



# Literary Darwinism

EVOLUTION,  
HUMAN NATURE,  
AND  
LITERATURE.

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# Introduction

## An Emerging Research Program

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.

In this introduction, I shall try to give a sense of where Darwinian literary study now stands and 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 list some of their accomplishments. I shall also take up two large theoretical issues that remain to be resolved: the exact structure of “human nature,” and the

adaptive function of imaginative constructs. In the final section, I shall describe the essays that are included in this volume.

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” (2003, p. 397). 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” (vol. 2. p. 389). (*The Expression of the Emotions in Man and Animals*, first published in 1872, is a psychological and anatomical sequel to *The Descent of Man*).

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 assessing the significance of particular actions within longer rhythms of life. 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. Through the first decade of the twentieth century, educated people interested in society and literature understood that their own ideas had to be integrated with Darwin’s new conception of man’s place in nature. 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 an array of naturalists such as Émile Zola, Frank Norris, Arnold Bennett, and Jack London. (Literary Darwinism extends down to the present through a lineage that includes Aldous Huxley, William Golding, Kurt Vonnegut, and Ian McEwan.)

In the second decade of the twentieth century, an anti-Darwinian counter-revolution conquered 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 mid-century 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. (On the history of Darwinian social science, see Alcock, 2001; Brown, 1991, pp. 1–38; Buss, 1999, part 1; Degler, 1991; Fox, 1989, chapters 3 and 4; Freeman, 1992, 1999, pp. 17–27; Segerstråle, 2000; Tooby and Cosmides, 1992, p. 28; E. O. Wilson, 1994, chapter 17.)

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. (Representative contributions to sociobiology and evolutionary psychology include Alexander, 1979, 1987; Arnhart, 1998; Betzig, 1986, 1997; Bickerton, 1990; Bowlby, 1982; Brown, 1991, 2000; Buss, 1990, 1994, 1995, 1999, 2000; Chagnon, 1979; Chagnon and Irons, 1979; Chiappe and MacDonald, 2003; Cosmides and Tooby, 1992, 1994; Crawford and Krebs, 1998; Cronk, Chagnon, and Irons, 2000; Daly and Wilson, 1983, 1988; Darwin, 1981, 1998; Dawkins, 1987, 1989; Eibl-Eibesfeldt, 1989; Ekman, 2003; Eysenck, 1967, 1980; Geary, 1998; Hamilton, 1996, 2001; Hrdy, 1999; Irons, 1998; Low, 1998, 2000; MacDonald, 1990, 1995a, 1995b, 1997; McGuire and Troisi, 1998; Maxwell, 1991; Mithen, 1996, 2001; Pinker, 1994, 1997b, 2002; Ridley, 1997, 1999; Rushton, 1995; Segal, 1999; Segal and MacDonald, 1998; Symons, 1979, 1992; Tiger and Fox, 1971; Tooby and Cosmides, 1992, 2001; Trivers, 1972, 1985; Williams, 1966; D. S. Wilson, 1999, 2002, in press; E. O. Wilson, 1975, 1978, 1998; J. Q. Wilson, 1993.)

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 traveling in space, one also moves backward in time. In the humanities, scholars 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 col-

leagues 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 that this movement will not only 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 postcolonialism and queer theory, no truly new political impulse has animated literary study now for more than 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. (See Fromm, 1996, 1998, 2001; Glotfelty and Fromm, 1996; Love, 1999a, 1999b, 2003; and in this vol., see part 1, chapter 8; part 2, chapter 4.)

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 obstruction 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 any-



one 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" (p. 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.

### 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 diffusive, 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 (1862) and of Teilhard de Chardin. Among contemporary literary theorists, its adherents include Walter Koch (1993), Frederick Turner (1992), Alex Argyros (1991), and Richard Cureton (1997a, 1997b). 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. (Koch, Turner, and Argyros are reviewed in this vol., part 1, chapter 5.)

The second misconceived way in which 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" (1991, pp. 7–8). Psychologist Donald Campbell (1988) 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" (2001, p. 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 biological historian Michael Ghiselin observes, “the history of thought is strewn with the corpses of strictly analogical argument” (1969, p. 146).

The currently most popular use of evolution as an analogical causal model is the idea of “memes” first conceived by sociobiologist Richard Dawkins (1982, 1989). 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 shorthand 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.

We can mention one more school that cites some of the same sources as the adaptationists but remains distinct from them. The “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 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, Francis Steen, and Lisa Zunshine. The distinction between these two schools is by no means absolute, and some scholars occupy a borderline position between them (see Boyd, 1999; Easterlin, 2002). 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” (1978, p. 48). (For a sympathetic survey of cognitive rhetoric, see Hart, 2001; and in this vol., less sympathetically, see the commentary on M. Turner in part 1, chapter 5, and part 2, chapter 1.)

### **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 Émile 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. (See Abrams, 1995, 1997; Carroll 1995; and in this

vol., see part 1, chapter 2.) 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 dissatisfactions, 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 this vol., part 1, chapter 5). A preview article from Storey's book appeared in a collection of essays, *After Poststructuralism: Interdisciplinarity and Literary Theory*, coedited 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 Easterlin (1999a, 1999b, 2000, 2001a, 2001b) has remained an active contributor 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 he has coedited two collections of essays, *Sociobiology and the Arts* (Bedaux and Cooke, 1999) and *Biopoetics: Evolutionary Explorations in the Arts* (Cooke and Turner, 1999). (Both volumes were based on small conferences and contain essays of varied quality.) Cooke's theoretical and interpretive efforts (1995, 1999a, 1999b, 1999c, 1999d) have now culminated in the first scholarly and critical book focusing on a single literary work, *Human Nature in Utopia: Zamyatin's We* (2002). One way to get a sense of the diverse sorts of work being done in this field is to dip into the three special journal issues that have been devoted to adaptationist literary study: *Human Nature: An Interdisciplinary Biosocial Perspective* 6, no. 2 (1995); *Interdisciplinary Literary Studies* 2, no. 2 (2001, edited by Brett Cooke); and *Philosophy and Literature* 24, no. 2 (2001). In addition to essays by the scholars already mentioned (Carroll, Cooke, Easterlin, and Storey), these collections contain essays by Brian Boyd (2001), Robin Fox (1995), Jon Gottschall (2001), Ian Jobling (2001a), Margaret Nesse (1995), and Michelle Sugiyama (2001b). Jobling (2001a, 2002) and Sugiyama (1996, 2001a, 2001c) have published other articles in the field, and Boyd, Gottschall, and Sugiyama have articles in press. Articles in Darwinian literary study have

also been published by Barash and Barash (2002), Evans (1998), Fromm (2003a, 2003b), Nordlund (2002), Thiessen and Umezawa (1998), and Whissel (1996). Gottschall and D. S. Wilson have in press a coedited volume, *Literature and the Human Animal*, that will contain articles by both literary scholars and social scientists—including articles by Carroll, Gottschall, Nettle, and D. S. Wilson. (For more detailed commentary on specific contributions to adaptationist criticism, see Carroll, 2003a, in press.)

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 Post-structuralism* 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* (1995b). 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.

### Hovering on the Verge of a Paradigm

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. What we have are the elements that are necessary for constructing that conception. I shall list here a few questions that need to be answered before we can put these elements together in a way that makes good on our claims for possessing a science of human nature.

At what level do the analytic reductions of biology and psychology become distinct motives, with their attendant emotions? How firmly do we draw the line between the “ultimate” regulative principles of inclusive fitness or reproductive success and the “proximal” mechanisms that operate on the level of immediate triggers to behavior? Is reproduction itself a motive, or do people only want sex? (Sociobiologists emphasize reproductive success; evolutionary psychologists look at people as “adaptation executors.”) Do people desire children? Or is parenting a behavioral repertory activated only by the presence of children? (The answer to this question seems obvious to me; many people, though not all, actively want children, but many evolutionary psychologists would balk at that common observation.) Can human behavior be organized into whole “behavioral systems” like “mating” and “parenting,” or are all motives only localized mechanisms (“cognitive modules” or “domain-specific mechanisms”) triggered by specific stimuli? If behavior is in fact organized into coherent and integrated behavioral systems, what are these systems? How many are there? Is “technology” a separate system? Is “social life” a system or a complex set of systems? How much flexibility is built into any system? That is, how wide a range of possible response to contingent circumstance is possible within a given system? (Too wide, and it is no longer a system; it is drifting toward the infinite flexibility of cultural constructionist views of human behavior. Too narrow, and the systems are not specifically human at all; they are merely the forms of programmed behavior we associate with the less complex neural anatomy of “lower” organisms.)

Is cognition itself a behavioral system? Does cognition consist only of a discrete array of specialized cognitive modules, as Tooby and Cosmides would have it, or does it consist also of a certain range of “general intelligence” that mediates among modules, synthesizing them and bringing them into productive and creative interaction, as Steven Mithen argues? If, as I believe, cognition is itself a distinct behavioral system, on a par with those for “technology,” “mating,” “parenting,” and “social life,” that means that the mind itself has motives, that mental needs and processes are distinct and irreducible, with their own particular satisfactions and frustrations. Like all other motives, mental motives interact with the motives of other behavioral systems. People need to understand the world around them, and they thus construct religions, philosophies, sciences, and the arts. But they also need resources, sex, and status, so they use their cognitive activities, like all their other capacities, as means



for obtaining the “good things” in life (as Trollope calls them). The interaction of distinct motives should not blind us to the distinctness of the motives.

Within the last few years, since about 1999, evolutionary psychology has progressed to the textbook phase—that is, the phase of institutional success in which a burgeoning academic industry stimulates a proliferation of textbooks designed for use in introductory survey classes. These books range in quality from David Buss’s thorough and circumspect survey *Evolution: The New Science of the Mind* to works that could be fairly described as the dual offspring of amateur enthusiasm and commercial ambition. In one respect, the onset of the textbook phase is a good sign. It means that there is a large audience and that the field has won sufficient general respect to warrant official recognition in academic programs. In other respects, the textbook phenomenon is a cause for some concern, and even dismay. Until it has answered questions like those I have listed above, evolutionary psychology can make no valid claim to have achieved intellectual maturity. Textbooks tend to affirm incomplete and uncertain propositions as settled doctrines to be comfortably memorized and replayed on exam questions. One thinks of the old joke about America having passed from barbarism to decadence with no intervening period of civilization.

Despite the threat of premature ossification in textbooks, I am hopeful that serious scientists and scholars will continue to pursue the important questions about human nature that have been the subject of adaptationist study. Perpetual suspension is not the goal. The goal is valid synthesis. 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.

### **The Adaptive Function of Literature and Other Arts**

The adaptive function of literature and the other arts is still very much a live question among adaptationists. In “Narrative Theory and Function: Why Evolution Matters” (2001b), 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’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 expositions of evolutionary psychology, *How the Mind Works* (1997) and *The Blank Slate: The Modern Denial of Human Nature* (2002). 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 include 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* (1998).

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" (p. 128). The complex functional structure of the mind thus becomes simply an efficient means of consuming adaptively expensive calories—a sort