

# The Handbook of Evolutionary Psychology

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Evolutionary psychology has penetrated many disciplines, and space limitations unfortunately precluded inclusion of all of them. As these words are written, there are rapidly emerging new hybrid disciplines, such as evolutionary economics (Gintis, 2000; Gintis, Bowles, Boyd, & Fehr, 2005), evolutionary organizational behavior (Brown, 2002; Colarelli, 2003), evolution and marketing (Saad, 2005), evolutionary sociology (Lopreato & Crippin, 2001), evolutionary analyses of history (Sulloway, 1996), evolutionary psychology and public policy (Bloom & Dess, 2003), and evolutionary political science (Rubin, 2002). In the final analysis, all human behavior—including economic behavior, legal behavior, artistic behavior, and organizational behavior—is a product of evolved psychological mechanisms. I predict that in the not too distant future, all of these diverse and seemingly unrelated fields will be based on a new evolutionary foundation.

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## CHAPTER 33

# Literature and Evolutionary Psychology

JOSEPH CARROLL

DARWINIAN LITERARY STUDY has emerged only in the past 15 years or so, and its practitioners still constitute a relatively small community on the margins of the academic literary establishment. That establishment is oriented to postmodern beliefs and thus repudiates the ideas both of human nature and of objective scientific knowledge. Darwinian literary critics embrace the notion of *consilience*, affirm the cogency of Darwinian evolutionary theory, and assimilate the findings of Darwinian social science. They would agree with E. O. Wilson (1998) that the world constitutes a unified causal order and that knowledge itself forms an integrated field that encompasses the physical sciences, the social sciences, and the humanities. They affirm that human mental and cultural activity is constrained by the principles that regulate all biological activity, life has evolved through an adaptive process by means of natural selection, and all complex functional structure in living things has been produced by adaptation. They argue that the adapted mind produces literature and that literature reflects the structure and character of the adapted mind. To distinguish this kind of literary study from other schools that are in some way associated with "evolutionary" thinking, I refer to it as *adaptationist* or *Darwinian* literary study.

Adaptationist literary study makes use of a variety of concepts common in other approaches to literary study—concepts such as point of view, realism and symbolism, character/setting/plot, thematic structure, tone, and formal organization. Adaptationist critics locate all of these concepts in relation to a structured account of human nature, and they derive that account from Darwinian social science. The Human Nature and Literary Meaning: A Model section outlines the concept of human nature that is now emerging from Darwinian social science and integrates the standard concepts of literary analysis with that model. ~~Before entering into that exposition, I provide some background and context for adaptationist literary study, outlining the main historical movements in literary theory over the past 150 years or so and locating adaptationist critics in relation to that~~

history. I then identify the kinds of work done by adaptationist literary scholars and give a concise guide to their chief contributions. I distinguish adaptationist criticism from other schools that are in some way associated with evolutionary thought and discuss the debate, within evolutionary psychology itself, about the adaptive status and function of literature and the other arts.

Literature is the written version of an oral behavior—the verbal representation of imagined actions—that is universal in preliterate cultures. The word *literature* may be taken tacitly to signify the larger concept, “literature or its oral antecedents.”

#### CONTRIBUTIONS TO ADAPTATIONIST LITERARY STUDY

The modern, unequivocally adaptationist understanding of literature and the other arts began to emerge only in the last quarter of the twentieth century. In this area, as in so many others, E. O. Wilson may be credited with pioneering insights (see Cooke, 1999a; E. O. Wilson, 1978, 1984, 1998). Until he included a chapter on the arts in *Consilience*, Wilson's comments remained occasional and fragmentary, but they nonetheless provided the most immediate stimulus for the work of Brett Cooke, who in the late 1980s began producing a series of articles taking an adaptationist perspective on science fiction, opera, ballet, cinema, and Russian literature. In 1992, Cooke coorganized a conference that provided the basis for a collection of essays, *Sociobiology and the Arts*, coedited by Bedaux and Cooke. The collection was not published until 1999, but the quality of the essays reflects the still rudimentary state of thinking in Darwinian aesthetics from the early 1990s. A second conference, in 1995, provided some of the materials for a second collection, *Biopoetics: Evolutionary Explorations in the Arts* (1999a), coedited by Cooke and Frederick Turner. As in the previous collection, several of the essays in this volume reflect a rather vague and inchoate sense of what an adaptationist perspective might involve. Most of the contributors make little effort to formulate fundamental principles of broad, general validity. Cooke's own most valuable theoretical essays include “On the Evolution of Interest: Cases in Serpent Art” (1999b), “The Promise of a Bioethematics” (1999c), and “Sexual Property in Pushkin's ‘The Snowstorm’: A Darwinist Perspective” (1999d). All three articles follow Wilson's lead in concentrating on the representation of human universals and the evocation of archetypal motifs. Cooke's single most ambitious and successful effort in practical Darwinian criticism is *Human Nature in Utopia: Zamyatin's We* (2002), the first book-length Darwinian study concentrating on a single work of literature. This study is fully informed on the relevant contexts of dystopian 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 human nature.

Another early contributor to Darwinian literary criticism, Nancy Easterlin, took her point of departure not so much from Darwin or the contemporary Darwinists as from the Darwinian associations in the psychology of William James (see Easterlin, 1993). Easterlin makes the case that James's empirical and naturalistic approach to psychology offers a better model for contemporary interdisciplinary work than the purely “rhetorical” methods of postmodern interdisciplinary work. One of Easterlin's areas of literary specialization is the study of the Romantic poet Wordsworth, and in her critique of feminist psychoanalytic interpretations of

Wordsworth (2000), she gives an excellent practical illustration of the way in which empirical findings from evolutionary psychology can correct distorted criticalceptions inspired by the obsolete speculative fancies of Freudian theory. In other of her essays (1999a, 1999b, 2001a, 2001b), Easterlin has both assimilated information from Darwinian social science and argued against any ultimate “reduction” of literary figuration and literary response to elementary principles of biology and psychology.

The 1993 volume Easterlin coedited with Riebling was billed not specifically Darwinian in orientation but only as “interdisciplinary.” The only radically Darwinian article in the volume was that by Robert Storey. Storey selects his raw source texts from theoretical biology, ethology, sociobiology, evolutionary psychology, and the theory of emotions. He passionately affirms that literature is rooted in the physical and emotional reality of our experience as evolved human animals and with equal passion he denounces the effete perversities and unreal abstractions of postmodern theory. Storey's article was an early version of the introduction to his book of 1996, *Mimesis and the Human Animal: The Biogenetical Foundations of Literary Representation*. In the book, along with extending the polemical argument of the pilot essay, Storey constructs speculative accounts of narrative as a comedy and tragedy, and he offers an illustrative critique of a novel by Iris Murdoch. The critique of Murdoch is particularly noteworthy in that Storey explains and argues that Murdoch, a modern intellectual susceptible to Freudian fashion, takes the sources and character of the passions depicted in her tale. The critique is plausible, and the general principle is important—the principle that overt and conscious thematic formulation on the part of an author is not the sole and definitive form of meaning in a literary representation. An author can be animated by common impulses of human nature and can depict those impulses and still make the same kinds of erroneous or imperfect interpretive judgments anyone else might make about the matters under his or her observation. This principle has application for authors from all periods and all belief systems. In a subsequent article (2001), Storey further explored the topic of comedy in relation to recent findings in cognitive neuroscience.

*Evolution and Literary Theory* (Carroll, 1995a) has a range of adaptationist orientation and a theoretical orientation similar to that of Storey's *Mimesis and the Human Animal*. Like Storey, I affirm that literature reflects the vital interests of human beings as living organisms, and I set this affirmation in sharp opposition to the textualized universe of the postmodernists. Drawing on evolutionary epistemology and evolutionary psychology, I affirm that the human mind, adapted to the world in which it evolved, it can give a true account of that world and Darwinian psychology and anthropology provide a fundamentally sound framework for the progressive acquisition of empirical knowledge about human nature. I give extended critiques of key figures in postmodern critical theory and evolutionary psychology and delineate a general theory of literary representation as a continuum between mimetic realism and symbolic figuration. In subsequent articles (1995b, 1998a, 1998b, 1999a, 1999b, 1999c, 2001a, 2001c, 2002, 2003a, 2003b, in press), I assessed new contributions to Darwinian aesthetics and Darwinian literary study and continued to develop an adaptationist theory of literary meaning. These essays have now been collected in *Literary Darwinism: Evolution, Human Nature, and Literature* (2004). My extended consideration of Darwin and the history of evolutionary theory

appears in the introduction to my edition of Darwin's *On the Origin of Species* (2003b).

Michelle Sugiyama has published several articles that use Darwinian anthropology and evolutionary psychology to illuminate important issues in literary theory and especially in narrative. In "On the Origins of Narrative: Storyteller Bias as a Fitness Enhancing Strategy" (1996), she uses sociobiology and ethnographic information on oral narrative to assess the way narrators manipulate their narratives to serve their own interests. In "Narrative Theory and Function: Why Evolution Matters" (2001b), she argues that narrative is a human universal and identifies its universal characteristics. In "Food, Foragers, and Folklore: The Role of Narrative in Human Subsistence" (2001a), she examines the practical information about vital resources in the narratives of a foraging people. Two of her essays take classic plays as a focal point for considering large theoretical issues. In "New Science, Old Myth: An Evolutionary Critique of the Oedipal Paradigm" (2001c), she uses the evolutionary critique of the Freudian Oedipal myth to illuminate the distortions in Freudian readings of *Oedipus Rex*. In "Cultural Relativism in the Bush: Towards a Theory of Narrative Universals" (in press), she discusses the question of cultural relativism by considering the response of the Tiv, a Nigerian people, to Shakespeare's *Hamlet*. She makes valuable distinctions between local cultural variations and the deeper, underlying commonalities that render literary works intelligible across wide boundaries of cultural difference. (Another good essay that takes account of cultural differences is Margaret Nesse's "Guinevere's Choice," 1995. Nesse assesses the way in which changing cultural attitudes within a single culture influence the depiction of sexual mores in different versions of the same story.)

Brian Boyd is widely regarded as the leading scholar on novelist Vladimir Nabokov, and for several years he has been working on an adaptationist approach to literature and art, especially to fiction. In "'Jane, Meet Charles': Literature, Evolution, and Human Nature" (1998), Boyd gives a general exposition of the tenets of evolutionary psychology, explains their relevance to literary study, and illustrates his argument with a reading of Jane Austen's *Mansfield Park*. One signal feature of this reading is that it examines a specific formal technique of narrative, "free indirect discourse," and argues persuasively that this technique constitutes a prosthetic literary extension of a fundamental cognitive adaptation. This linkage of literary technique and cognitive adaptation should provide a model for further such studies into the underlying cognitive logic of literary structures. In "The Origin of Stories: *Horton Hears a Who*" (2001), Boyd begins to develop a theory of art based on an evolutionary understanding of human attention and demonstrates that adaptationist criticism is not restricted to nineteenth-century marriage plots. In "Kind and Unkindness: Aaron in *Titus Andronicus*" (in press-b), he uses kin-selection theory to illuminate in-group/out-group dynamics. In "Laughter and Literature: A Play Theory of Humor" (in press-c), Boyd formulates an adaptationist theory of humor illustrated with examples from jokes, movies, Shakespeare, and modernist literature. In "Evolutionary Theories of Art" (in press-a), he assesses six major positions on art and adaptation. Boyd is currently working on a book in which he will demonstrate the relevance of adaptationist thinking across a diverse and representative array of literary periods and genres, from Homer through Shakespeare and into modern fiction, cinema, and comics.

Ecological literary criticism, or "ecocriticism," has emerged since the 1990s as a flourishing field of critical endeavor. The ecocritics have their own professional organization, the Association for the Study of Literature and Environment, and a journal associated with the organization, *Interdisciplinary Studies in Literature and Environment*. Ecology is a topic area, not a specific theoretical trine, and the ecocritics have spread themselves across the range of possible retical orientations (see Carroll, 2001a; Glotfelty & Fromm, 1996). Two founding, senior members of the ecological literary movement, Glen Love and Harold Fromm, have oriented themselves to Darwinian theory. In two theoretical articles (1999a, 1999b), Love draws on the consilient worldview of E. O. Wilson and argues for the integration of the sciences and humanities, and he poses this integration as an alternative to the antiscience views of postmodern literary theory. (A similar theoretical orientation informs Marcus Nordlund's "Consilientary Interpretation," 2002.) Love's book *Practical Ecocriticism: Literature, Biology, and the Environment* (2003) expands on these themes and offers an extensive illustration of his approach. Fromm is a distinguished literary essayist who has countered postmodern theory from an intuitively naturalistic orientation. He has articulated the naturalistic dimensions of ecocriticism (1991, 1996, 2000). More recently, Fromm has been assimilating the literature of evolutionary biology and Darwinian literary criticism (2001, 2003a, 2003b).

One obvious starting place for Darwinian criticism is to look at narrative and dramatic works for illustrations of some hypothesized universal form of psychology. Examples of this approach include Robin Fox's article on competition among younger and older males in epic literature (1995), Thiessen's and Umezawa's study of a medieval Japanese narrative (1998), and a more advanced form of the same kind of criticism, Ian Jobling takes account of the way "universal" sexual psychology is modulated by a specific cultural and he demonstrates the way that ethos enters into the depiction of characters and the organization of theme in Scott's *Ivanhoe* (2001b). Jobling has also worked on the underlying psychology in the depiction of ogres and heroes in world lore (2001a) and on Byronism as a literary fashion that exemplifies the "cading strategy" (2002).

Darwinian literary criticism and Darwinian literary science share subject matter but differ in methodology. Darwinian literary criticism uses information from the social sciences and acknowledges the validity of empirical criteria for its methods but its methods are humanistic—they involve tact, intuition, and personal response. Darwinian literary science is a subspecies of Darwinian social science. Darwinian literary science takes literary texts or the production of literature as its subject matter, but it studies this subject by adopting the methods of social science—statistical analysis and experimentation. It seeks both to use literature as a source of data for social science and to provide literary critics with empirical facts that can constrain and direct their interpretive efforts. This line of research has not been developed as extensively as Darwinian literary criticism, but it has immense promise. Cynthia Whissel has done a statistical study of the depiction of heroines in romance narratives (1996). Catherine Salmon and Donald S. G. have studied romance and pornography as windows into evolved sexual psychology (2001). Daniel Nettle has an article in press on the psychosocial dynamics of small group interactions in the plays of Shakespeare. (Dunbar, Nettle, & :

2003, are preparing a book-length study on the same subject.) Nettle's article will be included in an important volume, *Literature and the Human Animal* (in press), coedited by Jonathan Gottschall and D. S. Wilson. The plan of the volume is to include about equal proportions of work done by Darwinian literary critics and Darwinian social scientists who address the problems of literature. Contributors who have already completed the essays contracted for the volume include Boyd, Carroll, Gottschall, Nettle, and D. S. Wilson.

Gottschall has done work in Darwinian social science, Darwinian literary science, literary theory, and literary criticism on Homer. In social science proper, he has one single-authored and one coauthored article in press about rape ("Explaining Wartime Rape," in press-b and "Are Per-Incident Rape-Pregnancy Rates Higher than Consensual Pregnancy Rates?" in press with Tiffani Gottschall). In the area of Darwinian literary science, he is the single or primary author of three articles in press that report the results of using large-scale databases to conduct statistical analyses of the depiction of heroines cross-culturally ("Can Literary Study Be Scientific?" Gottschall, Allison, De Rosa, & Klockeman, in press; "The Heroine with a Thousand Faces," Gottschall, in press-c; and "Patterns of Characterization in Folk Tales," Gottschall, in press-d). In a theoretical article, "The Tree of Knowledge and Darwinian Literary Study" (in press-e), he locates all literary study within the empirical ethos of Darwinian social science. He has also used Darwinian anthropology to throw light on the ethos of male-male competition in Homer ("An Evolutionary Perspective on Homer's Invisible Daughters," in press-a) and on ritual combat in the *Iliad* (2001). (Barash & Barash, 2002, offer another sociobiologically oriented study of a classic epic, Virgil's *Aeneid*.)

#### NONADAPTATIONIST FORMS OF "EVOLUTIONARY" LITERARY THEORY

Adaptationist critics share one central principle—that the adapted mind produces literature and that literature reflects the structure and character of the adapted mind. There are at least three other ways of integrating evolution into literary theory, but none of these ways is adaptationist in the sense I use that word here:

1. Cosmic evolutionists identify some universal process of development or progress and identify literary structures as microcosmic versions of that process.
2. Evolutionary analogists take the process of Darwinian evolution—blind variation and selective retention—as a widely applicable model for all development.
3. Evolutionary ideologues isolate aspects of evolution that reflect their own social, ethical, political, or aesthetic values.

I comment briefly on each of these alternative uses of evolutionary theory. In the final paragraph of this section, I describe a fourth school, cognitive rhetoric, that has some marginal association with evolutionary psychology.

Cosmic evolutionists believe that the universe itself is evolving and that this evolutionary process constitutes a formal order that is replicated, like fractals, at every lower level of organization. Herbert Spencer offers a classic version of this theory. Spencer was Darwin's contemporary and is sometimes (misleadingly) associated with him as a proponent of natural selection. Long before Darwin pub-

lished his theory of natural selection, Spencer had already developed a theory of cosmic evolution that was inspired in part by his reading of Lamarck (see Carroll, 2003b). Spencer believed that the universe as a whole and every major feature of phenomena within it are animated by internal formal principles that lead them to increase in complexity. The central formal process is that of "an advance from a diffused, indeterminate, and uniform distribution of Matter, to a concentrated, determinate, and multiform distribution of it," that is, "from a confused simplicity to an orderly complexity" (1862, pp. 489, 490). In a long series of books, Spencer applied this abstract formula to astronomy, geology, biology, sociology, psychology, and ethics. Other cosmic evolutionists use different idioms but embrace similar metaphysical notions. Prominent examples include the German transcendentalists and Romantics (Herder, Hegel, Schlegel, Fichte); many of the nineteenth-century cultural theorists such as Arnold, Mill, and Comenius; and the mystical Catholic biologist Teilhard de Chardin. The metaphysical conviction of a progressive and teleological force driving historical change also informs the biological theory of Lamarck and the social theory of Marx. In contemporary literary theory, the proponents of cosmic evolution include Walter D. Mignot, Koch, Frederic Turner, Alex Argyros, and Richard Cureton (see Carroll, 1999, 2003a). Theorists who follow this line of thinking have simply failed to grasp a fundamental way in which the Darwinian theory of natural selection has definitively rendered all spiritualistic and teleological notions of progressive change irrelevant and obsolete.

Cosmic evolutionists identify some universal formal pattern of evolution or development, and they take biological evolution as a specific instance of that pattern. The second category of nonadaptationist evolutionists, evolution analogists, reverses this process. They take natural selection as a model for a process that applies to other phenomenal domains. Instances include Donald Campbell's idea that all intellectual creativity can be conceived as a form of random variation and selective retention (1988); Thomas Kuhn's notion that scientific disciplines speciate or branch into distinct and "incommensurable" species of knowledge (1991); Richard Dawkins' theory of "memes" (1976, 1982); and Rabkin's and Simon's idea that cultural creations "evolve in the same way as biological organisms, that is, as complex adaptive systems that succeed or fail according to their fitness to their environment" (2001, p. 45). All these theories now take an analogy for a causal process. Memes, for example, spread or reproduce in a way that has some parallels with the spread of genes, but no meme—no ideological cultural image—contains a molecular mechanism adapted by natural selection to replicate itself. Ideas and cultural images are themselves inert. They are "recruited" only by serving as stimuli for psychological processes eventuating in symbolic activity that stimulates other psychological processes. The differences between causal mechanisms between molecular replication and this memetic process are subtle but fundamental (see Carroll, 2003a; Daly, 1982; Flinn & Alexander, 1999; Symons, 1987).

Evolutionary analogists are close kin to the third category of nonadaptationist evolutionists, the evolutionary ideologues. The analogists take biological evolution as a conceptual model, and the ideologues take it as an ethical model. Both forms of modeling use only selected aspects of the root idea, but the use of selective aspects is particularly striking in the case of the ideologues because different ideologues use evolution to support radically different ethical norms. Nietzsche

adopt the notion that nature is red in tooth and claw, and they celebrate violent domination as an ethical norm. Spencerian utilitarians adopt the notion that evolution is like a laissez-faire economic system, and they celebrate the elimination of competitively unsuccessful biological enterprises. Utopian ecologists adopt the notion that evolution proceeds by way of symbiotic relationships, and they celebrate cooperative social interaction (see Carroll, 2001a; Hawkins, 1997). Evolutionary ideologues treat evolutionary theory the way certain fundamentalist Christians treat the Bible. The values come first. The appeal to authority is used only to give the values an apparent rationale in nature.

*Cognitive rhetoric* is a school of literary study that seeks to affiliate itself with certain language-centered areas of cognitive psychology. The chief theorists in this school argue that language is based in metaphors, and they claim that metaphors are themselves rooted in biology or the body, but they do not argue that human nature consists in a highly structured set of motivational and cognitive dispositions that have evolved through an adaptive process regulated by natural selection. Cognitive rhetoricians are generally more anxious than adaptationists to associate themselves with postmodern theories of "discourse," but some cognitive rhetoricians make gestures toward evolutionary psychology, and some adaptationist critics have found common ground with the cognitive rhetoricians (see Boyd, 1999; Easterlin, 2002). The seminal authorities in cognitive rhetoric are the language philosophers Mark Johnson and George Lakoff, and the most prominent literary theorist in the field is Mark Turner. Other literary scholars associated with cognitive rhetoric include Mary Thomas Crane, F. Elizabeth Hart, Tony Jackson, Alan Richardson, Ellen Spolsky, Francis Steen, and Lisa Zunshine (see Carroll, 1998a, 1999b, 2003a; Hart, 2001).

#### THE QUESTION OF THE ADAPTIVE FUNCTION OF THE ARTS

The question of adaptive function bears directly on the issues of how and why literature is produced, why it is consumed, and what effects it has. Our ideas about adaptive function enter into virtually any proposition we might make about the nature of literature and about the meaning of any given literary text. The question as to whether the arts have an adaptive function—and if so, what it might be—is thus clearly central to the adaptationist understanding of literature and the other arts, but adaptationists have reached no consensus on this question. Moreover, the debate over the adaptive function of the arts is rooted in a still deeper question: the adaptive function of the mind itself. For the purposes of a handbook designed to convey the state of knowledge in a given field, this situation presents a special challenge. No settled findings can be reported in this area, but no significant arguments can be put forward that do not imply some hypothesis. This section and the next describe the various hypotheses that have been put forward and make the case that literature and the other arts do have an adaptive function. I argue that they fulfill the specifically and uniquely human need to produce an emotionally and aesthetically saturated cognitive order. The need to produce that order is a major component in the model of human nature described in the following section.

Among evolutionary psychologists and adaptationist aesthetic theorists, three broad lines of argument have been made about the adaptive function of the arts: (1) that the arts have no adaptive function and have arisen as side effects of other

adaptive mental processes; (2) that neither art nor the mind itself has any adaptive function produced by natural selection but that both have arisen, as the product of sexual selection, for the purposes of sexual display; and (3) that the arts do have an adaptive function. The theorists who advocate this third position can be further divided into two groups: (1) those who argue that the arts have no intrinsic adaptive function peculiar to their own nature but that they provide subsidiary service only to some other, more general adaptive function, such as information distribution, kin recognition, or social cohesion; and (2) those who argue that the arts fulfill a primary and irreducible adaptive function—that they satisfy adaptive needs that are not satisfied by any other activity.

Steven Pinker (1997, 2002) has a dual theory of art that places him in both the first and third of the three categories identified in the previous paragraph. He divides the proximal purposes of art into the traditional categories of utility and pleasure (*utile et dulce*). With respect to the pleasure derived from art, Pinker locates himself in the first category, among those who argue that art is a side effect of other adaptive functions. Higher cognitive activity is in itself adaptive, Pinker argues, but the pleasure we get from the activity of the mind can be parasitized and exploited by artistic activity. Art pushes pleasure buttons in the same way that psychoactive drugs, pornography, and rich desserts push pleasure buttons. The buttons themselves would originally have been "designed" by natural selection for some primary adaptive purpose. With respect to the utility of art, Pinker locates himself in the first section of the third category—among those who argue that art serves as a form of information distribution. He argues that stories depict model situations and that people can learn the consequences of behavior from those models. Other theorists have made similar claims. Sugiyama (2001a, 2001b) argues that art serves as a medium for conveying adaptively relevant information about the environment. Ellen Dissanayake (1995a, 1995b, 2000, 2001) argues that art heightens and focuses attention and thus serves the purpose of fixing the mind on adaptively significant areas of human activity. She also argues that art serves as a medium of social communication that articulates the sense of shared values and concerns within a community. This latter idea is similar to the idea put forward by Kathryn Coe (2003) that art serves primarily to signal affiliation with specific kin groups. In contrast to these hypotheses about the adaptive value of art, Geoffrey Miller (2000) has argued that the large human brain did not itself evolve because it had adaptive value but only because it was metabolically expensive. It could thus advertise general fitness and serve as a means of sexual display like the peacock's tail. Painting or writing would, in this view, demonstrate that the artist himself, like the bowerbird, is capable of expending large amounts of mental energy in adaptively useless tasks.

The idea that art has a primary and irreducible adaptive function presupposes that the large human brain evolved for its adaptive value. The brain enables humans to respond flexibly to complex contingent circumstances. The adaptive advantages of a large brain must have been great enough so that they could outweigh the disadvantages: metabolic expensiveness, a difficult and dangerous passage through a birth canal already narrowed by upright posture, and the multiplying possibilities of confusion and error that accompany the loosening of stereotyped, instinctual responses. In the only adaptationist hypothesis that identifies a primary adaptive function for the arts, it is this latter problem—confusion and uncertainty—that the arts have evolved to solve (see Carroll, 1998b,



behavior patterns and the systems responsible for them" (p. 60). Within each system, we can identify more particular goals or directives that, following MacDonald (1990), I designate *evolved motive dispositions*. Under *survival*, for instance, we can identify evolved motive dispositions for obtaining food and shelter and avoiding predators; under *mating*, for selecting and obtaining mates and for warding off rivals; under *parenting*, for nurturing, protecting, and teaching children; and under *cognition*, for telling stories, painting pictures, forming beliefs, and acquiring knowledge. At the base of the diagram are the seven basic emotions identified by Ekman, which indicate that all behavior is proximally activated by emotions (see Damasio, 1994; Ekman, 2003; Ekman & Davidson, 1994; Ledoux, 1996; MacDonald, 1995b; Panksepp, 1998).

The concept of *domain-specific cognitive modules* is sometimes formulated so broadly that it includes emotions, perceptual processing subsystems, evolved motive dispositions, and behavioral systems (see Cosmides & Tooby, 1994, p. 103; Pinker, 1995, p. 236, 1997, pp. 128, 315; Tooby & Cosmides, 1992, p. 113). For the purposes of analytic utility, we would do better to distinguish among these different aspects and levels in psychological organization (see Chiappe & MacDonald, 2003; Geary, 1998; Geary & Huffman, 2002; MacDonald, 1995b). In this model, specific cognitive modules would be activated within relevant behavioral systems. For instance, visual processing modules such as those for detecting edges or motion would be activated in the survival and technological systems; cheater detection modules would be activated in the mating, parenting, and social modules; face-detection modules would be activated in all systems involving interpersonal relations, and so on.

Five of the behavioral systems delineated in the diagram—survival, mating, parenting, kin relations, and social life—correspond to the sequence of chapters in several of the textbooks of evolutionary psychology that have been produced since 1999 (see Barrett, Dunbar, & Lycett, 2002; Bridgeman, 2003; Buss, 1999; Gaulin & McBurney, 2001; Palmer & Palmer, 2002; Rossano, 2003). This organization of chapters tacitly supports the idea of behavioral systems as functionally and causally related behavior patterns. Two of the designated systems, technology and cognition, do not form a regular feature in the textbooks but are necessary to an adequate basic model of human nature.

Our hominid ancestors evidently had domain-specific cognitive modules for the construction of hand axes, and one of the signal features in the "human revolution" that took place some 50,000 years ago is the emergence of complex, multi-part tools. In his synthesis of paleoanthropology and cognitive psychology, Mithen (1996) has argued persuasively that technology should be recognized as a behavioral system. (Mithen uses the term *cognitive domain* to denote a concept roughly parallel to what I here designate a *behavioral system*.)

A second signal feature in the human revolution was the emergence of symbolic and aesthetic activity, as evidenced by cave paintings, ornaments and ornamentation, figurines, and ceremonial burials (see Mellars, 1996; Mithen, 1996, 2001; Stringer & Gamble, 1993; Tattersall, 1999). A behavioral system has distinctive latent capacities that require satisfaction. For instance, the mating behavioral system activates a desire for forming affiliative bonds of a sexual character. The parenting behavioral system activates a desire to help an individual's own children grow into healthy adults. The social behavioral system activates a desire to integrate self into a social group. And the cognitive behavioral system acti-

vates a desire to make sense of the world. It satisfies that desire by formulating concepts; articulating religious, philosophical, or ideological beliefs; developing scientific knowledge; fabricating aesthetic artifacts; and producing imaginative verbal representations.

When most Darwinists start thinking about how to use evolutionary psychology to illuminate literature, their first thought is to identify human universals—most often universal mating behavior—and to propose examining this or that literary text to demonstrate that the behavior depicted in the text exemplifies the universal. The search for universals is in fact an integral component of adaptationist literary study, but it is only one component. To make the best use of the component, adaptationist critics must integrate the study of universals with the study of cultural and individual differences, and they must also assimilate standard concepts of literary analysis.

Literature depicts human behavior, but human behavior does not consist only of species-typical behavior. Marriage, for instance, is a human universal. It appears in all known cultures. But not everyone gets married. Not everyone is heterosexual, and there are many heterosexuals who do not follow the species-typical patterns of affiliative bonding. (Psychopaths do not, and psychopathy is a favorite topic of literary representation.) Moreover, marriage can be polygamous or monogamous, lifelong or serial. It can consist in slavish subjugation of the female or in intimate partnership. The two people involved in a marriage are both human, but they can vary in age, health, personality, intelligence, social affiliation, occupation, status, honesty, and a number of other characteristics. Most women prefer men of status and wealth, and most men prefer young and beautiful women (see Buss, 1994), but women sometimes employ gigolos, and men sometimes have faithful and happy marriages with rich older women—as did, for instance, both Mohammad the Prophet and Disraeli the British prime minister and novelist. None of this cultural and individual variation is irrelevant to literary meaning. Species-typical norms provide all of us with a basis for common human feeling—for the possibility of mutual understanding and imaginative sympathy. But the differences of culture and personal identity are also real and important parts of who we are and how we think. Individual identity defines itself in relation to a common humanity, but that relation is often one of tension and discord. Depicting and registering the relation between human universal and individual identity is a chief concern for an adaptationist interpretation of literary meaning.

A literary representation is a written or spoken enactment of a social interaction. That social interaction consists in three distinct sets of participants—the author, the audience, and the characters depicted (see Abrams, 1986). Each participant is a conscious agent with a distinct point of view. He or she interprets the world and comments on the action. Meaning emerges not just out of the action but also out of the interplay among converging, competing, and conflicting perspectives on the action. Analyzing this interplay is one of the chief ways in which literary critics interpret meaning in literary texts.

An author is an individual with a culturally colored identity, an idiosyncratic temperament, and a unique set of personal experiences. All of those modifying individual factors enter into the author's attitudes toward his or her subject. The attitude an author takes toward his or her characters is a crucial part of the meaning of his or her depiction. The author might love some characters, hate other

and despise still others. Those feelings shape the manner and tone of the presentation and enter into the logic of the plot. Moreover, authors wish to influence the feelings of the audience. The author is a person talking to other people (the audience) about still other people (the characters). The author and the audience both respond to characters with emotions that parallel emotions we have in observing real people in the actual world. The author responds to the characters and seeks to manipulate or persuade the audience. The audience responds to the characters and to the personality and manner of the author. All of this social interaction is a fundamental part of the total literary experience and is an indispensable part of what a literary interpretation takes into account (see Carroll, 2001b, in press-a; Storey, 1996; Sugiyama, 1996).

Characters are fictional but can be and often are modeled after real people—Julius Caesar, Jesus, Napoleon, the author's sister, cousin, or uncle, or someone the author met at a party. Characters can also be wholly imaginary—fairies, angels, talking animals, ghosts, demons, gods. No matter how fanciful or unrealistic characters and situations might be, to be effective as literature, they must tap into recognizable emotions and motives. They must operate within the range of behaviors that are intelligible and meaningful to our evolved psychology.

Human experience has three elemental components: individual persons (characters), a surrounding world (setting), and sequences of action connected by emotionally meaningful purposes (plots). Literary authors can seek to give exact and faithful accounts of what actual experience is like in a concretely detailed physical and social world occupied by ordinary people engaged in activities that are constrained by commonplace conditions. We call that kind of literature *realism*. Authors can also depict imagined situations in which characters exemplify elemental emotions and abstract ideas, in which settings exemplify emotional or imaginative aspects of experience, and in which plots fulfill the inner logic of some emotional or imaginative process relatively unhindered by commonplace constraints on probability. We call that kind of literature *symbolism* (e.g., myths and fairy tales). The two kinds represent not mutually exclusive alternatives but polar points on a continuum, and all literature has some measure both of realism and of symbolism (see Carroll, 1995a, chap. 3). Dickens, for example, both depicts the actual conditions of Victorian urban life and creates characters and plots that often seem more like those of myth or fairy tale than those of simple realist fiction. In neither its realist nor its symbolic aspect does literary meaning reside simply in an accurate portrayal of what happens. Meaning resides always in the *sense* of what happens—in how it feels and looks to the characters and to authors and readers. In this crucial respect, then, meaning is always a function of point of view.

In the traditional study of literary meaning, critics divide meaning into three main dimensions: theme, tone, and formal organization. To conclude this exposition on literary meaning, I briefly describe how each of these aspects of meaning can be integrated into an adaptationist literary perspective.

Theme is the conceptual organization that can be abstracted from a literary work. All the elements depicted—characters, settings, actions—have to be conceived. Authors vary in the ideas they have about life and death, love and family, reproduction, technology, the social world, and the larger world of nature. Analyzing that conceptual organization is an indispensable feature of all literary interpretation. Adaptationist critics do not differ from traditional critics in the

obligation to understand how an author conceptually organizes his or her own imagined world. What distinguishes an adaptationist approach is that the adaptationist compares the author's conception to the Darwinian conception of the world. Adaptationist critics use the consilient worldview and Darwinian social science as the common frame within which they assess the conceptual order of any depicted action.

Most authors have a strong intuitive understanding of human nature. That understanding is one of the prerequisites for being an author. Adaptationist critics analyze the way the intuitive understanding of any given author is made to fit within the author's conceptual order. Authors sometimes give depictions of human behavior in which some personal bias or some religious, ideological, or theoretical preconception seriously distorts his or her intuitive understanding. Such distortions are also materials for an adaptationist interpretive analysis.

Tone is the emotional organization of a literary work—the emotions of the characters depicted and of the author depicting them and even the emotions that the author anticipates the audience will feel. All these emotions are intertwined in a distinct sequence that produces a combined total effect. In one basic dimension of meaning, any literary work can be analyzed as an orchestrated sequence of emotions producing a total quality of mood or tone. This dimension is so important that it constitutes the chief element in the largest terms that are used to categorize literary works—the terms of *genre*. Genres, like emotions, can be subtle, complex, and mixed in quality, but there are three basic genres—tragedy, comedy, and satire—that form the core elements in all the more complex or equivocal forms.

The three basic genres are produced by specific combinations of the basic emotions: joy, sadness, fear, anger, disgust, contempt, and surprise. Tragedy and comedy occupy the poles of negative and positive emotionality in human experience. Tragedy depicts in its characters and engages in its audience the emotions of sadness, fear, anger, and surprise. (The very existence of tragedy disconfirms the notion, propounded by Freud, 1959, that literature is merely a form of wish fulfillment fantasy.) Comedy depicts and engages the emotions of joy and surprise. Romantic comedy, for instance, is the depiction of a successful mating effort that integrates the couple within a harmonious social world. In this genre the marriage itself is often the medium for reconstituting or confirming that social harmony. In both tragedy and comedy, without the element of surprise or suspense, there is no story. The activation of concern for a doubtful outcome is a necessary and integral part of the psychology of narrative and of dramatic representation (see Storey, 1996; M. Turner, 1996). At this elementary level, narrative form might depend on a domain-specific cognitive module.

Unlike tragedy and comedy, satire does not seek to engage the reader in sympathetic identification with the characters. It activates the emotions of anger, disgust, and contempt in the reader, and it makes the reader stand apart, alienated and indignant, from the characters. This, too, is a basic, dichotomous alternative within our evolved psychology—the alternative as to whether we sympathize with other people or withdraw emotionally from them. Tragedy makes us grieve because characters we care about suffer. Comedy makes us rejoice because characters we care about fulfill their desires. And satire makes us glad that characters we despise get what is coming to them.

Formal organization can be divided into macrostructures and microstructures. Macrostructures include plot, narrative sequences, and the organization of scenes in drama. Microstructures include syntax, phrasing, imagery, word choice, and prosody. It is to these latter structures that we usually refer when we speak of style. Formal organization meshes closely with theme and tone, but formal order cannot be wholly reduced to these two other dimensions of meaning. There is an irreducible element of cognitive and verbal structure in form, and that element is closely allied with what we think of as the specifically aesthetic component in literary depiction. In traditional literary study, the analysis of style has usually been conducted by means of impressionistic and intuitive commentary. The challenge for an adaptationist understanding of formal organization is to explain how specific formal structures derive from and reflect the properties of our evolved cognitive architecture. Some work along these lines has already been done (see Barrow, 1995; Eibl-Eibesfeldt, 1989; F. Turner, 1992, pp. 61–108). The “cognitive rhetoricians” have also suggested some avenues of approach into formal organization but have stopped short of connecting formal analysis with a larger model of human nature (see M. Turner, 1991, 1996). For scholar-scientists who can combine expertise in literary interpretation, cognitive science, linguistics, and adaptationist psychology, this dimension of literary meaning offers rich opportunities.

### CONCLUSIONS

Literary adaptationists have emerged and survived on the margins of the literary establishment, like small early mammals creeping about nocturnally among the feet of sleeping dinosaurs. The dinosaurs in this case consist of two populations. One population is composed of the last lingering elements—most of them gray, stiff, and fragile—of old-fashioned, humanist critics—belle-lettristic, archivalist, and a little lost and disoriented in the modern world of progressive empirical knowledge (see Abrams, 1997; Carroll, 1999b). The other population is composed of the postmodern establishment, no longer revolutionary but fully ensconced in all the precincts of academic power. This population can be compared to an invading army that has conquered a vast district, ravaged it, left it destitute, and thus deprived itself of the resources necessary to maintain itself on the ground it has conquered. The purely theoretical impulses animating postmodernism inspired the first wave of invaders, the deconstructionists, but that wave had already subsided by the late 1980s and had been superseded by the much more heavily political criticism of the Foucauldians, supplemented by their auxiliaries of feminist, gender, postcolonial, and ethnic critics. That secondary political wave has now also exhausted its momentum, and the literary establishment finds itself in a period of stasis and fatigue, isolated both from the progressive empirical sciences and from the interests and tastes of educated public opinion. The intellectual works that appear on nonfiction bestseller lists are not the works of Althusserian Marxists, Lacanian psychoanalysts, or Kristevan feminists. They are the works of primatologists such as Frans de Waal, zoologists such as Matt Ridley, and cognitive neuroscientists such as Steven Pinker.

Life among the dinosaurs is sometimes dangerous and uncomfortable for adaptationist literary scholars, and it is especially difficult for younger scholars struggling to survive in a hostile job environment. Those who do survive have the satisfaction of feeling that they are participating in a large and successful move-

ment oriented to progressive knowledge. Barring a second Dark Ages, the future belongs to science, not to the irrationalist obstructions of the postmodernist. Being part of a population that will provide descendants to the future offers no refuge and consolation, but the chief motive for adaptationist critics is the stimulus of meeting the two challenges that are immediately in front of them: (a) to assimilate information outside their own field of expertise and (b) to formulate the elementary principles that are specific to their own field. The first challenge is complicated by the preparadigm phase through which evolutionary psychology is now passing. Literary Darwinists find it necessary not only to assimilate the settled and confirmed findings of evolutionary psychology but also to assess critically the fundamental questions that have not been settled. In assessing the fundamental questions, they will discover that the two challenges they face are complementary and interdependent. Literature and its oral antecedents are among the most significant and peculiar features of the specifically human part of human nature—the part that distinguishes humans from their primate cousins, from other mammals, and from all other living things. Literature is important enough so that we can use it as a touchstone for our model of human nature. We can say that until we have an adequate understanding of literature—its adaptive functions, its sources in the adapted mind, and its proximal mechanisms—our model of human nature will itself be radically incomplete. Fortunately, we already have the materials for an adequate understanding both of literature and of human nature. By integrating them, we will incorporate literary study into the larger movement of progressive empirical knowledge and help to construct the model of human nature requisite to a true paradigm in evolutionary psychology.

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 CHAPTER 34
 

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## Evolutionary Psychology and the Law

OWEN D. JONES

FORGET CRIMINAL TRIALS, speeding tickets, and plaintiffs' attorneys looking for big wins on small injuries. Forget divorce lawyers, robbed judges, a antidrug legislation. These are among the many distractors for the unwary who often miss the most important thing to understand about law. It is a tool for moving human animals to behave in ways they would not otherwise behave if left solely to their own devices. Put starkly, legal systems modify features of the human environment in order to modify human behavior. Viewed this way, law need for evolutionary perspectives on behavior, including those from evolutionary biology and evolutionary psychology, becomes obvious. A better understanding of behavior can aid society's efforts to change behavior.

Ideally, a legal system should encourage people to act in ways that further public goals. These goals obviously vary. For example, they range from controlling pollution to ensuring a minimum income for society's poorest, from facilitating a thriving economy to protecting property from theft, and from ensuring that foods and drugs are safe and effective to ensuring that important disputes are resolved without violence in fair and principled ways.

Of course, it is the rare public goal that would, if achieved, benefit all individuals in a society equally. The interests of individuals are rarely identical—and in democratic societies public goals are typically those goals that a sufficient number of individuals representing yet other individuals designate as public goals. In the end, however, legal policymakers are among the key players in soliciting, framing, articulating, and ultimately defining these varied public goals. And those policymakers also influence or determine which of many existing goals will be the top priorities and help to choose among possible methods for pursuing these goals, ever mindful that resources are finite.

Although methods vary considerably, they typically sort into two general categories. One category includes methods that physically force people to behave (or not to behave) in a given way. For example, incarceration, among other things, physically prevents offenders from reoffending. The other category includes