

**Joseph Carroll**  
*University of Missouri-St. Louis*

## Adaptationist Literary Study: An Emerging Research Program

### 1. Introduction

In the past decade or so, a small but rapidly growing band of literary scholars, theorists, and critics has been working to integrate literary study with Darwinian social science. These scholars can be identified as the members of a distinct school in the sense that they share a certain broad set of basic ideas. They all take “the adapted mind” as an organizing principle, and their work is thus continuous with that of the “adaptationist program” in the social sciences. Adaptationist thinking is grounded in Darwinian conceptions of human nature. Adaptationists believe that all organisms have evolved through an adaptive process of natural selection and that complex functional structure in organic development gives *prima facie* evidence of adaptive constraint. They argue that the human mind and the human motivational and behavioral systems display complex functional structure, and they make it their concern to identify the constituent elements of an evolved human nature: a universal, species-typical array of behavioral and cognitive characteristics. They presuppose that all such characteristics are genetically constrained and that these constraints are mediated through anatomical features and physiological processes, including the neurological and hormonal systems that directly regulate perception, thought, and feeling.

Adaptationist social scientists identify “the adapted mind” as the foundation of human culture. Adaptationist literary scholars concur, and they seek to bring literature itself within the field of cognitive and behavioral features susceptible to an adaptationist understanding. They identify human nature as a biologically constrained set of cognitive and motivational characteristics, and they contend that human nature is both the source and subject of literature. They are convinced that through adaptationist thinking they can more adequately understand what literature is, what its functions are, and how it works—what it represents, what causes people to produce it and consume it, and why it takes the forms it does.

What I propose in this article is to give a sense of where Darwinian literary study now stands and to suggest where it might be headed. After sketching out the history of Darwinian social science, I shall distinguish the adaptationist research program from other forms of evolutionary thinking in literary study. I shall identify the main contributors to adaptationist literary study and describe some of their

accomplishments. At the end of the article, I shall take up a basic problem within the adaptationist program—the problem of the adaptive function of imaginative constructs—and propose a solution for that problem.

The *Origin of Species* was published in 1859, and within a decade it had almost completely changed the general view of evolution in the minds of the educated public. While writing the *Origin*, Darwin had been fearful of endangering his general theory of evolution by alarming people in their most tender ideological anxieties. Consequently, he had mentioned human beings only in passing. Close to the end of the *Origin*, surveying the prospects for the theory he has propounded, he declared, “in the distant future, I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history” (488). The future was not so distant as Darwin fancied, at least not in the short run. Darwin was himself much surprised by the magnitude of his success in establishing the basic principle of “descent with modification,” and the success gave him the heart to fulfill his own prediction—to throw light on man and his history, and to place psychology on a new foundation. In *The Descent of Man, and Selection in Relation to Sex* (1871), he located human beings in their ancestral lineage as primates. On the basis of evidence from comparative anatomy and embryology, he concluded that “man is descended from a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits” (2: 389).

Like many (but not all) of their primate cousins, the specifically human descendants of this hairy quadruped were highly social in nature, and much of *The Descent of Man* is given over to analyzing the origin, function, and character of human social behavior. Darwin provides a classic account of human moral psychology. He identifies two central elements in moral feeling: an evolved social sympathy that humans share with other social animals, and a capacity for locating specific behaviors within extended time sequences. This latter capacity is one of those peculiarly human cognitive aptitudes. The rudimentary elements for such aptitudes can be found, Darwin argues, in other animals. There is no human characteristic that is not continuous with characteristics of other primate species, but in human beings those characteristics develop and combine in ways that produce capacities unique within the animal kingdom. One such capacity is the moral sense. Another is language, and it is on language, Darwin speculates, that all higher cognitive human development depends. Darwin succeeds in analyzing human psychology and culture in ways that lead back through unbroken causal sequences to the elementary biological drives toward survival and reproduction. He is thus the first sociobiologist and the first evolutionary psychologist, and it is for this reason that one will often see the epithet “Darwinian” used more or less synonymously with epithets like “sociobiological” or “adaptationist.”

The revolution Darwin began in psychology and the other social sciences has not yet been completed. Darwinism was an active force in social and even in literary theory until about the end of the first decade of the twentieth century. Among his distinguished successors in this period, we can identify T. H. Huxley, Leslie Stephen, Francis Galton, William James, John Dewey, and Thorstein Veblen. Literary figures heavily influenced by Darwinian naturalism include George Eliot, H. G. Wells, Joseph Conrad, Thomas Hardy, and a whole array of naturalists such as Zola, Norris, Bennett, and London. (Literary Darwinism extends down to the present through a lineage that includes Aldous Huxley, William Golding, Kurt Vonnegut, and Ian McEwan.)

In the first two decades of the twentieth century, an anti-Darwinian counter-revolution overwhelmed and mastered the social sciences and from there spread out to become the dominant public ideology of the century. Social theorists such as Émile Durkheim, Franz Boas, Alfred Kroeber, and Robert Lowie propounded the doctrine that culture is an autonomous agency that produces all significant mental and emotional content in human experience. From this culturalist perspective, innate, evolved characteristics exercise no constraining influence on human motives or thoughts. Evolution produced the human brain, but that brain invented culture, and culture has succeeded in cutting itself loose from all direct biological influence. This concept of cultural autonomy became the cornerstone of standard social science, and until the 1970s Darwinism essentially disappeared from professional social theory. Important work in Darwinian epistemology was accomplished in the midcentury period by both Konrad Lorenz and Karl Popper, but the first major professional challenge to cultural autonomy as the ideology of the social sciences appeared in 1975, with the publication of Edward O. Wilson's *Sociobiology: The New Synthesis*. Wilson offered a comprehensive analysis of the social behavior of animals within the explanatory framework of natural selection. His final chapter, extending this analysis to the human animal, provoked a series of violent rebuttals, but it also helped inaugurate a line of research that has since grown at ever-accelerating rates.<sup>1</sup>

Over the past three decades, Darwinism has had a major impact on psychology, philosophy, political science, linguistics, and aesthetics. Dozens of books and thousands of articles have been published in these areas; many distinguished Darwinian researchers now hold key positions at major research institutions; and there is a steady stream of serious but accessible publications aimed at both professional scientists and the educated lay public. Every year, the nonfiction bestseller lists include some work of Darwinian psychology or Darwinian ethical theory. It could not yet be said that Darwinism dominates the social sciences, but it can reasonably be predicted that within two decades this transition will have advanced far enough so that the modifying term "Darwinian" will be quietly dropped from the substantive term "social science." The epithet will be redundant because all educated people will take it for granted that no reputable

psychologist or anthropologist can ignore the findings of biologically oriented study, and even sociologists and political scientists will have to accommodate themselves to the reality of what is empirically known about the biological basis of human behavior.<sup>2</sup>

It seems likely that within two decades the sheer force of progressive empirical knowledge will almost inevitably bring about a fundamental transformation in the social sciences. In all likelihood, the humanities will eventually follow in the train of this movement, but they will probably be slow and late in catching up. The conceptual shift that takes place when moving from the Darwinian social sciences to the humanities can be likened to the technological shift that takes place when traveling from the United States or Europe to a country in the Third World. While happily confident of their own *avant-garde* creativity continue to repeat the formulas of Freud, Marx, Saussure, and Lévi-Strauss—formulas that have now been obsolete, in their own fields, for decades. It is as if one were to visit a country in which the hosts happily believed themselves on the cutting edge of technological innovation and, in support of this belief, proudly displayed a rotary-dial phone, a manual typewriter, and a mimeograph machine.

There are many literary scholars, and especially younger scholars, who are eager to make productive use of the best available information about the human mind and human behavior. The conceptual time-lag in the humanities presents grave institutional problems for these scholars. Among their colleagues in the mainstream literary establishment (exemplified by the Modern Language Association), they are almost certain to meet very often either with blank incomprehension or with outright hostility. This problem is particularly acute for young scholars at the beginning of their careers, trying to put together dissertation committees or flinging themselves on a job market that is already sufficiently inhospitable even for those who are willing to conform to established views.

Despite these real and serious institutional obstacles, a substantial body of work has now been published in Darwinian literary studies, and it seems likely not only that this movement will continue but also that it will expand at an increasing rate. The more that is published, the more momentum the whole movement has—the more there is to work with, and the more plausible and possible the whole enterprise seems. One element certain to be important, but hard to calculate, is the simple exhaustion of rhetorical variations in the movements that have now been current for some two or three decades—a period of time sufficient for a fresh doctoral graduate to have passed through maturity and to have entered into the declining phase of his or her career. Deconstruction as a method pure and sufficient unto itself lasted scarcely a decade before giving way to the politically saturated discourse theory of Foucault, and radical political ideology has perhaps already exhausted the range of important social groups that can plausibly be represented as oppressed minorities. After the vast groundswell of feminism and the minor tides

of post-colonialism and queer theory, no truly new political impulse has animated literary study now for over a decade, and no essentially intellectual impulse has been felt for something like three decades. The only major new subject area that has appeared in the past decade or so has been ecological literary study, or “ecocriticism,” and in respect to its theoretical orientation this school has teetered uncertainly between postmodernism and a quasi-Darwinian naturalism.<sup>3</sup>

How soon will the stale and etiolated rhetoric of postmodernism crumble from within? How quickly will judicious practitioners make use of the robust theory and provocative information flooding in from adaptationist social science? In *Evolution and Literary Theory* (1995), I glumly foretold dim decades of obstruktion and stasis in literary studies. Now, just a few years later, I am more hopeful for faster movement. In the middle of the 1980s, how many people foresaw the imminent collapse of the Soviet Union? I have no basis for confident predictions about the pace of change. What I can say, repeating my earlier conclusion, is that for those of us who cannot tolerate the prospect of stagnating in the backwaters of self-trivializing ideologies, there is no need to wait for the established intellectual bureaucracy to shift its own massive bulk and break through its own obstructions. “Whatever happens within the critical institution as a whole, the pursuit of positive knowledge is available to anyone who desires it. Within this pursuit, the opportunities for real and substantial development in our scientific understanding of culture and of literature are now greater than they have ever been before” (*Evolution and Literary Theory*, 469). In the few years that have elapsed since that statement was written, the developments in positive knowledge have continued to accumulate, and the programmatic claim that literary scholars can make use of this knowledge has been rapidly confirming itself as a practical reality. Even just a few years ago, the term “adaptationist literary study” could claim to be little more than a speculative and predictive abstraction. Through the work they have already done, a substantial cadre of scholars has now given definition and detail to that abstraction.

## 2. Non-Adaptationist Forms of Evolutionary Criticism

Adaptationist literary study can be distinguished from other forms of “evolutionary” literary study by reference to a simple causal sequence. Adaptationists would affirm the following two causal propositions: (1) the mind has evolved through an adaptive process of natural selection; and (2) the adapted mind produces literature. Adherence to this causal sequence can be contrasted with at least three other distinct ways of integrating evolution with literary study: (1) cosmic evolutionism; (2) evolution taken as an analogical model; and (3) evolution taken as a normative value. All three of these alternatives to the adaptationist program seem to me fundamentally misconceived. Here I shall only briefly characterize them and explain why I think they are misconceived.

The theory of cosmic evolution is the belief that the universe itself is evolving, driven by some inner principle of complexification. In most versions, this principle is teleological and spiritualistic; that is, the universe is conceived as evolving toward some higher, ultimate state of spiritual and/or social perfection. In the field of metaphysics and cultural theory, this general view of things can be credited to Herder, Hegel, and the German Romantics and proponents of *Naturphilosophie*, but it is a diffuse, pervasive aspect of cultural and literary theory throughout the nineteenth century. In social theory, it animates Marx as much as Hegel, and it shapes the thinking of progressive liberals like Arnold and Mill and even of utilitarians like Comte and Spencer. In biology proper, it is a distinguishing feature in the theory of Lamarck, and it is continued in the biological thought of Spencer and of Teilhard de Chardin. Among contemporary literary theorists, its adherents include Walter Koch, Frederick Turner, Alex Argyros, and Richard Cureton. When they adopt its most robust forms, proponents of this theory are metaphysical formalists. That is, they identify some autonomous, self-generating and self-regulating formal process, and they depict this formal process as the central causal force that is responsible for “evolution” or “development” on every level of phenomenal process: cosmology (astronomy), geology, biology, psychology, culture, language, and literature. As a set of comprehensive cosmic formulas, such theory can be combined with virtually any other conceptual apparatus or set of jargon terms. In recent times, it has been combined with, among other things, structuralist anthropology and linguistics, deconstructive epistemology (if that is not itself an impermissibly oxymoronic designation), chaos theory, and ecological theory.

In my own view, such thinking sounds the last echo of medieval theological speculation. It operates chiefly in the range of fanciful metaphysics. Insofar as it makes use of empirical information, it subordinates that information to abstract formulas that are generated *a priori*. Empirical information is used only to ornament and illustrate preconceived ideas, and these ideas are not subject to falsification through new empirical findings. In its style and manner, work done in this vein tends to exemplify a variety of quirks and defects. Some of it (Koch, Cureton) is truly medieval in its pseudo-technical proliferation of formal patterns—a style reminiscent of the symbolic elaborations of alchemical and astrological theory. Some of the writing in this school is verbally opaque, either through an affinity with scholastic theology (Koch) or deconstructive metaphysics (Argyros). In the work of Frederick Turner, cosmic evolution articulates itself in an effusively lyrical manner that seeks affiliation with the poetry of the English Romantics and the American Transcendentalists.<sup>4</sup>

The second misconceived way to adapt evolutionary theory to literary purposes is to take evolution as an analogical model—to use a metaphor as a conceptual framework. This is a shortcut to causal thinking, and it is another version of formalism. The analogical theorist takes it for granted that the causal

processes in one field will provide a neat and reliable pattern for processes in other fields. In evolutionary theory proper, organisms vary in random ways. Variations differ in the degree to which they enable the organism to survive and reproduce. Variations are heritable, and the heritability of more adaptive variations leads in time to speciation; or, in Darwin's terms, "descent with modification by means of natural selection." How can this causal sequence be adapted to the problems of culture and literature? Thomas Kuhn envisioned scientific disciplines as branching into separate, incommensurable "species" (2: 7-8). The psychologist Donald Campbell sought to generalize all intellectual creativity as a form of random variation and adaptive selection, and there is now afoot a project at the University of Michigan to provide statistical data supporting the notion that science fiction "evolves" through an adaptive evolutionary process. Describing the underlying logic of the University of Michigan Genre Evolution Project, Rabkin and Simon explain, "Cultural creations evolve in the same way as do biological organisms, that is, as complex adaptive systems that succeed or fail according to their fitness to their environment" (45). This theoretical assertion does not appear to be the result of empirical inquiry or reasoned causal analysis. It is an imaginative inspiration supported only by emphatic affirmation. The likelihood that complex causal processes in any one phenomenal area will exactly parallel those in some other area is vanishingly slight. It is for this reason that, as the biological historian Michael Ghiselin observes, "the history of thought is strewn with the corpses of strictly analogical argument" (146).

The currently most popular use of evolution as an analogical causal model is the idea of "memes" first conceived by the sociobiologist Richard Dawkins. Memes are supposedly units of cultural symbolism that survive and replicate in a fashion parallel to that of "genes." Examples of successful memes include Christianity, Mickey Mouse, and the idea of "memes" itself. The supposed parallel between genes and units of cultural symbolism is radically imperfect. Genes are "self-replicating," but units of cultural symbolism are repeated only if they activate responses in a human mind; they are stimuli, not organic mechanisms organized for self-replication. The causal mechanisms involved in transmitting cultural patterns involve complex interactions of psychological dispositions and environmental circumstances. Theorists who use the "meme" metaphor as a short-hand designation for these complex processes almost invariably get caught up in confusing causal associations that are appropriate to the source of the metaphor (genes as self-replicating units) but not to the subject the metaphor is taken to illustrate (semiotic stimuli the repetition of which depends on complex causal processes external to the stimuli).

The use of evolution as an analogical causal model has a clear kinship with the third literary misuse of evolutionary theory: taking evolution as the basis for normative value judgments. This application is perhaps most familiar in the form associated with the social Darwinists and the Nietzscheans. In this scheme of

things, all natural relations are conceived as violent and hostile, and that conception of nature is used to authorize violent domination as a social, political, or literary norm. In a contrasting scheme, utopian conceptions of the natural order as a harmonious ecosystem are used to authorize norms of pacific concord. In contemporary literary theory, violent domination is not often touted as a viable norm, but the idea of evolution as random and chaotic has sometimes been taken to support deconstructive principles of indeterminacy. In all such conceptions, whether aggressive or pacific, evolution is reduced to one aspect, an aspect that correlates with human values, and that reduction is then used to justify the human norm that guided the reduction in the first place. This process is a little like selectively using the Bible to justify whatever social, political, or aesthetic values one wishes to propound. The appeal of such usage is that the source can be taken to justify virtually anything, even values radically opposed to one another. That universal utility is of course also a fatal theoretical weakness. Evolutionary processes involving speciation operate at time scales and on levels of biological organization far broader than those of human social interaction, but the adaptive process has produced humans with species-typical moral and aesthetic dispositions. The adaptationist understanding of ethics and aesthetics operates at the level of those dispositions, not at the level of the large-scale causal processes that produced them.

### 3. Contributions to Adaptationist Literary Study

Adaptationist thinking in literary theory can be traced back as far as the work of Darwin's contemporary Hippolyte Taine, and it enters into the literary theory and criticism of a few major writers in the later nineteenth and early twentieth centuries, notably into that of Emile Zola, Leslie Stephen, and (with heavy qualifications) Carl Jung. Except for the indirect influence of Darwin through Jung's archetypalism—as in the work of Northrop Frye—adaptationist thinking had little influence on the development of mainstream critical theory through most of the twentieth century. The New Critics who dominated the academic establishment from the 1930s through the 1970s propounded ostensibly formalist doctrines that were, for the most part, grounded in romantic and Christian conceptions of the autonomous power and quasi-spiritual significance of the literary imagination. The main contextualist or "extrinsic" alternatives to the formalist or "intrinsic" criticism of the New Critics were those of old-fashioned Freudian and Marxist theory. The poststructuralist regime ushered in by deconstruction inverted the New Critical orientation toward harmony and resolution but perpetuated and extended New Critical doctrines on the hermetic autonomy of the textual universe. With a few exceptions, most of the biologists, anthropologists, and psychologists who have made seminal contributions to Darwinian social science have had little expertise in the humanities and have not had much to say about art or literature as a product of the adapted mind. The first

stirrings of adaptationist thinking among literary scholars began in the late 1980s and early 1990s.

My own interests were turned in this direction in the early 1990s. I was profoundly dissatisfied with the irrationalism and textualism of the prevailing literary doctrines, and in adaptationist research I found a solid basis for developing alternative views about such matters as personal identity, sexuality, gender, the family, social motives, and the relation between the mind and the world. Unbeknownst to me at the time, similar dissatisfaction, hopes, and ambitions were animating several of my contemporaries. While I was conducting the research that eventuated in *Evolution and Literary Theory*, Robert Storey was working on *Mimesis and the Human Animal: On the Biogenetic Foundations of Literary Representation* (1996; reviewed in Carroll, "Literary Study and Evolutionary Theory: A Review Essay"). A preview article from Storey's book appeared in a collection of essays, *After Poststructuralism: Interdisciplinarity and Literary Theory*, co-edited by Nancy Easterlin and Barbara Riebling (1993). This collection also contained one of Easterlin's own articles, "Play, Mutation, and Reality Acceptance: Toward a Theory of Literary Experience," and in the subsequent decade both she and Storey have remained active contributors to adaptationist literary studies. In the late 1980s, Brett Cooke had already begun producing a series of articles taking an adaptationist perspective on Russian literature, science fiction, opera, ballet, and cinema, and in 1992 Cooke co-organized a conference that provided the basis for a collection of essays, *Sociobiology and the Arts*, co-edited by Bedaux and Cooke (not published until 1999). Several of the essays in this collection are devoted to visual art, some of them are casual or amateur, and several demonstrate the hazy latitude that can be accorded to the terms Darwinian or "sociobiological." A second conference, in 1995, provided materials for a second collection, *Biopoetics: Evolutionary Explorations in the Arts*, co-edited by Cooke and Frederick Turner (also 1999). This second collection included materials from various sources, particularly from a conference of 1990 dedicated to science fiction and the fantastic. Like the former collection, this volume casts a wide net, stretching the idea of Darwinism rather thin. The quality of the contributions ranges from that of well-informed theoretical meditations and professional scholarly articles to that of touched-up conference papers.

Cooke's most significant efforts to formulate general principles of adaptationist interpretive practices include "The Promise of a Biotheematics" (1999) and "On the Evolution of Interest: Cases in Serpent Art" (1999) and "Sexual Property in Pushkin's 'The Snowstorm': A Darwinist Perspective" (1999). All three articles concentrate on the representation of human universals and the evocation of archetypal motifs. In this respect, Cooke's literary thinking runs parallel with that of E. O. Wilson, who devotes a chapter to the problems of artistic creation in *Consilience: The Unity of Knowledge* (1998)—his magisterial effort to incorporate all knowledge within a comprehensive naturalistic framework.

Cooke's theoretical and interpretive efforts have now culminated in the first scholarly and critical book focusing on a single literary work, Zamyatin's Soviet dystopian novel *We*. *Human Nature in Utopia: Zamyatin's We* (2002) is by far the most substantial and considered adaptationist study Cooke has yet produced, and in various ways it is a model for such study. It is well-informed on the relevant contexts of dystopian literature and Soviet literature; it is alive to issues of style and literary form; and it frames its critique of dystopian customs by appealing to adaptationist findings about personal identity, intimate personal relations, social organization, and cognitive activity.

In the middle of the 1990s, several of the scholars who took an adaptationist approach felt it necessary to clear the ground by conducting polemical campaigns against the prevailing postmodern views. Easterlin's collection *After Poststructuralism* contained a diverse array of scholars hostile to poststructuralism and anxious to bring literary study within the general purview of a realist and rationalist orientation. In *Evolution and Literary Theory*, I integrated adaptationist theory with concepts from traditional literary theory and used the resulting theoretical system to repudiate poststructuralist precepts—specifically the ideas that language constructs the world and that the world is fundamentally incoherent and unknowable. The book was about evenly divided between positive theoretical construction and polemical assault. Similar aims and proportions characterized Storey's *Mimesis and the Human Animal*. In the wider field of an adaptationist aesthetics concerned with all the arts, Ellen Dissanayake conducted a similar campaign in *Homo Aestheticus: Where Art Comes From and Why* (1992). In "Jane, Meet Charles: Literature, Evolution, and Human Nature" (1998), Brian Boyd offered an introductory exposition of evolutionary psychology, summarized the opposition between adaptationism and poststructuralist doctrines, and illustrated the interpretive potential of adaptationism by giving a sharply focused sociobiological reading of Austen's *Mansfield Park*.

I would say that we are now finally getting past the need for such polemics. It is not that the mainstream literary establishment has seen the error of its ways and has humbly set about amending them. Far from it. But the case against poststructuralism has been made very thoroughly from a number of angles. Those who care to rehearse these issues have ample sources at their disposal. More recent work has concentrated on the constructive side of the adaptationist project—assessing theoretical problems within the adaptationist framework and engaging in specific tasks of scholarship and interpretive criticism. This capacity to turn away from polemic and to engage in genuinely new and constructive work marks a fundamental difference between adaptationist literary study and the often merely negative, reactive responses against poststructuralism that characterize the critiques of many older, traditional scholars.<sup>5</sup>

For a scholar trying to feel his way around in this field, a convenient way to get a sense of the diverse sorts of work being done is to dip into special journal issues

devoted to adaptationist literary study. The first such special issue appeared in 1995 in the journal *Human Nature: An Interdisciplinary Biosocial Perspective* (vol. 6, no. 2). *Human Nature* is grounded in anthropology, but like most adaptationist science it blurs the boundaries between anthropology and psychology. It has consistently been a chief venue for adaptationist work in literature and aesthetics. This special issue, edited by Margaret Nesse, contained essays by Carroll, Cooke, Dissanayake, the distinguished anthropologist Robin Fox, and by Nesse herself.

In 2001, a relatively new journal, *Interdisciplinary Literary Studies* (vol. 2, no. 2), provided a venue for a collection of adaptationist articles. Brett Cooke edited the collection, which contained contributions by Carroll, Easterlin, and Storey and also a first article publication by Ian Jobling, at that time still a graduate student working on his dissertation. Jobling's article analyzes the sexual psychology shaping plot, character, and point of view in Scott's *Ivanhoe*. The signal achievement of this article is to bring into explanatory relation three key components of a large-scale adaptationist critique: (1) a well-researched analysis of "human universals" relevant to a specific literary representation; (2) an analysis of the way those universals are organized within a specific cultural economy; and (3) some specifically literary feature in the organization of literary meaning—some aspect of form or technique, characterization, plot, style or tone. (To appreciate the significance of this advance, one might compare this critique with the simpler, more naive form of sociobiological analysis exemplified in Thiessen and Umezawa, "The Sociobiology of Everyday Life: A New Look at a Very Old Novel.") Jobling has also published an article in *Human Nature* on the psychology behind the depiction of ogres and heroes in world folklore. A third article, on the sexual psychology of Byromism, is forthcoming in the journal *Philosophy and Literature*.

The most recent special journal issue devoted to adaptationist literary study is that of *Philosophy and Literature* (2001; vol. 24, no. 2). Through a series of reviews, critical discussions, and scholarly articles, beginning in the mid 1990s, *Philosophy and Literature* has emerged as a chief venue for adaptationist literary study. Over its twenty-five years of publication, this journal has maintained a consistently high level of quality. It is oriented to sound scholarship, reasoned discussion, and a stylistic ethos that values clarity. It is thus one of the few literary journals that has effectively resisted the rebarbative jargon and conceptual fatuities of poststructuralism but that has also remained alive to new currents of thought and information flowing in from empirically responsible sources. The special issue devoted to adaptationist study was edited by Nancy Easterlin. Among the names already mentioned, the issue contains essays by Boyd, Carroll, Dissanayake, and Easterlin, and it contains as well articles by Michelle Sugiyama and Jonathan Gottschall. Sugiyama has already been publishing in the field for several years and has several important articles to her credit. Gottschall had just recently completed

his doctorate, and this article, adapted from his dissertation, was his publishing debut.

In "Narrative Theory and Function: Why Evolution Matters," Sugiyama argues that narrative is a universal human disposition, that it develops reliably and spontaneously in all known cultures, no matter how isolated they might be, and that it takes the same basic form in all cultures—a form involving characters, goal-oriented action, and resolution. Sugiyama has published two other articles that bring anthropological data to bear on the adaptive function of narrative: "On the Origins of Narrative: Storyteller Bias as a Fitness Enhancing Strategy," and "Food, Foragers, and Folklore: The Role of Narrative in Human Subsistence." Other important articles by Sugiyama include "Cultural Relativism in the Bush: Towards a Theory of Narrative Universals," on the response of the Tiv, a Nigerian people, to *Hamlet*, and "New Science, Old Myth: An Evolutionary Critique of the Oedipal Paradigm," a decisive critique of Freudian family dynamics. (Readers interested in adaptationist revisions of mainstream psychoanalytic criticism should also look at Easterlin's trenchant critique of Oedipal perspectives on Wordsworth, "Psychoanalysis and the 'Discipline of Love.')

Gottschall has been working on the sociobiological logic of rape and woman theft in Homer. The article in *Philosophy and Literature*, "Homer's Human Animal: Ritual Combat in the *Iliad*," is the first of his publications on this topic. A second article, "An Evolutionary Perspective on Homer's Invisible Daughters," is forthcoming in *Interdisciplinary Literary Studies*. While working on Homer, Gottschall is also pursuing studies that bridge the gap between the methodology of the humanities and that of the social sciences. He has an article forthcoming on the sociobiological theory of rape, and he is likely to produce several articles from his current project, a large-scale statistical study about the depiction of heroines in folk tales around the world, "The Heroine with a Thousand Faces." Using statistical methodology, Gottschall proposes to establish something in the way of "facts" about literary phenomena—that is, stable points of empirical reference that can constrain and direct interpretive activity. (One such study, using statistical methods, has already been published by the psychologist Cynthia Whissel, "Mate Selection in Popular Women's Fiction.")

Along with the articles that can be identified as specifically adaptationist in orientation, this special issue of *Philosophy and Literature* contains two articles that adopt a disciplinary approach bordering on but still distinct from that of the Darwinists. The articles by Lisa Zunshine and F. Elizabeth Hart exemplify a school sometimes known as "cognitive rhetoric." Cognitive rhetoricians affiliate themselves with a branch of cognitive psychology that confines itself largely within the range of linguistic philosophy—thus avoiding the questions of basic human motivational structures that interest evolutionary psychologists. The main theoretical source of the cognitive rhetoricians is the work of the language philosophers Mark Johnson and George Lakoff, who have developed a system for

analyzing abstract concepts as metaphors drawn from basic percepts of physical space and bodily orientation. The most prominent practitioner in this field is Mark Turner, and it is represented also by Mary Thomas Crane, Tony Jackson, Alan Richardson, Ellen Spolsky, and Francis Steen. As Hart observes in "The Epistemology of Cognitive Literary Studies," the distinction between these two schools is by no means absolute, and some scholars occupy a borderline position between them. The cognitive rhetoricians tend to seek common ground with the discourse theory of poststructuralism, and they are uncomfortable with adaptationist claims that human nature consists in a highly structured set of motivational and cognitive dispositions that have evolved through an adaptive process. Such claims are, they feel, "reductive." The adaptationists would not disown the epithet. They would concur with E. O. Wilson's assertion that "the heart of the scientific method is the reduction of perceived phenomena to fundamental, testable principles" (*On Human Nature* 48).<sup>6</sup>

#### 4. The Adaptive Function of Literature and Other Arts

Sugiyama's article "Narrative Theory and Function" engages a major theoretical issue that is still very much a live question among adaptationists concerned with cultural artifacts. Sugiyama's arguments for *why* narrative should be considered adaptive seem cogent to me. Her arguments for *how* narrative functions adaptively seem right as far as they go, but in my view they do not go as far as they should. She argues that narrative is primarily a means of conveying adaptively important information, and in this respect her arguments are congruent with those put forth by Steven Pinker in his encyclopedic exposition of evolutionary psychology, *How the Mind Works* (1997). Pinker argues that plot situations in narrative serve as models for behavior, that they are like game plans, and that in this respect they are roughly parallel with the model chess games laid out in chess training books. Many authors have no doubt conceived of their work in this way. The epistolary novels of Samuel Richardson had their origin in the book of model letters he published as a guide to writers who were uncertain about the conventions of epistolary propriety. And Anthony Trollope regarded his novels as useful guides to young women involved in the interesting life choices surrounding courtship and marriage. But the didactic side of things clearly does not exhaust the interest and significance in the works of either of these authors, or of any author. (I for one have made no use of Richardson's model letters, and as a married, middle-aged male, I am unlikely ever to find myself faced with the interesting life choices Trollope depicts, but I still find both these authors absorbing and stimulating.)

In addition to the idea of information transmission or game-plan modeling, there are at least two other theories that have been proposed on the adaptive function of artistic constructs, including literature. (When we speak of literature in a context like this, we must always be understood to signify the oral antecedents of written language—"literature" as it is practiced by peoples who are preliterate but

who nonetheless have rich traditions of oral narrative.) One theory is that proposed by Geoffrey Miller in *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature* (2000), and the other is that proposed by E. O. Wilson in *Consilience: The Unity of Knowledge*.

On the grounds that other primates get along fine without brains of human magnitude, Miller suggests that the higher cognitive capacities of the mind have no particular adaptive utility, at least so far as "survival" is concerned. As an alternative to the idea that the mind has survival value, Miller proposes that the mind evolved through sexual selection as a form of sexual display. The artifacts of the mind—conversation, art, music, literature, and so on—would be forms of display at one remove. Miller's argument against the survival value of the human brain is patently weak. An identical argument could be made about any adaptation not universally shared by all organisms. Many organisms get along fine without eyes, ears, legs, or wings, but few people would conclude from that observation that eyes, ears, legs, and wings contribute in no discernible way to the survival of any organism. Miller's argument against the survival value of the human brain reduces instantly and irresistibly to absurdity.

Miller makes his case for art as sexual display with a good deal of learning and wit, but his central thesis is almost comically far-fetched. In his single-minded pursuit of this one bright idea, he loses sight of a larger principle that undergirds all adaptationist thinking: the idea that complex functional structure gives evidence of adaptive design. Miller argues that all mental activity is a form of sexual ornamentation, and he suggests that "every sexual ornament in every sexually reproducing species could be viewed as a different style of waste" (128). The complex functional structure of the mind thus becomes simply an efficient means of consuming adaptively expensive calories—a sort of neurological incinerator. It is as if a group of workmen were to set up a workshop dedicated to fabricating fine musical instruments, and right next door also to set up a large furnace. All the instruments—oboes, cellos, pianos—are lovingly crafted with immense care and skill, and as soon as each is produced, it is carried over to the furnace and tossed in. Admiring but congenitally tone-deaf females observe this display, marvel at the ostentatious expenditure of superfluous effort, and go soft and warm with sexual excitement. The workmen clearly possess resources so abundant that they can devote the larger part of their productive life to an elaborately senseless process designed to generate highly structured forms of pointless activity.

The functional hypothesis put forth by Sugiyama and Pinker is sensible but incomplete, and the hypothesis put forth by Miller is provocative but ultimately frivolous. The two arguments nonetheless display a common weakness. Neither of them identifies any adaptive function that is specific to art or literature proper. In both hypotheses, literature is a means to an end, in the one case a means for conveying practical information, and in the other a means for generating sexually attractive forms of wasted effort. In the degree to which artistic and literary

productions are themselves highly organized in ways that seem designed to fulfill a primary and irreducible psychological need, these functional hypotheses fail to account for the subject at hand. People everywhere have a spontaneous and irrepensible disposition for producing and consuming narratives. Neither the theory of information exchange nor the theory of sexual display offers a convincing explanation for why they have any such need.

In his chapter on the arts in *Consilience*, E. O. Wilson offers a convincing adaptive hypothesis for the universal human disposition to create and consume imaginative artifacts. He argues that the large human brain has adaptive (survival) value but that in solving some adaptive problems the brain produces a new adaptive problem—it causes confusion and uncertainty. The human brain allows for an unparalleled flexibility of response to variable environmental conditions, but to achieve this flexibility it must cut human cognition loose from any rigidly programmed set of instinctual behaviors. In a dangerous and challenging world that demands decisive action oriented to adaptively functional goals, confusion and uncertainty are potentially fatal disabilities. It is in order to cope with this challenge, Wilson argues, that human beings have created religion and the arts:

There was not enough time for human heredity to cope with the vastness of new contingent possibilities revealed by high intelligence. [...] The arts filled the gap. Early humans invented them in an attempt to express and control through magic the abundance of the environment, the power of solidarity, and other forces in their lives that mattered most to survival and reproduction. The arts were the means by which these forces could be ritualized and expressed in a new, simulated reality. They drew consistency from their faithfulness to human nature, to the emotion-guided epigenetic rules—the algorithms of mental development. (Consilience 225)<sup>1</sup>

Within this general hypothesis, we can formulate more specific hypotheses about the way in which literature and the other arts organize experience in subjectively meaningful ways. We can argue that the arts are indispensable for personal development, for the coherent internal organization of ideas and feelings, and for the organization of shared experience that makes collective cultural life possible. As the cognitive paleoanthropologist Steven Mithen observes, imaginative artifacts are not “simply products or representations of our inner thoughts. They play an essential role in formulating, manipulating and sharing those thoughts” (“The Evolution of Imagination” 50). In art, music, and literature, people make the forms of experience available to their own conscious minds and to those of others.

When we speak of the literary or artistic “imagination,” we mean to signify the complex, integrated set of cognitive, perceptual, and emotional faculties through which we articulate and communicate the felt quality of life. Imaginative constructs are both organized in conceptually intelligible patterns and also weighted with qualitative, subjective affects. The arts make a psychologically indispensable link between conceptual models of experience and the biologically constrained and emotionally mediated dispositions that in common usage we call “human nature.” Evolutionary psychologists follow that common usage, and for

understandable reasons they are preoccupied with affirming the continuity between human nature and the nature we share with other primates and, in decreasing degrees, with all other animals and all living things. This preoccupation has a sound theoretical basis, and it has proved immensely fruitful for the purpose of analyzing the biological basis of human behavior; but acknowledging the continuity of animal and human nature does not require us to overlook the fact that the arts are themselves one of the most salient and functionally important parts of our specifically *human* nature.<sup>2</sup>

Art provides an emotionally and subjectively intelligible model of reality, and it is within such models that human beings organize their complex behaviors in flexible response to contingent circumstances. The imaginative models that we construct about our experience in the world do not merely convey practical information. They direct our behavior by entering into our motivational system at its very roots—our feelings, our ideas, and our values. We use imaginative models to make sense of the world, not just to “understand” it abstractly but to feel and perceive our own place in it—to see it from the inside out. Making sense of the world in this way, through narrative and through the other arts, is both a primary psychological need and a necessary precondition for organizing our behavior in ways that satisfy all our other adaptive needs.<sup>3</sup>

Evolutionary psychology has already produced an immense body of useful research, and adaptationist literary study has now produced a much smaller but still substantial and valuable body of work. It nonetheless remains the case that we do not yet have a full and adequate conception of human nature. We have the elements that are necessary for the formulation of this conception, and we are on the verge of synthesizing these elements. One way to measure the validity of any proposed synthesis will be to judge the degree to which that synthesis comprehends the adaptive functions of the human imagination. Literary scholars can do evolutionary psychologists an important service by keeping this criterion of success steadily in view. In the meantime, one can now be confident that literary scholars will continue to make good and productive use of adaptationist research.

## Notes

<sup>1</sup> For the history of modern social science in its antagonistic relation to Darwinian naturalism, see Degler's *In Search of Human Nature* and Fox's *The Search for Society: Quest for a Biosocial Science and Morality* (chapters 3 and 4). Shorter accounts of this history are also given in Brown's *Human Universals*, in Tooby's and Cosmides' “The Psychological Foundations of Culture,” and in Freeman's “Paradigms in Collision.”

<sup>2</sup> For representative contributions to modern sociobiology and evolutionary psychology, see Wilson's *On Human Nature*, Alexander's *Darwinism and Human Affairs*, Symons' *The Evolution of Human Sexuality*, Daly's and Wilson's *Sex, Evolution, and Behavior*, Brown's *Human Universals*, Tooby's and Cosmides'

"The Psychological Foundations of Culture," Mithen's *The Prehistory of the Mind: The Cognitive Origins of Art, Religion, and Science*. Pinker's *How the Mind Works*, and Buss's textbook *Evolutionary Psychology*.

<sup>3</sup> Harold Fromm articulates an ecocritical vision that is closely affiliated with Darwinian naturalism. See "A Crucifix for Dracula: Wendell Berry Meets Edward O. Wilson" and "Ecology and Ecstasy on Interstate 80." In "Ecocriticism and Science: Toward Consilience?" and in "Science, Anti-Science, and Ecocriticism," Glen Love seeks to persuade ecocritics to adopt the adaptationist framework. For overviews of the relations between ecocriticism and adaptationist literary study, see Carroll, "The Ecology of Victorian Fiction" and "Organism, Environment, and Literary Representation."

<sup>4</sup> Koch, Turner, and Argyros are reviewed in Carroll, "Literary Study and Evolutionary Theory: A Review Essay." For examples of Cureton's work, see "Toward a Temporal Theory of Language" and "Linguistics, Stylistics, and Poetics."

<sup>5</sup> For a parody of adaptationist criticism from a traditionalist perspective, see Crews, *Postmodern Pooh*, chapter seven. For a commentary on the relations among poststructuralism, traditionalism, and adaptationism, see Carroll, "Theory, Anti-Theory, and Empirical Criticism."

<sup>6</sup> Hart offers a sympathetic survey of cognitive rhetoric. For an adaptationist critique of cognitive rhetoric, see Carroll, "The Deep Structure of Literary Representation," and see also the commentary on Mark Turner in Carroll, "Literary Study and Evolutionary Theory: A Review Essay."

<sup>7</sup> In "Does Beauty Build Adapted Minds? Toward an Evolutionary Theory of Aesthetics, Fiction, and the Arts," Tooby and Cosmides also argue that creative imagination contributes to mental adaptations for flexible responses to contingent circumstances.

<sup>8</sup> For an exceptionally well-informed and judicious inquiry into the specifically human character of the creative imagination, see Mithen, "The Evolution of Imagination: An Archaeological Perspective." Mithen synthesizes information from paleoanthropology, primatology, and cognitive science. In "The Evolutionary Origins of the Storied Mind: Modeling the Prehistory of Narrative Consciousness and its Discontents," H. Porter Abbott cites a little adaptationist science and mingles it with the psychoanalytic fantasies of Lacan. In "Literature and Evolution," Paul Hermadi cites a little more and mingles it with old-fashioned humanistic values.

<sup>9</sup> For adaptationist commentary on the developmental, interpersonal, and social functions of the arts, see Carroll, "Steven Pinker's Cheesecake for the Mind" and "Wilson's Consilience and Literary Study"; Dissanayake, *Art and Intimacy* and "Chimera, Spandrel, or Adaptation: Conceptualizing Art in Human Evolution"; and Storey, *Mimesis and the Human Animal*.

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