings of the ancient pagans to the most proud and magnificent palaces built on nothing but sand and mud" (31). Christian theology could bolster such linguistic foundations only through "special grace from heaven." Given this situation, two things likely to happen happened: mathematics assumed a certain divine prestige, and language was subject to a severe reformation. While Descartes sought to define God through geometric formalism, natural languages were confined and reorganized. Foucault describes the development this way: "From the seventeenth century, it is this massive and intriguing existence of language that is eliminated. It no longer appears hidden in the enigma of the mark; it has not

yet appeared in the theory of signification. From an extreme point of view, one might say that language in the Classical era does not exist" (79). Literature in the seventeenth and eighteenth century developed within such constraints. Poetry and drama assumed neoclassical regulations and featured chastened abstractions and allegorical plots. When the novel appeared it was guided by the rules of empirical description and linear cause and effect. Novelistic characters, like the billiard balls of Newtonian physics, were subject to the laws of action and reaction.

Imaginative writers represented a world guided by the two central values of science: abstraction and linearity. Inspired by the triumphs of mathematics and physics and influenced by the arguments of both continental rationalists and their supposed antagonists, British empiricists, European poets and, later, novelists turned from the richly complex linguistic textures of Renaissance poetry and narrative to what they supposed were neo-classical virtues. Here certainly were poetic constitutions of reality no less imaginative and bold than those of Wordsworth and Coleridge. Yet there was a difference: seventeenth- and eighteenth-century literature seemed agreeable, more or less, to the rational genius of the age. It was utterly modern in that regard.

From the seventeenth to the nineteenth century, literary language was constrained by a "neoclassical decorum" that had as much to do with mathematical abstraction and linear description as the "classical" qualities of Greek and Latin literature. According to Foucault, the romantic, symbolist, and modern movements had to begin, then, by finding their way back to a "raw being forgotten since the sixteenth century" and within such work "the being of language shines once more on the frontiers of Western culture" (44). "From the romantic revolt against a discourse frozen in its own ritual pomp, to the Mallarméan discovery of the word in its impotent power, it becomes clear what the function of literature was, in the nineteenth century, in relation to the modern mode of the being of language. . . . Literature . . . leads language back from grammar to the naked power of speech, and there it encounters the untamed, imperious being of words" (300).

By severing physical from metaphysical values, Descartes had established the terms of a persistent modern tactic, followed by Kant and others, which was to preserve the integrity of the physical sciences and metaphysical (or aesthetic) speculation by detaching one from the other. As the physical sciences, from Newton through Boltzmann and Maxwell, gained more and more prestige, precisely by ignoring the role of consciousness and life in the scheme of their laws, the metaphysical traditions were neglected and decayed. Christianity receded from serious intellectual discussion and its totalizing myths were replaced by the anti-aesthetic, atomized myths of material progress and bourgeois competition.

Since Kant and the English romantics, literary thinkers have thus tended to view the claims of literature as different in kind from those of science. Coleridge could thus write in chapter 14 of the *Biographia Literaria*, "A poem is that species of composition, which is opposed to works of science, by proposing for its *immediate* object pleasure, not truth; and from all other species (having *this* object in common with it) it is discriminated by proposing to itself such delight from the *whole*, as is compatible with a distinct gratification from each component part."¹⁷ The most telling inference to be drawn from this celebrated passage is that "truth," having been assigned to the "work of science," is no longer understood as the relationship of the whole to its constituent parts. The New Critics, having accepted the premise that modern science was "rational" and "actual," could only "defend" or "apologize" for poetry by distinguishing its claims on us from those made by science. John Crowe Ransom made the distinction quite clear: "Science gratifies a rational or practical impulse and exhibits the minimum of perception. Art gratifies a perceptual impulse and exhibits the minimum of reason."¹⁸ Separated from pleasure, truth is also separated from the very idea of a whole and from the "delight" which an apprehension of wholes prompts. The truth of literature has thus to be viewed in symbolic, archetypal, or hortatory terms, while the truth of science is seen as literal and actual but, as a consequence, divorced from delight and pleasure. The Platonic coupling of the beautiful and the true having been broken, modernists must choose between pleasure and truth,

fictive wholes or sundered facts. The philosophical and social category of the “aesthetic” thus served to substantiate an opposing perceptual category which in the modern world has come to be called the “real,” the focus and preserve of scientists. “Literature” in its familiar modern sense was thus born the moment poetry renounced claims to any but “fictive” truth.

Modernist literary historians tend to put the best face on the segregation and trivialization of art by claiming that Kant, by establishing the constitutive powers of the individual mind, had empowered the poet. With this epistemological authority, the poetic imagination could breathe significance into the world while the metaphysical fictions of Christianity were yielding to the emergent culture of industrial and consumer capitalism. Ironically, literary historians, like Douglas Bush and Basil Willey, who sought to maintain the virtues of poetry in the face of modern scientific claims, often accepted the idea that science was inimical to poetry.¹⁹ Since the principles of modern science were not in doubt, this interpretation had the effect of marginalizing the poetic or aesthetic project of dramatizing the relationship of parts to wholes, of subjectivity and objectivity.

Science is of course not inimical to poetry (as I hope to show), but science has changed the way critics have described the value and purpose of art. Thus in the sixties Frank Kermode, following Wallace Stevens, proposed that we view literature as “fictions” of totalization that we enjoy even as we understand their fictiveness.²⁰ The world rendered according to the various discourses of scientific “truth” appeared to be utterly chaotic, insignificant, perhaps absurd: “fictions” were required to discern any coherent meaning in it—which is to say any sense, however partial, of totality. When Thomas Pynchon’s novels appeared in the sixties this tradition achieved its *reductio ad absurdum*: in *V*, *The Crying of Lot 49*, and *Gravity’s Rainbow* the “world” outside and beyond individual consciousness was revealed to be so filled with random but irrefutable facts, so complex and yet so real, that any attempt to perform an aesthetic reduction or a holistic construction of it was either a form of paranoia or the unlikely discovery of a vast and complex historical conspiracy.²¹

Indeed, New Critical formalism and the theory of “fictions” were the last attempts to equate the aesthetic with the hypothetical and the unreal: in a sense they were the most recent platonism. The poststructuralist critiques insist that philosophy, science, history, and literary formalism are all discursive in varying degrees and thus characterized by aesthetic and rhetorical premises and practices. All knowledge is seen, according to the strongest of these critiques, to be aesthetic in the sense that it has an irreducible metaphorical and paradigmatic center.²² Although defenders of formalism and the humanist tradition in letters, like Murray Krieger, tended to see poststructuralism as a threat to poetry’s supposedly unique function among all human discourses, poststructuralists were actually providing a general aesthetics which could establish links between the sciences and the arts and provide the intellectual tools for a chaosmic analysis.²³

Even as the New Critics and humanists in general maintained the modernist valuation of science the better to establish the values and uses of poetry, the psychological and physical sciences had begun to register the limits of scientific representation. The separation of aesthetic and scientific representation established by Descartes became increasingly difficult to maintain. Physics, the fundamental science and the inspiration to the others, went through a series of crises and revolutions which have radically challenged the division between mental and physical experience, while psychoanalysis claimed that consciousness and reason are features of a wider psychic economy which includes the unconscious. Physics was in the forefront of this growing awareness of the aesthetic dimension of scientific reasoning precisely because it confronted both the most basic and the most abstract of phenomena: the nature of space, time, matter, and movement.

The blurring of the distinctions between the scientific and the aesthetic, objectivity and perspective, as well as the meaningful and the real, first revealed in the theories of relativity and quantum mechanics, indicated a gradual movement away from the modern assumption that nature could and ought to be representable in a single code or register. This weakening of the fundamentally abstract and linear ambitions of modern science led to

current theoretical views describing the multiple temporalities, spaces, and laws observable simultaneously in the world. After Newtonian physics replaced Aristotelian physics, the general enlightened view was that all movement should be subject to a single set of laws. In principle, according to Laplace, a thorough knowledge of present conditions would lead to a knowledge of all future movements and developments. But as Newtonian principles have been supplemented by thermodynamics, the theory of relativity, quantum mechanics, and chaos theory it seems—despite efforts to postulate a Grand Unified Theory—that physics can no longer be conceived as a fundamental science, if by that one means a singular and inviolable set of uniform principles.

It is this very emergence of *complexity* and *plurality* in science, William Paulson argues, that reopens the dialogue with literature cut off, as Foucault reminds us, precisely because of the complexity, density, and texture of literary language: “In an apparent paradox, the current literature-science dialogue . . . is made possible by the very properties of literature that long made it seem the antithesis of a scientific object.”²⁴ In *Finnegans Wake* especially one sees the triumphant emergence of the “imperious being of words,” complexity, interdisciplinarity, just as one sees it in the deconstructive projects of Jacques Derrida. No longer kicked upstairs into the transcendental attic, literature can be seen as both theory and example of the chaotic, plural, and self-organizing world.

New reckonings

Gregory Bateson’s most comprehensive exposition of conclusions drawn from fifty years of research in anthropology, psychology, communications, and cybernetics appears in *Mind and Nature: A Necessary Unity* (1979). The title indicates how closely Bateson’s analysis and speculations on the nature of mind is a direct response to Cartesianism. For Bateson, the advent of scientific culture and the sequestration of philosophy and literature within humanism was a fundamental error. “I hold to the presupposition

that our loss of the sense of aesthetic unity was, quite simply, an epistemological mistake. I believe that that mistake may be more serious than all the minor insanities that characterize those older epistemologies which agreed upon the fundamental unity.”²⁵ Bateson summarizes this mistake in these terms:

- a. the Cartesian dualism separating “mind” and “matter.”
 - b. the strange physicalism of the metaphors which we use to describe and explain mental phenomena—“power,” “tension,” “energy,” “social force,” etc.
 - c. our anti-aesthetic assumption borrowed from the emphasis which Bacon, Locke, and Newton long ago gave to the sciences, viz. that all phenomena (including mental) can and shall be studied and evaluated in quantitative terms.
- (240)

These traits of science led to the modern view that mankind exists as an inexplicable superfluity in an otherwise ordered universe, a kind of passenger upon or within material and mechanical vehicles—the earth and the body. Through excluding mind from the arena of scientific thought, and considering undisciplined perception as a contaminant of truth, reality and objective experience were produced, and so too the “underlying notion of a dividing line between the world of living . . . and the world of non-living billiard balls and galaxies” (7). Although this division led to the industrial and technical transformation of the world which we all find so convenient and necessary, it also effectively assigned the “pleasure” which comes from understanding the relationship of parts and wholes to the aesthetic or false discourses of religion, philosophy, and art.

In their places Western industrial capital eventually erected a massive consumer culture, which imbues language, dress, identity, and purpose with the discourses of “products,” but which has also provided security, convenience, and the creation and temporary satisfaction of desires—at least for those able to purchase them. Although these desires are spiritual or subjective in nature, the satisfactions offered are invariably material and objective.

Thus the fundamental argument of consumer culture, which is the usual expression of modern liberal values (or the lack of them), is that the desire for wholeness can only be satisfied by more and newer products, works of art, and critical trends. Modernity thrives on this endlessness of production, guided by demands for novelty and originality, values which are still largely unquestioned, however much critical theory in the last several decades has cast doubt on them.

This confusion between quantitative and qualitative conceptions of wholeness is characteristic of the schizoid reasoning engendered by Cartesianism. Bateson claims that this legacy has cost us every myth, indeed every conception and possibility of aesthetic unity: "We have lost the core of Christianity. We have lost Shiva, the dancer of Hinduism whose dance at the trivial level is both creation and destruction but in the whole is beauty" (19). In the place of myths of unity, modernists and "postmodernists" thrive on plans, projects, and programs which begin by offering valid critiques of past regimes of value but must defer offering one themselves as long as they can, knowing as they do that it is at that moment that the market of ideas will demand new criticism and plans. For it is as a critique that intellectual work earns its reputation, just as it is by originality that works of art achieve theirs.

There are of course good precedents for this skepticism: the "aesthetic unities" proposed by Pound and Eliot or attempted by Hitler and Mussolini have inoculated most intellectuals against the infection of aestheticized politics. Even so, what Bateson proposes is much less and potentially much more than these totalitarian solutions. He is proposing that we re-evaluate what we mean by our minds and what we mean by nature, and determine how wise we are in rejecting the very possibility of thinking in terms of wholes. Although we have all been conditioned to view the "loss" of Christ or Shiva as nostalgia for imaginary Edens and urged to agree to consensual realities which preserve the concert hall, the museum, and the theatre for our aesthetic requirements, we should not ignore Bateson's calm assertion that modern culture is not the result of a mythic fall—simply the history of an error.

The ideologies engendered by the scientific revolution can be seen within the tradition of artificial dualisms forced upon the continuum of humanity and world which give rise to powerfully repressive or aesthetically impoverished cultural epochs. Like Judaism, Platonism, and Christianity, all of which divided mind from matter in order to constitute an external, immaterial, and eternal realm of pure significance far from human praxis, modern science sought to decipher the eternal laws hidden within the workings of nature and represent them in the atemporal discourse of mathematics. These cultural discourses all presuppose “falls” into contingency and chaos, into the physical realm of unending transience, in order to explain the gap between the significance they seek and the existence they represent. The fall is a fall outside of a privileged discourse which has been abstracted and placed within a sacred or eternal dimension in order to maintain its purpose as the source of human significance. Scientific laws, however, represented an advance beyond the Judeo-Christian scheme: unlike the will of God, they could never be violated. By legislating truly immutable laws within nature, scientific culture seemed to require a kind of agent of order or an ontological tendency within matter toward order which it consistently denied in practice.

Bateson believes that a reconciliation between human beings and their world can occur only through an epistemological revolution, one that would necessarily nullify what I have described as the modernist dilemma. Instead of privileging one of the traditional poles of modern epistemology, whether it be subjective or objective, or imagining their ideal fusion or transcendence, Bateson claims instead that neither of them are in the slightest sense real. For Bateson, the world is not a duel between fictitious mental orders and blind material processes, for the simple reason that they are aspects of one another. Bateson's entire argument is based on the premise that “mental function is immanent in the interaction of differentiated ‘parts.’ ‘Wholes’ are constituted by such combined interactions” (104). When computer scientists claim that a computer is “intelligent” or that it is “conscious,” they are working from a similar premise, although somehow when the idea that mind is an

interaction of parts and wholes is applied to a machine it seems hardheaded and antihumanist and when it is applied to an ecology it seems softheaded and irrational. This is probably because we tend to see natural organizations as chance constructs of evolution which sustain us and give us pleasure and machines as expressions of the human mind which work for us and solve problems. For Bateson, however, mind and nature are aspects of the same patterning: "the pattern which connects is a metapattern. It is a pattern of patterns. It is that metapattern which defines the vast generalization, that indeed, it is patterns which connect" (12).

Cartesianism has so imbued our thought with the conviction of its own immateriality, its own difference from the "outside," that Bateson's proposition seems nonsensical. Kantian epistemology holds that such patternings are projections of the Understanding, and that whatever noumenal truth there may be in them will remain a mystery to mortals. But for Bateson, the world is not held together by a physical framework of reality which must perforce exclude the image-making or spiritual dimension of mind. The world, from atoms to people, from people to planet, is held together because of the logic of its patterning, just as planets, people, and atoms form a world. The mind that perceives and is composed of patterns is necessarily natural, just as nature is essentially mental in the sense that it is holistic. The "laws" which describe/guide the movement of the planets in their orbits, no less than the laws which describe/guide the beating of our hearts, could just as well, and with as little or much anthropomorphism, be called "narratives." Bateson writes:

The fact of thinking in terms of stories does not isolate human beings as something separate from the starfish and the sea anemones, the coconut palms and the primroses. Rather, if the world be connected, if I am at all fundamentally right in what I am saying, then thinking in terms of stories must be shared by all minds, whether ours or those of redwood forests and sea anemones. (14)