LITERARY STUDY AND EVOLUTIONARY THEORY

A Review Essay

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Several recent books have claimed to integrate literary study with evolutionary biology. All of the books here considered, except Robert Storey's, adopt conceptions of evolutionary theory that are in some way marginal to the Darwinian adaptationist program. All the works attempt to connect evolutionary study with various other disciplines or methodologies: for example, with cultural anthropology, cognitive psychology, the psychology of emotion, neurobiology, chaos theory, or structuralist linguistics. No empirical paradigm has yet been established for this field, but important steps have been taken, especially by Storey, in formulating basic principles, identifying appropriate disciplinary connections, and marking out lines of inquiry. Reciprocal efforts are needed from biologists and social scientists.

KEY WORDS: **Adaptationist program; Darwinism; Literary criticism; Literary theory; Literature and science.**

Books under review:

Argyros, Alexander J., *A Blessed Rage for Order: Deconstruction, Evolution, and Chaos* (Ann Arbor: University of Michigan Press, 1991), x + 368 pp.

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Koch, Walter A., *The Roots of Literature* (Bochum, Germany: Universitätsverlag Dr. Robert Brockmeyer, 1993), ix + 246 pp.

Kroeber, Karl, *Ecological Literary Criticism: Romantic Imagining and the Biology of Mind* (New York: Columbia University Press, 1994), 185 pp.

Storey, Robert, *Mimesis and the Human Animal: On the Biogenetic Foundations of Literary Representation* (Evanston: Northwestern University Press, 1996), xxii + 274 pp.

Turner, Frederick, *Natural Classicism: Essays on Literature and Science* (originally published by Paragon House in 1985; reissued, Charlottesville: University of Virginia Press, 1992), xix + 284 pp.

Turner, Mark, *Reading Minds: The Study of English in the Age of Cognitive Science* (Princeton: Princeton University Press, 1991), x + 298 pp.

Darwin's impact on literature, and particularly on the naturalistic fiction of the later nineteeenth century, is a long-established and still active field of research. Lionel Stevenson's *Darwin among the Poets* appeared in 1932, and in 1996 Bert Bender published *The Descent of Love: Darwin and the Theory of Sexual Selection in American Fiction, 1871–1926.* Bender tacitly accepts the validity of Darwin's naturalistic orientation, but in this respect, among contemporary literary scholars, he is something of an anomaly. From an ideological angle virtually opposite to that of Bender, and more fashionable, other recent studies have attempted to characterize Darwin, with perverse ingenuity, as a forerunner for the irrationalist antirealism of such contemporary authorities as Jacques Derrida and Michel Foucault. Signal instances include Gillian Beer's *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot, and Nineteenth-Century Fiction* and George Levine's *Darwin and the Novelists: Patterns of Science in Victorian Fiction.* Whether naturalistic like Bender, or postmodern like Beer and Levine, historians have tended to take their theoretical frameworks as something given, not requiring original constructive effort. They devote their attention instead to influences or parallels among specific writers.

The books here under review represent a new and different kind of evolutionary literary study. Most contain illustrative instances of literary interpretation, but their purposes are primarily theoretical, not critical. Their authors are preoccupied with formulating new ways to think about all historical and interpretive literary topics. Literary theory is itself of course an ancient pursuit, but only one previous theorist has ever made a serious and sustained effort to incorporate the idea of evolution. In his immense *History of English Literature,* Darwin's contemporary Hippolyte Taine took organism, environment, and heredity as central organizing principles. Taine has now been largely and undeservedly forgotten. None of the authors here under review cites him. If only by default, then, the current authors are all pioneers in what is, to them, a virgin wilderness.

It is the fate of pioneers to suffer and struggle mightily, to endure high rates of mortality, and after all their heroism still to produce settlements that, though monuments to their own industry and courage, make but a shabby impression on the eye of the touring cosmopolite. In his voyage on the *Beagle,* Darwin was shocked and disgusted by the squalor of New Zealand and Australia, and he was heartily glad to get back to England. Our own generation of literary scholars has no such refuge as that to which Darwin returned. As we head into the wilderness, we leave behind no mature and refined society, no mellow landscapes, picturesque towns, and genial networks of zealous fellow workers. Our situation is rather more like that of the Pilgrims fleeing persecution, the Israelites escaping from Egyptian bondage, or Lot and his family turning their backs on the corruption of Sodom and Gomorrah. The flagrant and frivolous unreality of currently established literary doctrines—on which all these authors comment—leaves us no alternative but to make what order we can with the rough tools at our disposal.

For literary scholars with Darwinian sympathies, or for Darwinian social scientists sympathetic to humanistic study, most of the books reviewed here are likely to cause disappointment. To my own mind, only one of the books, Robert Storey's *Mimesis and the Human Animal,* makes any substantial progress toward establishing the foundations of a Darwinian literary theory that can produce progressive findings in close company with the biologically grounded human sciences. To say this need cast no skeptical light on the prospects for a Darwinian literary theory, because the central problem with all the books, except Storey's, is precisely that they are not Darwinian. They either do not understand or do not accept the full logic of the adaptationist program. All the books claim some sort of affiliation with biology, but (with the exception of Storey's) they adopt various marginal conceptions of biology, and they evade the central premises of sociobiology, evolutionary psychology, and human ethology. Apart from the present reviewer, one other author of book-length studies, Ellen Dissanayake, joins Storey in assimilating the information and logic of these disciplines to humanistic inquiry. I have not included her work in the review only because her two books, *What Is Art For?* and *Homo Aestheticus: Where Art Comes From and Why,* are oriented to the more general problems of art and aesthetics, not to the problems specific to literature.

The number of genuinely adaptationist studies will probably soon increase. Several capable scholars and critics have become alert to human evolutionary studies and are now giving conference papers and writing articles and reviews. The more satisfactory studies that are still to come will not, however, instantly and automatically supplant the strange species that have begun to proliferate in the border lands between biology

and literary theory. For a good while yet, we shall need to be making distinctions between mainstream Darwinian thinking and the various misshapen offspring of the vagrant literary fancy.

Of all the authors in this set, Karl Kroeber is the only one who has an almost exclusive preoccupation with the literature of a specific historical period. He credits himself with having introduced the term "ecology" into Romantic scholarship, and his book *Ecological Literary Criticism: Romantic Imagining and the Biology of Mind* distills decades of research into his historical subject. In order to use his period specialization as the basis for theoretical construction, Kroeber must invoke the Romantics as models and precursors for what is, in his view, the most advanced and enlightened contemporary ideology: the eco-feminism of Evelyn Fox Keller and a few other like-minded theorists. The Romantics, we are told, believed that humankind belonged in "the world of natural processes." They were thus "proto-ecological" (p. 5). Current "ecologically oriented sciences" continue the Romantic revolt against the rationality of the Enlightenment, and they thus join with the eco-feminists in questioning the "principle of rationality" associated with "a 'male-oriented' science" (pp. 6, 7). By associating the eco-feminists and Romantics with the affirmation of Nature, Kroeber can set them in diametrical opposition to the anti-naturalism of deconstruction and New Historicism, the two theoretical movements that have dominated literary study for the past thirty years or so.

Kroeber's alliances and oppositions involve him in several distortions. In order to make the Romantics suitable as models, Kroeber both colludes with Wordsworth's sentimental concept of Nature as wholly beneficent and denies, dogmatically and implausibly, that Romantic metaphysics are transcendental. In order to make postmodern theorists into suitable foils for his Romantic eco-feminism, Kroeber reduces their world view to the repudiation of Nature. He thus overlooks the irrationalism through which they are intimately affiliated with Kroeber's own feminist anti-rationalism. Kroeber has little insight into the origins or underlying logic of contemporary literary theory—he attributes deconstruction and New Historicism exclusively to "a Cold War mind-set" (p. 3)—and the logic of his oppositions leads him into the absurd notion that "most contemporary criticism" has a "'scientific' foundation" indistinguishable "from that favored by the most brutally oversimplifying scientists of the later nineteenth century" (pp. 20–21).

In *Higher Superstition: The Academic Left and Its Quarrels with Science,* Paul Gross and Norman Levitt have complained bitterly about humanists who venture to issue lofty opinions on sciences about which they are profoundly ignorant. Kroeber is highly vulnerable to criticism of this sort. He makes sweeping, grandiose claims about "recent biological research,"

"contemporary biological conceptions," and "contemporary ideas of evolution" (pp. 1, 2, 111), but he knows the least possible amount about these subjects. He has read a good deal in the history of ecology, but his reading in biology seems to consist of little more than a single book by Ernst Mayr, some Stephen Jay Gould, a few eco-feminists, and Gerald Edelman's "neural Darwinism." On the basis of this research, he feels himself authorized to declare that irrationalist eco-feminism has produced a rethinking of "fundamental presuppositions of biological science" (p. 8). Of research into sociobiology, evolutionary psychology, and human ethology, he seems to know essentially nothing. He roundly characterizes the idea of a universal incest taboo as a "myth" (p. 117), but he cites none of the important findings that have appeared on this topic in the past thirty years. More generally, he supposes that all human universals have now been revealed "to be no more than generalizations of Western European modes of thought" (p. 141), but he cites none of the dozens of studies in the annotated bibliography in Donald Brown's *Human Universals*.

Although he has updated his rhetoric with a little anti-adaptationist biology, Kroeber's basic critical and theoretical approach is quite old-fashioned. His readings of the major Romantic poets operate almost exclusively in the medium of plodding thematic commonplace—he reduces all their work to dull thesis statements—and his larger theoretical formulations operate in the medium of Romantic metaphysics. The following instance will illustrate the quality of his style in his more exalted, metaphysical moments. Rejecting "the deadly mechanicalness of limited regularities"—that is, actual causal mechanisms like those of natural selection—he proposes a biological vision based on a teleology of the ecosystem (p. 106). "What if one conceives of life as diverse processes striving to sustain what we call ecosystems, complexes of interactivity that enhance the power and endurance of their vitality through a cooperative interplay of self-transforming individualities?" Such comically bloated bits of inane abstraction are endemic to philosophical literary criticism.

Kroeber's readings of the Romantic poets form the bulk of his book, and these readings can have little interest for anyone not specializing in the period. Indeed, they will probably provide no very lively stimulus even to specialists. He has some good things to say on the relation between Spinoza and Darwin and on the evolutionary themes in Keats's *Hyperion* poems. The strongest part of the book is the annotated bibliography embedded in the notes. Specialists will benefit from the decades Kroeber has spent judiciously sifting through the scholarship on the period.

Kroeber locates the moving power of nature at the level of the ecosystem. The next three books to be considered, those by Frederick Turner, Alexander Argyros, and Walter Koch, all take in a still larger scope. For all

three, the specifically biological principles of evolution are merely special cases within evolution at the level of the cosmos or universe. With a speculative enthusiasm animated by creative license, and nowise diminished by the absence of any causal mechanism, the universe at large is credited with dynamic formal principles that transcend and sometimes suspend the workings of natural selection. As with Kroeber's teleology of the ecosystem, all such notions involve a regression to metaphysical, pre-Darwinian conceptions.

Frederick Turner is the son of Victor Turner, the cultural anthropologist. He is an English professor and a poet, and he has an intimate familiarity with contemporary literary culture. He also has a profound appreciation for his father's work on the cultural functions of ritual, and he is among the first of current critics to have made substantial use of new empirical information about neurophysiology. *Natural Classicism: Essays on Literature and Science* appeared in 1985, before the recent flood of studies in human evolution, and especially before the advent of "evolutionary psychology." Substantial work was already available under the rubric of sociobiology, but Turner makes almost no use of sociobiological theory, and his pronouncements on sociobiology are thoroughly equivocal.

Tuner has strong spiritual aspirations, and like Kroeber he fears the concept of a determinate causal order that is essential to science. He uses anthropology and neurophysiology to illuminate aesthetic experience, but he also proclaims that the creative imagination transcends any "material" causality. "Matter and mind," he believes, "are different arrangements, the latter much more complex than, and subsuming, the former" (p. xiv). If mind is given the lead in the causal chain, the ultimate mysteries of nature are to be sought in mental experience, not in physiology and physics. "If we wish to understand the animating drives of nature, we can go to no better place than ourselves" (p. 169). The "driving force and inner principle" in "nature's own spontaneous creativity" is "self-awareness." The "process of creation" is "an expansion of the universe and a continuation of the work of evolution" (p. xvi). Linking up this spiritualistic belief with the idea of "performative" utterances, from J. L. Austin's philosophy of speech acts, Turner attributes to literature the power of creating "a new reality by verbal fiat." This is a giddy creed. All things are connected, and the inspiration of the humanistic imagination is at the very source of universal creativity. The style appropriate to such a creed, Turner feels, is an "inspired amateurishness" (p. xii). What this means, in practice, is to envelop popularized science in an atmosphere of mystical rapture and to carry it forward on a stream of rhapsodic prose. A style of this sort can provide no firm foundations for the development of explanatory structures.

Turner is himself of two minds about the value of developing explanatory structures integral with those of science. In his boldest mood, he vigorously and succinctly lays out the unifying effect Darwin's evolutionary theory had upon the diverse branches of biological studies, draws suggestive parallels between these branches and those of traditional literary scholarship, and proposes to seek "an equivalent unifying idea" for literary scholarship (p. 4). Still further, he proposes that biology itself provide this unifying idea. "Obviously, any attempt to provide a scientific basis for the study of aesthetic phenomena must take the royal road through biology: the perception of beauty is first and foremost a capacity belonging to living organisms" (p. 240). This is well and truly said. If Turner had been able to sustain this conception, his book could have gone much further toward integrating biology and literary scholarship. He does not sustain it, and the invocation of Darwin as a model invites a comparison through which we can identify a basic weakness in Turner's habit of mind.

The Origin of Species is, as Darwin himself recognized, "one long argument" (1968:435). It is a wholly unified, connected set of propositions and evidentiary expositions, all of which bear upon a tightly interlocked sequence of primary causal theses. There is in all this, apart from the depth of insight and the sheer magnitude of information accumulated, an instinct for the integrity of an argument. This instinct is something like the mental equivalent of a characteristic of personality, and it is a quality in which Turner is signally deficient. There are no sustained arguments in *Natural Classicism.* Instead, there are flashes of insight that are sometimes elaborated in a swirl of repetitive embellishments and sometimes diffused and cancelled by contradictory propositions and equivocal reservations. After describing "a view of literature which sees it as continuous with all other kinds of reality," Turner backs off and says "that whole of which I speak" is "not easily scanned, expounded, or even described by a single line of argument" (p. xiii). Immediately after invoking evolution as an "analogy of a unifying paradigm in a natural science," he cautions, "Perhaps, indeed, the analogy should not be taken too far" (p. 5). Poised indecisively over the attractions of "rational virtues" and humanistic inspirations, Turner tilts the balance by reconceiving biology as itself a subjective, inspirational pursuit.

> Surely literary criticism should never be an exact quantified science. But then by the same token neither should biology: life, after all, is itself a survival strategy of finesse against the cold numbers of entropy. . . . Evolutionary theory did not falsify by reducing the complex and qualitative richness of the biosphere: rather, it helped us to reveal it (pp. 5–6).

There is an elementary fuzziness here that will hardly yield to correction. The complexity of a subject is no argument against quantitative analysis. From the subjective, experiential standpoint, life has "qualitative" aspects, but as a subject of scientific study life can nonetheless be reduced to a distinct set of causal, explanatory hypotheses. In historical fact, Darwin's theory, like all successful scientific theories, did reduce the complexity of phenomena to underlying regularities, though it did not thereby "falsify" or deny the complexity. Biology is in fact an exact quantified science, though with varying degrees of exactitude in its various branches. Certain aspects of literary criticism involve taste and personal value. In the nature of things, expressions of taste and value are not statements of scientific fact, but expressions of taste and value can themselves be the subject of psychological analysis, and psychology looks forward, with good reason, both to increasing unification through the reduction of complexity to underlying regularity and to a correspondent increase in exact quantified knowledge. In its objective aspect, as a subject of scientific study—a subject embedded in psychology, anthropology, and sociobiology—literature is intrinsically no less susceptible to scientific understanding than life itself.

Turner's treatment of sociobiology and human ethology is of a piece with his treatment of biology in general. On one hand, he concedes that these disciplines "offer promising opportunities for research" into the biological basis of aesthetics (p. 242), and on the other hand he repudiates "the genetically hard-wired robot of the sociobiologists" (p. 62). Seeking a "third position" somewhere midway between genetic determinism and cultural relativism, he concedes that certain cultural universals "indicate a shared biological underpinning," but "unlike the genetic determinists" he does not "regard this shared inheritance as a constraint" (p. 80). If genes do not constrain, what is it that they could possibly do? In tacitly answering this question, Turner tries to make evasive equivocation sound like witty paradox. "Humankind has a nature; that nature is cultural" (p. xv). Or, in more discursive form, "Humankind *does* have a nature; there are cultural universals. But this nature is neither a limitation nor a totally protean adaptiveness. Rather, it is a system of neurobiological and developmental rules which make possible an immensely productive and infinitely versatile, but characteristically mammalian and human *generativeness*" (p. 222). Such formulations seek to split all differences by simultaneously affirming and denying identical propositions under slightly different words. Human nature is not a "limitation," but it is a set of "rules"; it is not "totally protean" but is nonetheless "infinitely versatile." Despite the yearning for an irrational compromise, Turner's culminating emphasis on "generativeness" slides inexorably toward cultural relativism—the idea that our genes gave us a creative brain and an apti-

tude for culture and then left the rest up to us. Accordingly, Turner suggests that culture "is now taking over the central genetic tasks of our species" (p. 215).

Turner's equivocal hostility to sociobiology seems to arise in part from his spiritual aspirations. He wishes to affirm the autonomy and indeed the supremacy of "the 'higher pleasures' of creative mental effort, of beauty, of goodness, of truth" (p. 14). He rejects the idea that these supposedly higher faculties are "merely perverted or sublimated versions of sexual or nourishment drives." Recent information about the chemical reward system reveals, he thinks, that the motive force of the higher faculties is "potentially much greater than that of hunger or lust." In order to reach this conclusion, he associates the "higher" faculties with endorphins, "the internally generated brain rewards," and sets these chemical rewards in contrast to "the conventional motivators proposed by crude materialists and behaviorists." The fallacy built into this argument should be apparent. It might well be the case that the appreciation of beauty and the pursuit of truth have satisfactions peculiar to themselves, not reducible to other animal satisfactions, but all satisfactions, "higher" and "lower," have evolved as adaptive mechanisms that are mediated through the chemical reward system. The pleasures derived from the satisfaction of hunger and lust cannot be set in contrast to the pleasures derived from "the internally generated brain rewards."

The peculiarity of a biologized aesthetics that deprecates hunger and lust can be underlined by Turner's effort to bring Darwin into close proximity with Thoreau. Both writers, he tells us, were "naturalists," and he suggests that Thoreau could serve as an anthropological guide to nineteenth-century New England, "though he has intriguing and significant omissions, such as kinship and sexuality" (pp. 202, 179). These are not, needless to say, omissions in Darwin's *Descent of Man*. A "naturalism" without kinship and sexuality is like a liquid without wetness. Turner's enchantment with endorphins, and his desire to segregate them from the fulfillment of common human needs, seem to reflect a paradoxical peculiarity of temperament: at once hedonistic and effete, sybaritic and ethereal.

Turner's book can be divided into two distinct parts, four essays devoted to theoretical topics and three chapters of interpretive literary criticism. The chapters of criticism look as if they have been written up from lecture notes for seminars on English Renaissance literature, Shakespeare, and Thoreau's *Walden*. The readings are presented as examples of a "participatory" form of criticism. In practice, this means a sympathetic exposition of primary texts. The weakness of this method is that it offers no external standpoint, no independent critical perspective, so that one misses a chief merit of good criticism—the sense of what the literature means

for some one particular mind. With all its limitations of conceptual order, the theoretical part of the book gives a much more decided impression of a distinct literary personality.

In *A Blessed Rage for Order: Deconstruction, Evolution, and Chaos,* Alexander J. Argyros presents himself as an acolyte of Frederick Turner. Like Turner, he propounds a philosophy of cosmic evolution, and again like Turner he takes a fundamentally equivocal stance toward sociobiology. The central principle in his scheme of cosmic evolution is that of an inner force driving the cosmos to "increasing complexation" (p. 149). In one part of his book, he uses Lumsden's and Wilson's work on gene-culture co-evolution as his main guide, but he warns the reader that his "defense of Lumsden and Wilson is only a defense of those aspects of their work that support" his own "non-reductionist version of sociobiology" (p. 354). Being non-reductive apparently means taking refuge in a range of verbal equivocation that suspends all determinate conceptions. Argyros says he would defend "a progressive kind of sociobiology that pays homage to our evolutionary past while respecting the central importance of culture in determining the world of human beings." This sort of sociobiology is compatible, he thinks, with "a view of the natural and social worlds that situates them in a softly teleological and endlessly innovative continuum" (p. 7). For hard problems such as "the enlargement of the neocortex in advanced prehominids," Argyros offers this soft cosmic teleology as a source of solutions more satisfactory than those of "traditional Darwinian explanations" (p. 285).

Despite their considerable agreement at the level of large general ideas, Argyros and Turner make a very different impression on the imagination. They work in different contexts, with a different range of references and different styles. Turner has been genuinely impressed with information from anthropology, neuroanatomy, and neurophysiology, and he has brought this information into close proximity with an acute appreciation of specific literary structures, especially poetic meter. Argyros makes theoretical appeal to the general field of empirical science, and he takes literature as a point of reference for his philosophical disquisitions, but he begins and ends in metaphysical abstraction. His main source science is chaos theory, and this he assimilates at the level of metaphysics. He has assimilated virtually no empirical information about anthropology, human ethology, or psychology. Although he uses Lumsden and Wilson as a guide, he refers to only one book by them. Generally, his bibliography is rather slight. His ample pages spin out a very little matter into a very thin tissue of theoretical disquisition. Of all the writers in this review, he has the least literature. He seldom cites a literary text, and he shows very little interest in the problems specific to literary productions. His prose reaches its culminating moments in formulations similar in style to those of Kroe-

ber. For instance, "I conjecture that the universe is a dynamical, evolving system describing a vector of increasingly complex and self-reflexive information-processing technologies set against the background of ballooning entropy" (p. 325).

Argyros belongs to a generation of literary scholars who as graduate students were immersed almost exclusively in the deconstructive philosophy of Jacques Derrida. Deconstruction constitutes the chief topic and primary point of reference for his book, and with respect to Derrida's works Argyros' bibliography is very full. The first of the three parts of the book is devoted to a critique of Derrida. The second part consists in an exposition of a theory of cosmic evolution worked out by the philosopher J. T. Fraser. The third part offers an exposition of chaos theory and integrates this theory with Fraser's ideas. In the second and third parts, Derrida serves sometimes as a foil and sometimes as another component in the theoretical mix put forth as an alternative to an exclusively deconstructive philosophy.

Argyros' critique of Derrida is consistently intelligent, but it is not consistent in point of view. His position is something like that of the protagonist in the film *Little Big Man*, a story of a white man who as a boy was captured by Indians and then spent the rest of his life wandering between the two cultures, riding sometimes with the cavalry, and at other times slipping across the border and rejoining his native companions. At times, Argyros poses science as a frame of reference that could contain and discredit Derrida, but at other times he declares that deconstruction "cannot be evaluated in traditional philosophical or scientific ways (since it disputes the kinds of truths these disciplines purport to yield)" (p. 75). In his guise as a scientific rationalist, Argyros stoutly repudiates Derrida's central thesis, the idea that there is nothing outside the text, that writing is the universal substance. "Derrida's belief that hierarchies are metaphysical hypostatizations of an underlying unhierarchical bed of arche-writing is simply wrong" (pp. 119–120). As he begins to cross over the boundary into the opposing culture, Argyros hedges, suggesting that "Derrida has erected an ontological and epistemological hypothesis that is, if only partially, in error" (p. 89). Speaking from within the opposing culture itself, he regards Derrida's writing as "hyperlucid" and "a magnificent narrative" (pp. 61, 1). One way of resolving such perplexities is simply to abandon the project of a unified world view, to set up alternative orders of reality, and to assign each culture to its proper sphere. The physical world can be given over to science, and the world of mental experience, the arts and humanities, can be yielded up to postmodernism. "In fact, it is here that Derridean deconstruction, Wittgensteinian skepticism, and Foucauldian historicism appear to be fruitful epistemologies" (p. 191).

For his critique of Derrida, Argyros might be recommended to readers who feel frustrated at never having been able to grasp the elementary principles of deconstruction. He might help them to inhabit, even if only for a moment, the state of mind in which it seems meaningful to declare that everything is made of words and that all things are contradictory. Despite his cautious reservations and equivocal disavowals, he does not, I think, achieve a perspective adequate to his subject. A more adequate perspective would both lay out the inner logic of deconstruction, as Argyros does, and also register the sheer absurdity and monstrosity of this whole way of thinking. One should be at least a little shocked at the spectacle of an entire generation of academic intellectuals who have given themselves over to perverse preciosity. To get one's mind around this phenomenon, one needs to have the satiric sense—an ability to recognize charlatanism, and an instinctive revulsion against it.

In attempting to identify readers for the other two parts of the book, for the exposition of Fraser and of chaos theory, one runs into a difficulty that is common among the books under review. Argyros is giving a second-hand account of matters in which he has no primary expertise. He is neither a professional philosopher, like Fraser, nor a professional mathematician. Comparing his exposition of chaos theory with that of N. Katherine Hayles—a dignitary among postmodern theorists of science—Gross and Levitt say that his exposition is "far more systematic and coherent, although it is far from flawless" (1994:270). This is perhaps the least damning of their assessments of literary scholars who have ventured to offer critical commentaries on specialized scientific topics. Nonetheless, if one is chiefly interested in obtaining an introductory exposition of chaos theory, one would probably be better advised to read books written by people who have an assured mastery of the topic.

Literary scholars have no choice but to make use of information from other fields, but a distinction can be drawn between two ways of dealing with this information. One way is merely to give an amateur exposition of a specialized scientific topic—of brain structure, neurochemistry, sociobiology, anthropology, chaos theory, philosophy, or the psychology of personality and emotions. The other way is to assimilate information from any of these fields and to incorporate it into primary, independent constructs in the field of literary and cultural studies. Argyros makes little effort to formulate sustained arguments about problems specific to literature and culture, and his ventures into other fields necessarily remain at the level of the amateur.

In *The Roots of Literature,* Walter A. Koch operates on a scope that makes most other books seem very modest in their pretensions. Like Argyros, he conceives of evolution as a cosmic process in which the central driving force is a tendency toward "complexation" (p. 12), but unlike Argyros, he

aims to survey the whole range of this process. He projects a philosophical and historical system that would "reach from cosmogenesis to recent human behavior" (p. 42), and he sketches out the whole saga, from the big bang through the earliest stages of life on earth, the gradual evolution of protohuman primates, the beginnings of civilization, and the major phases of western cultural history. To connect all this information, he offers preliminary formulations for "the scientific development of an all-encompassing dynamics of form." In accordance with this faith in the scientific character of "the dynamics of form," he identifies his own school of thought as that of "evolutionary structuralism" (p. 190). His background is that of old-fashioned German philology updated, several decades ago, by the structuralist linguistics of Roman Jakobson. In his handling, such dynamics sometimes deteriorate to a pseudo-technical doodling that recalls the manner of medieval and Renaissance alchemical texts—a blending of scholastic philosophy and pre-scientific conceptions of the natural order. The following passage gives a fair impression of how a philosopher in the fifteenth century might have formulated the concept of kin selection:

> "Isologies" of every kind are a characteristic first step in any cognitive process: the **comparandum** (a new item for the neurognostic system) can only be approached through a **comparans** which is more or less firmly stored in the brain. . . . The vehicle for sameness is supplied in the form of the "tertium comparationis". This short-term craze for **sameness** (instead of for long-term **differences**) is of course in tune with precognitive, biological short-term goal-directed behavior which lasts at best for the lifetime of an individual and which also favours sames, namely, in the form of "kin" (p. 12; emphasis in original).

This passage invokes Koch's single most comprehensive structural conception, that of a simple tripartite balance. "Evolution developed living systems in which different states of different portions of sameness (stability) and of difference (instability) tend toward mutual equilibration" (p. 194).

Although his basic conceptual system is structuralist, not Darwinian, Koch has assimilated a good deal of naturalistic research into his cosmic chronicle. He argues that "part of the subliminal structuring of literature is due to neurognostic forms that are 100 million years old or even older" (p. 154). Like Frederick Turner, though with considerably less precision, he argues that certain literary structures are "somehow coded in our nervous systems (including the limbic system)" (p. 157), and he looks into animal ethology, paleoanthropology, and archaeology for forms of behavior that can be identified as "proto-narrative, proto-ritual and proto-art" (p. 161). He associates structuralism with Jungian archetypes as a form of

genetically encoded human universals, and such formulations bring him into theoretical proximity with evolutionary psychology.

Koch has a passion for schematization but very little sense of underlying conceptual order. The two most prominent sources for his many diagrams are Karl Popper's scheme of "three worlds" and various linguistic schemas of Roman Jakobson. There are supplementary schemas from Freud, Tinbergen, Jung, Foucault, Toynbee, McLuhan, von Bertalanffy, and others. None of these fragmentary principles of order is analyzed with respect either to its place within its original context or to its compatibility with the other principles. The whole is merely a patchwork of descriptive diagrams scattered almost randomly across a universal temporal grid. There are interesting bits of information and even suggestive insights all along the way, but no usable structure of ideas. Reading the book is like visiting a large and disorganized intellectual antique shop. One wanders dispiritedly through rooms of oddly assorted materials, much of it little better than junk, but occasionally finding amidst the clutter half-buried pieces of real value and interest. Among the more noteworthy finds, one could mention the analysis of hierarchy in medieval thought (p. 113), the distinction between "matrixing" and "mapping" as dichotomous forms of understanding (pp. 104, 116), and the contrast between medieval and modern attitudes (pp. 122–137).

Of all the writers considered here, the one who has been most fully acknowledged within mainstream literary study is Mark Turner. He has co-authored work with the cognitive linguist George Lakoff and has absorbed much from the cognitive scientist Mark Johnson, who is himself one of Lakoff's co-authors. He takes a tactfully critical stance toward the non-empirical orientation of contemporary literary theory, and he addresses himself smoothly to the concern for disciplinary status that has very largely motivated this theory. He writes in a polished, urbane manner, and he has a nice precision in the analysis of metaphoric structures—a field that is vital to literary meaning and that legitimately combines contemporary cognitive linguistics with traditional literary analysis.

Darwinian literary critics are likely to be enticed but ultimately frustrated by Turner's *Reading Minds: The Study of English in the Age of Cognitive Science*. He concisely formulates an ethological conception of literature, the idea that "acts of language, including literature" are "acts of a human brain in a human body in a human environment which that brain must make intelligible if it is to survive" (pp. vii–viii). This formulation is frequently repeated but never developed. Turner wishes to make cognitive linguistics central to literary study, and he posits the adapted mind as a locus for the development of language, but he does not then posit any evolved structure of human motives. He makes no use of ethology, sociobiology, or evolutionary psychology. At one point, pursuing a

line of thought in Mark Johnson's work, he declares, "A brain is part of a body and in operation is inescapable from it. Evolutionarily, the brain exists only in order to serve the reproductive and metabolic body of which it is a part, and it is deeply and ineradicably invested with the nature of its body" (p. 36). This is strikingly said, but the only categories actually stipulated for the physical nature of experience are those of spatial organization, "discovery," and "pain" (p. 39). For the rest, Turner maintains that "we receive a tacit cultural education" in how to imagine "the body" and "the human person" (p. 40). There is nothing here of the intuitive evolved apprehension of inner life as it has been described by Donald Brown, J. Q. Wilson, and Steven Pinker. Instead, the whole of substantive human motivation has been relegated to "conventional cultural and conceptual structures" (p. 21). Ultimately, even the domain of spatial organization proves too substantive for Turner's conventional belief in the autonomy of conventions, and his ethological principle fades timidly into equivocal disavowals of epistemological realism. A purely formal concept of the relation among categories would, he feels, liberate us from "arguments about how literal language refers to the world" (p. 142). Indeed, there would be "no direct relation between language and the world."

Turner argues that "we organize knowledge around mental models" (p. 128). This proposition is, I think, both true and potentially important. To realize its potential, though, we have to stipulate what these models are, offer causal explanations for them (why precisely *these* models?), and organize them systematically within a total structure of human motives and values. Turner evades these larger tasks and tries to take a short cut directly into the routinized technical analysis of normal science. Late in the book, he offers a random list of categories that he calls "conceptual domains": eating, dress, learning, buildings, travel, combat, and plants (p. 199). He makes no effort to correlate these domains with the concept of domain-specific modules in evolutionary psychology, nor does he provide any other rationale or organizing principle for the list. Instead, he offers tedious analyses of formal relations among poorly distinguished and weakly rationalized "levels" of metaphoric categories: "basic level" and "generic level" metaphors.

Turner defines literature as "the highest expression of our commonplace conceptual and linguistic capacities" (p. 4), and he accordingly seeks to reorient literary study to the analysis of such commonplace capacities. He repeatedly urges us to take little account of the exceptional aspects of literary usage and instead to find a deep interest in what we normally take for granted. As a general exhortation, this proposal has some merit, but in Turner's own performance it is not well vindicated. He does not demonstrate how we are to pass through the commonplace to achieve

deeper levels of causal explanation or systematic connection. His minutely detailed analyses of common ideas lead him to no larger conclusions. If we collect some of his major findings, we discover that the mind has evolved both to make categories and to recognize differences (chapters 2 and 6); that originality consists in deviations from a common ground (chapter 3), that symmetry is an important principle of formal organization—a thesis that spreads into the tautological proposition that "pattern" is an important principle of formal order (chapter 4); and that arguments are figured in terms of opposing physical forces (chapter 5). It is on conclusions of this magnitude that Turner proposes to reconstruct the field of English studies. Never was revolutionary manifesto more inoffensively bland.

Frederick Turner's idea of drawing a parallel between current literary study and pre-Darwinian biology was prefigured at mid-century by Northrop Frye, one of the greatest of modern literary theorists. In *Mimesis and the Human Animal: On the Biogenetic Foundations of Literary Representation,* Robert Storey quotes the *locus classicus* from Frye's *Anatomy of Criticism:* " 'Criticism seems to be badly in need of a coordinating principle, a central hypothesis which, like the theory of evolution in biology, will see the phenomena it deals with as parts of a whole' " (p. xvii). Like Frederick Turner, Storey proposes that biology itself provide this central coordinating principle, and his formulations sound at times very similar to the ethological formulations of Mark Turner. Storey differs sharply from both Turners in that he understands clearly the implications of the biological idea and follows them out with a rigorous consistency. In opposition to Frye and to all theorists who propound the autonomy of literature, Storey argues that neither criticism nor literature "ever needed a conceptual universe of its own" but rather that "each is explicable only in terms of the natural world that the human being shares with the rest of terrestrial phenomena" (p. xvii). Still more directly, and in terms that display his commitment to the modern, gene-based understanding of natural selection, Storey affirms, "Far from having left biology behind," human beings "have simply exfoliated their cultures from its genetically productive heart" (pp. 13–14).

In important ways, Storey's book is a model of what to leave out and what to include in a biologically oriented study of literature. He leaves out all fanciful fringe conceptions of biology. There are no forays here into cosmic evolution or the teleology of the ecosystem, no hints of an autonomous inner dynamics of form, no idyllic sentimentalizations of a beneficent natural order, and no self-unfolding of the inner reflexivity of the human self-consciousness. He locates the concept of evolution at the right level—the level of living things—and he identifies the central principle of biology as the evolution of adaptive structures by means of natural selec-

tion. While excluding the metaphysical chimeras that have charmed the fancies of the other theorists under discussion, Storey has excluded also the whole metaphysical cast of mind—the naive humanistic faith in the supreme efficacy of grandiose abstractions, the credulous susceptibility to Big Words. He has placed his confidence instead in the cumulative and self-correcting body of empirical information. He has made use of most of the kinds of information the various other theorists have used, and some they have not. His largest conceptual frame is that of sociobiology, and he makes extensive use of information from ethology, evolutionary psychology, developmental psychology, the study of emotions, cognitive psychology, the neurosciences, and anthropology. Along with this empirical information, he has a good familiarity with traditional literary theory, and he has made a particular study of scholarly works devoted to the specific literary topics to which he gives attention: to the theory of narrative, reader response, and the genres of tragedy and comedy. The empirical information is brought to bear directly on the kinds of problems specific to literature. Genre, for example, is largely a matter of feeling—tragedy is sad, and comedy happy—and it makes obvious sense to connect formal studies of generic structure with psychological research into human emotions. And finally, Storey does not fail to include literature itself in his development of literary theory. Unlike many of the younger scholars who have been trained in departments dedicated largely to postmodern philosophy, or "theory" as it is familiarly called, he has read widely in world literature. He sprinkles illustrative examples and allusions throughout the theoretical chapters of his book, and in the final chapter, for the purpose of comparing conscious authorial intent with intuitive naturalistic perception, he offers a detailed reading of a novel by Iris Murdoch. A long intimacy with great literature seems virtually indispensable for producing the sensitivity and tact necessary to keeping literary theory within the bounds of good sense, and it can also have beneficial effects on prose style. Storey writes with humor, wit, and felicity of phrasing.

Storey divides his book into two main parts. The first part summarizes the findings of recent evolutionary study and thus generates what Storey calls a "'biogrammar' of the species" (p. xviii), that is, an outline of the evolved human architecture, with a special emphasis on those aspects of sociality, elemental motives, and mental functions that are most relevant to literature. Part two is devoted to specifically literary problems. In both parts, Storey develops his constructive argument in opposition to the views that currently prevail in literary study. For instance, sketching out a biologically based idea of the individual human identity, he declares that the human "subject," as the individual person is known in literary circles, "is a seeker and maker of meaning first of all—not because it is a bourgeois capitalist, or a hegemonic sexist, or even a benightedly retrograde

humanist, but ultimately because it is a gene-driven organism that has evolved to live by its wits" (p. 101). Taking up the structuralist and post-structuralist belief that meanings are generated by arbitrary and infinitely variable cultural "codes," Storey affirms that all such conventional structures are "bound up intimately with both the social dynamics and the cognitive practices that are more or less common to all human beings" (p. 123). A formulation like this enters the empirical arena in which propositions can be tested by reference to steadily accumulating empirical findings, and it sets itself firmly in opposition to the culturalist beliefs evinced, with varying degrees of consistency, by Kroeber, Argyros, and by both Frederick and Mark Turner.

The challenges facing theorists and critics who take up an empirical program can seem all but overwhelming. Out of the vast and constantly increasing mass of specialized knowledge, what does one select? Not just particular books and articles, but what whole *disciplines* does one choose as relevant to literary study? At what level of generality or popularization does one absorb specialized knowledge? How loosely or speculatively does one hold by propositions that, in the very nature of empirical study, are necessarily provisional, subject to correction or falsification? Storey is fully aware of the risks he has taken, and he expresses an appropriate humility. He describes his effort as "a starting point only," a "provisional answer to the question I have posed myself: What does it mean to say that art imitates life?" (p. xvii).

Although Storey's book is, to my mind, by far the most satisfactory of those under review, it does not escape unscathed from the risks it has assumed. The exposition of sociobiological theory cannot avoid the problem of second-hand reportage. The distinction between the two main parts of the book is not maintained very clearly, and the separate chapters sometimes seem to be almost arbitrary divisions in what is one continuous, but not always consequent, stream of argument. In attempting to absorb and synthesize large amounts of information from a wide variety of disciplines, there is a danger of becoming distracted by local problems, of losing the thread while becoming disproportionately preoccupied with details, or of responding in a reactive, too passive way to the structure of ideas in some source. Synthesis is the right goal, but it is not a goal always to be reached. Ideas that have independent force and some obvious association with one another might fail to cohere as an explanatory unit. For example, in the theory of the functions of narrative, it might be true that emotions precede language, that language splits the world into a repressed "shadow" and a social persona, that narrative mediates ambiguously between the two, and that narrative is primarily about social relations, but the total set of these propositions does not, as it seems to me, penetrate to the heart of the issue or constitute a complete and coherent

theory of narrative meaning. Similar kinds of reservations might be put forward with respect to the theories of tragedy and comedy, though on all these topics much is said that is suggestive and illuminating.

To say that Storey's book is, as he himself describes it, a "starting point," is by no means to damn with faint praise. As other efforts indicate, it is all too easy to wander off into byways and down dead ends, from whence no start could ever be made. From the point at which Storey has left us, where do we go? The one main thing Storey's book does not do, and cannot even attempt to do, is provide empirical verification for its many speculative hypotheses. If we are ever to proceed beyond the range of mere speculation, bridges will have to be built between falsifiable empirical research and literary theory. All of the books under review have made some effort, and some have made a considerable effort, to assimilate new empirical information. This is a bridge built half-way, from one direction. To complete the bridge, constructive efforts will also have to be made from the other side. If we are to incorporate literary study fully within the community of empirical science, we shall have to have a collective effort that includes experimental research by practitioners in psychology, anthropology, and the other human sciences. Storey, especially, has formulated falsifiable propositions about the production and reception of literary meaning. These formulations need to attract the attention of empirical scientists who could devise experimental situations through which these propositions can be falsified, qualified, or developed.

By accumulating a body of provisionally valid empirical propositions about the production and reception of literary meaning, we can begin to construct a framework within which to conduct rational discussions about the interpretation of individual texts and authors and of whole literary periods. E. O. Wilson has proposed the nucleus of a theory of culture, based on "culturgens" or units of cultural meaning that are linked with genetically encoded and neurologically identifiable components of human nature (1996:115). The analysis of literary meaning should be an integral part of the development of any such theory. It can offer important information both about human universals and about the psychology of individual differences. The problems are immense, but the prospects are also real and exhilarating. For literary scholars, the only alternative is to continue in an essentially frivolous line of activity—to filter literary texts through the arbitrary idioms of fashionable schools of thought, and to rationalize this process as the inevitable consequence of the purely conventional character of all meaning.

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