ELSEVIER

# The Deep Structure of Literary Representations

Joseph Carroll
*English Department, University of Missouri–St. Louis, St. Louis, Missouri*

**The cognitive rhetoricians have introduced the idea of cognitive domains into literary theory, but they have not yet developed a model for a comprehensive, species-typical structure of human motives. Evolutionary psychology can provide this model. Elemental human motives and basic emotions provide the deep structure of literary representations, and this deep structure serves to organize the particularities of circumstance and individual identity. Personal power and reproductive success are governing purposes in life and in literary representations. The concept of individual identity is necessary to literary representation, and a theory of literature based in evolutionary psychology has to incorporate models of personality. Literature and its oral antecedents organize experience in personally meaningful ways. They provide models of behavior and help regulate the complex cognitive machinery through which humans negotiate their social and cultural environments.** 

**KEY WORDS:** Literature; Literary theory; Fiction; Inclusive fitness; Psychological models; Cognitive domains; Basic emotions; Personality factors; Cognitive rhetoric; Evolutionary psychology.

Mithen and Gazzaniga make statements that represent complementary extremes in our current evolutionary understanding of the human mind. Mithen (1996: 71) declares that "when thoughts originating in different domains can engage together, the result is an almost limitless capacity for imagination." Gazzaniga (1997: 157) poses a rhetorical question, "What Are Brains For?" The answer is "Sex." Both statements are correct, more or less, but neither by itself provides us with enough structure to build a usable model of literary representations. If we try to go directly from these statements to literary representation, we end up with either too little constraint or too much. If we take Mithen's statement alone, we end up with unlimited combinations of images that

Received October 9, 1998; revised February 6, 1999.

Address reprint requests and correspondence to: Joseph Carroll, 9038 Old Bonhomme Road, St. Louis, MO 63132, U.S.A. E-mail: Jcarroll@umsl.edu.

Evolution and Human Behavior 20: 159–173 (1999)

655 Avenue of the Americas, New York, NY 10010

1090-5138/99/$–see front matter
PII S1090-5138(99)00004-5

could only be catalogued seriatim. And if we take Gazzaniga's statement alone, we end up with some version of the simple proposition that all literary works are ultimately about sex, that they are written out of sexual motives, that they represent sexual relationships, and that they are read for the purpose, direct or indirect, of sexual gratification. Neither statement alone provides adequate structure, but if we combine them and mediate between them, we shall find that we now have the means for analyzing literary representations and for understanding the psychological functions of literature.

Throughout this paper, the term "literature" will be used as a short-hand term signifying both oral and written forms of narrative, verse, and dramatic enactment. Writing is an extension of oral communication. Literacy is less than 10,000 years old, and it should be clear that no claim is being made here that literacy and its offshoots are themselves adaptations. When I speak of the adaptive functions of literature, I mean to signify the adaptive functions of the oral antecedents of written stories, poems, and plays. The same arguments that apply to these oral forms will be understood as extending also to their counterparts in written language.

Mithen has assimilated and revised a central concept of evolutionary psychology—the idea that the human mind contains a rich array of innate structures that have evolved through the adaptive process of natural selection. Some of the most prominent evolutionary psychologists (Tooby and Cosmides, Pinker) conceptualize evolved psychological structures as "modules" dedicated to specific domains or adaptive tasks, for example, to visual cognition, mate selection, and predator avoidance. Drawing on recent work by cognitive scientists, mainly psychologists and philosophers, Mithen argues that between 100,000 and 30,000 years ago, the human mind underwent a crucial phase of evolutionary development (p. 194). The modules dedicated to hitherto separate domains became permeable, and the mind began to make analogical connections among them. This reflexive capacity, which Mithen calls "cognitive fluidity," is a necessary precondition for the production of modern culture—for complex technology, science, art, and religion (p. 71).

The concept of cognitive fluidity brings evolutionary psychology into partial alignment with a set of ideas that has already been long-established in a field sometimes called cognitive linguistics or cognitive rhetoric. The seminal text in this field is Lakoff and Johnson (1980). Both authors have published subsequent work independently, and Lakoff has co-authored a book with the literary scholar Turner, who has himself published various independent works. Lakoff and Johnson argue that "our ordinary conceptual system...is fundamentally metaphorical in nature" (p. 3), and further, that we habitually use constructs from one "domain" of experience to talk about corresponding concepts in other domains (p. 52; and see Johnson 1987: xiv–xv). Lakoff and Johnson are making a claim not just about the logic of specific figures of speech, as decorations or elaborations of isolated concepts, but also about the elementary structures of whole conceptual systems. Propositions of this sort hold out the promise of situating literary analysis within some stable, empirically grounded, and philosophically rationalized system of general knowledge. To connect literary study with cognitive science would be to render it thus far scientific—objective, progressive, and technical.

In the nearly two decades since Lakoff and Johnson made their argument, this promise has not been realized. The central problem the cognitive rhetoricians have failed to solve is that of grounding the concept of "domains" within some larger concept of human experience and cognition. In the work of Lakoff, Johnson, and Turner, the concept of domains remains nebulous and variable. They propose to establish order by identifying hierarchies of metaphors, but these hierarchies are themselves grounded in no larger or deeper set of regularities and can provide no stable basis of causal or systematic connection. The closest Turner gets to a systematic order is an apparently random list of categories that he calls "conceptual domains": eating, dress, learning, buildings, travel, combat, and plants. He makes no effort to correlate these domains with the concept of domain-specific modules in evolutionary psychology, nor does he provide any other rationale or organizing principle for the list. He says only that these categories are "basic source domains, grounded in our forms of life" (Turner 1991: 199).

The failure of cognitive rhetoric is one of the most encouraging developments in the literary theory of the past decade. It is encouraging because the cause of failure is easy to diagnose, and the diagnosis points us very clearly in the direction we need to take. The one crucial element missing in cognitive rhetoric is an ordered system of domains; the necessary precondition for this system is a structured concept of human nature; and the source for this concept is the study of the adapted mind—that is, the study of the evolved structure of the human psyche. One of the best pieces of evidence for this diagnosis can be found in the work of the cognitive rhetoricians themselves. Their own logic leads them inexorably to invoke the adapted mind as the site of metaphoric domains. They simply fail to carry through on their own logic. Johnson (1987) titles a book, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason.* Lakoff (1987) affirms that "our conceptual systems grow out of bodily experience." He grounds all "*cognitive models*" in "experience"; and he grounds experience in "the internal genetically acquired makeup of the organism and the nature of its interactions in both its physical and its social environments" (pp. xiv–xv). Together, Lakoff and Johnson (1999) declare that "our conceptual systems grow out of our bodies" and that "meaning is grounded in and through our bodies" (p. 6). Turner (1991) follows these leads. He insists on the bodily basis of meaning and stipulates, "A brain is part of a body and in operation is inseparable from it. Evolutionarily, the brain exists only in order to serve the reproductive and metabolic body of which it is a part" (p. 36; and see Turner 1996: 25). Similarly, attempting to integrate cognitive psychology with literary analysis, Spolsky (1993) appeals to "the evolutionary history of the species" and to "the genetically inherited architecture of the brain" (pp. 5, 12). Once one has made any such appeal as this, the obvious and inescapable next step is the step toward human ethology or human sociobiology, and it is a step that each of these writers fails to take. Their bibliographies contain almost no titles of books or articles on the evolution of human sexuality, human sociality, or human behavior of any kind. Their emphasis on "the body" has restricted itself largely to concepts of physical direction or orientation—concepts like up and down, and front and back. (On the physical constraints of human existence, also see Barrow 1995.)

In recent work, Lakoff and Johnson (1999) identify the idea of physical well-being as the source domain for concepts of morality and the idea of family structure as the source domain for concepts of political orientation. These concepts do not form part of a comprehensive conception of a species-typical motivational structure. On the contrary, Lakoff and Johnson reject the concept of a relatively stable set of species-typical characteristics. They argue that in biology, cognitive science, and neuroscience, "human nature is conceptualized rather in terms of variation, change, and evolution, not in terms of a fixed list of central features" (p. 557). Given the relatively slow pace of evolutionary change, one cannot legitimately invoke evolution as an antithesis to the idea of a distinctly structured set of species-typical characteristics. The question is whether evolution has produced any such set of characteristics in human beings. The answer from evolutionary psychology is that it has.

In one broad and obvious sense, the problem presented by the failure of cognitive rhetoric is easy of solution. It is simply a matter of expanding one's reading to take in as much information as possible about the evolved structure of the human psyche. Lakoff, Johnson, and Turner are by no means wrong to emphasize the body and even to insist on the primacy of a few directional concepts that regulate physical existence, but we hardly need stop there in defining the architecture of human experience. We already have a large amount of well-documented information about the species-typical structure of human motives and concerns.

The problem that presents itself to us is this: how do we connect our current understanding of species-typical motives with the concept of domain-specific reasoning, and further, how do we use these combined concepts for the purposes of literary analysis? The first thing to consider is the actual current status of our understanding of domains and modules.

At first sight, the theory of domains presents a jumbled array of possibilities, a mere disparate list of specialized cognitive mechanisms. For example, Tooby and Cosmides (1992: 113) offer a list of special modules for the following functions: face recognition, spatial relations, rigid object mechanics, tool use, fear, social exchange, emotion perception, kin-oriented motivation, effort allocation and recalibration, child care, social inference, sexual attraction, semantic inference, friendship, grammar acquisition, communication pragmatics, theory of mind, "and so on." This is the sequence they themselves give, and the "and so on" signifies an open-ended series. Pinker (1994: 420) offers a similar list containing 15 items. For someone who is concerned with analyzing the imaginative structure of literary texts, lists of this sort would probably not seem very helpful. Taking such a list as a guide, the critic could do little more than catalogue metaphors, a practice that would not take us beyond the kind of random analysis of metaphoric structures practiced by the cognitive rhetoricians. It takes us scarcely beyond the unlimited field of metaphoric particularities that has been thoroughly tilled by old-fashioned literary critics since the early decades of this century.

Faced with any such random list, the natural impulse is to start grouping items into larger categories. Among cognitive psychologists concerned with domain specificity, there is still substantial controversy about the definition, number, and organization of cognitive domains, but there is also a fair degree of consensus about some

of the main categories in which to group domains. The starting point for domain-specific reasoning has been the purely sensory modules, like that for visual perception, and the concept of a language module, derived from Noam Chomsky. Beyond these heavily studied modules, there is widespread agreement on the existence of at least three main cognitive domains: the domains of physics, biology, and psychology (Carey and Spelke 1994: 171; Cosmides and Tooby 1994: 102; Mithen 1996: 51; Pinker 1997: 352; Sperber 1994: 42). The psychological domain is sometimes called the "theory of mind module," and it consists in the recognition of feelings and thoughts in other minds. The domain of physics is the area in which we can locate the directional metaphors (up–down, etc.) that preoccupy the cognitive rhetoricians. By adding biology and psychology to the purely spatial sphere, the cognitive evolutionary psychologists bring us much closer to the range of subjects and motives that constitute the substance of most literary texts.

Assuming for the moment that there is adequate empirical support for the provisional grouping of domains into a few major categories, how does that advance the case for literary analysis? In order to make use of cognitive domains as categories of literary analysis, we have to correlate domains with some specific structure of human motives and concerns and locate the functions of literary representation within this structure of motives and concerns. Literature represents human motives and concerns, and it is written and read because it satisfies human needs. If evolutionary psychology can give a comprehensive explanation of motives and concerns, it should both provide a taxonomy of themes in literary representation and explain why people read and write and how literature affects them.

To begin with, how does a list of four or five major cognitive domains translate into a structure of human motives and concerns? At this point, we should recall the question by Gazzaniga. What are brains for? If we reformulate the answer in a less rhetorically striking way, we can say that the function of the brain is to promote *inclusive fitness.* The differential transmission of genes depends on the organism surviving long enough to reproduce, and in human beings it involves also parenting, collateral nepotism, and the successful negotiation of a social environment. These basic requirements result in behavioral mechanisms oriented to solving problems within a limited range of concerns. McGuire and Troisi (1998: 61) identify four basic behavioral systems: survival, reproduction, kin assistance, and reciprocation. Following the same logic, Buss (1999) surveys the whole field of evolutionary psychology within a sequence of book sections devoted to (in this order): survival, sex and mating, parenting and kinship, and group living.

Evolutionary psychologists emphasize proximal mechanisms of adaptation, and in this respect they distinguish their method from that of sociobiological thinkers who place a greater emphasis on the direct and immediate pursuit of reproductive advantage (Barkow 1989: 296; Betzig 1991: 140; Buss 1995: 9–10; Pinker 1997: 44; Symons 1992: 151; Tooby and Cosmides 1992: 54). Evolutionary psychologists nonetheless recognize that all proximal mechanisms can have evolved only under the regulative force of inclusive fitness. Features of living organisms that are physiologically expensive and that display complex functional organization can have evolved only if they enabled the organism to pass on its genes more effectively

than other, competing organisms. Thus, Cosmides and Tooby, taking issue with the purely epistemological preoccupations of cognitive psychology, argue that "cognitive mechanisms capable of acquiring knowledge evolved solely because they subserved a larger cognitive architecture that regulated behavior" (p. 105).

The more closely any motive impinges on the elementary principles of inclusive fitness, the deeper it goes into the regulative structure of species-typical motives. The two behavioral systems that most directly impinge on inclusive fitness are survival and reproduction. Discussing a broad range of research into human motives, Buss (1995: 21) observes that "power and love emerge consistently and cross-culturally as the two most important dimensions of interpersonal behavior." Kinship relations outside the reproductive nucleus of mates, parents, and children have diminishing levels of affective force, and more remote social relations have still less. In the grouping of domains into four or five major categories, this whole primary set of concerns falls within the basic categories of "psychology" or "social interaction." Reproductive interests—sex, parenting, and family—form a clear and distinct subset of these categories. There is ample evidence for evolved cognitive structures that regulate these specific motives and concerns.

Alexander (1987) explains that biologists divide the expenditure of effort in the life cycle into two basic forms of life effort—the somatic and the reproductive. Somatic effort is all the effort an organism expends on gaining resources for its own survival and development. Reproductive effort is all the effort expended on mating, parenting, and aid to kin. These two forms of effort overlap; they are seldom wholly separate. For instance, gathering food, building shelters, and negotiating a position in a social group all contribute both to our own individual support and to the support of our children and kin. If we accept the idea of modules for social activity and for cognition of the physical and natural world, these modules would be hierarchically subordinate to somatic and reproductive effort.

In order to make any hierarchical principle of human motivation usable for literary analysis, we must stipulate that there is a fundamental parallel between the structure of human motives and concerns and the organizing principles of literary representation. Human beings living in a real physical world and interacting both with their physical environment and with other human beings form the central topic of all literary representation. Cognitive rhetoric emphasizes metaphorical relationships, but this elementary configuration presents us with a primary, literal order of representations. Metaphors are diverse, but they have meaning and force only in the degree to which they reflect the elementary structure of human motives and concerns.

In literature the most frequent and important themes are those that concern individual identity, sexual romance, and the family. Survival is the basis of all adventure stories, and by far the largest proportion of stories that are not strictly oriented to survival are organized around the mating game, the concerns of parents for children, and family relations generally. On the basis of such observations, we can propose a large generalization about the primacy of adventure, personal success, and romance within the themes of world literature, and this kind of generalization can, in fact, yield hypotheses that are testable through large-scale, cross-cultural analyses of literary subjects (Fox 1989, 1995; Whissell 1996).

Both social and cognitive activity are a significant part of what is actually represented in literature, and they are inextricably intertwined with themes of personal power and reproductive success, but in literary texts they will almost always have less structural importance than the more primary levels of somatic and reproductive effort. That is, most plots will be grounded more deeply in issues of personal power and love than in problems of social antagonism, social affiliation, and the pursuit of knowledge about the physical and natural world. The broader biological and physical environments that constrain personal and social interaction have their own affective values, and these values are registered in nature poetry and the description of setting. Much of the metaphoric elaboration of intimate human relations derives from images of the natural world. And, conversely, virtually all direct representations of the natural world are intertwined and suffused with the images and affects of intimate personal relations.

Literature itself has until recently been the only great repository of information about human nature. Empirical psychology is scarcely a hundred years old, and much of the psychological theory in this century has foundered amidst the sensational and distorted speculations of Freud and the barren reductions of behaviorism. Throughout the greater part of our history, our best psychologists have been playwrights, poets, and novelists. When Hamlet tells the players that the purpose of the poet is to hold "the mirror up to nature" (III: ii), it is human nature he has most in mind. Literary authors have intuitively understood that the subject matter of literature is human experience, that experience is grounded in common natural motives and feelings, and that sympathetic response to the depiction of experience in texts depends on the common shared experience among authors, the characters depicted, and the audience. Understanding the inner workings of the mind has been the heart and soul of the literary tradition, as it no doubt was the heart and soul of the oral traditions that are the ancestors of all literate cultures.

Any psychological system could become the basis for an associated school of literary analysis, but only a Darwinian conception of the evolved and adapted character of the human mind can provide an understanding of human nature that is sufficiently profound and incisive to correspond with the intuitive understanding embodied in the literary tradition. In the middle decades of this century, literary critics sometimes used Jungian ideas of innate "archetypes" as categories for the analysis of universal human themes, and these categories can be partially but very imperfectly correlated with the themes of evolutionary psychology (Carroll 1995: 155–156.) At present, overwhelmingly the most influential version of psychology in literary studies is the Freudian version. Literature itself appeals to a sense of human nature truer and deeper than Freudian doctrine, and evolutionary psychology has already corrected basic elements in the Freudian scheme of analysis (Buss 1999: 217–219; Daly and Wilson 1990; Degler 1991: 245–269). Freudian readings of literary texts almost inevitably introduce distorting ideas of incest and castration anxiety, and a form of literary analysis that appeals to evolutionary psychology rather than Freudian psychoanalysis will have a vastly improved access to the deep structure of literary representations (Carroll 1995: 44, 410–417, 442–45; Storey 1996).

Brown (1991) argues that the idea of the self or of individual persons is a human universal, and Pinker (1997) includes it as one of the "modules" or cognitive

domains. Among human beings, the sense of individual persons is the conscious correlative for the biological concept of the organism, and this concept is an essential precondition for the organization of behavior in goal-directed ways and for the interaction of individuals in social groups. In literary structures, the idea of an individual self is indispensable to the organization of literary meaning. Characters in poems, plays, and stories are individuals, and authors necessarily present their stories from some distinct point of view. All emotion and cognition is organized within the individual mind, and the response of audiences to literary works is thus necessarily lodged in individuals, even when the response is collectively experienced, as in the audience of a play. For these reasons, the study of individual psychology is integral both to the Darwinian conception of human beings and to literary analysis.

The modern study of Darwinian psychology has tended to concentrate on the idea of human universals, and within the Darwinian community itself there has been controversy over the adaptive significance of individual variations. Theorists who believe that individual variations are not adaptively important argue that adaptations display complex functional structure and that any such structure must be common to the species as a whole (Tooby and Cosmides 1990). Other theorists seek to explain the adaptive value of variation within a given ecology (Barash 1997; Buss 1995: 20; Buss 1999: 393–398; MacDonald 1990; Wilson 1994). For the purposes of identifying a species-typical human psychological design, the crucial point to be made is that human universals and individual variations are not mutually exclusive concepts. The dimensions through which individual identity is structured and in which it necessarily varies *are themselves universals.* These dimensions are part of the evolved structure of human nature.

Tooby and Cosmides (1992: 73–77) argue that evolutionary psychology must work both backwards and forwards, from hypotheses about ancestral environments to predictions about evolved structures, and from observation of evolved structures to speculations about ancestral conditions. Any information on universal features of the human design, even if they have been studied by scientists indifferent to evolutionary psychology, provide substantive empirical data that can be used by evolutionary psychologists.

One of the most important set of structures for individual identity are the five factors of personality (Ashton et al. 1998; Bouchard 1994; Digman 1990; MacDonald 1995; McCrae 1992). These five factors—extraversion/introversion, agreeableness/antagonism, neuroticism/security, conscientiousness/carelessness, and curiosity/dullness—can be used for the comparative analysis of characters, authors, and audience response. Each of these factors can be described in ways that correlate with a biologically based understanding of human motives and concerns. The extraversion/introversion scale involves the elementary biological terms of organism and environment, measuring whether the organism is more responsive to external stimuli or, alternatively, more attuned to internal processes. In literary terms, the concept of organism and environment correlates with the concept of character and setting, and it is thus an indispensable dimension for assessing literary situations. Agreeableness and antagonism identify the two possible extremes in social interaction. They thus reflect basic principles in the hierarchy of elementary regulative princi-

ples for human behavior. Neuroticism involves an array of traits that respond to danger and that are thus signals of threat to survival both of the organism and of his or her kin and social affiliates. Conscientiousness is a quality of character that is essential to personal success and to authority within a social group. Openness or intellect is a measure of responsive sensitivity to the whole range of environmental conditions, physical and social. These latter two factors, conscientiousness and openness, form the basis of the theory of moral psychology worked out by Darwin (1871) in *The Descent of Man*, and they remain basic parts of Darwinian ethical psychology (Arnhart 1998;Wilson 1993).

Individuals vary in the degree to which they are extraverted or introverted, emotionally stable or insecure, intellectually open or dull, friendly or antagonistic, and conscientious or careless, but variations in these dimensions can be likened to variations in other adaptive features of the human design—for example, in keenness of eyesight or hearing, intelligence, physical strength, and sexual attractiveness (Wilson 1994: 233.) The observation of such differences is part of the common experience of everyday social interaction, and evolutionary psychologists have now begun to make reasonable conjectures about the ways in which such differences can be integrated into other fundamental features of the human motivational system. For instance, Ashton et al. (1998) correlate differences of agreeableness and emotional stability both with sex differences and with differential dispositions to kin altruism and reciprocal altruism (see also MacDonald 1995).

Buss (1995: 25) argues that the dimensions of personality in the five-factor system "summarize the most important features of the social landscape that humans have had to adapt to" (see also Eysenck and Eysenck 1985: 44; Pinker 1997: 448). If Buss is correct, and if it is also correct that literary texts reflect an intuitive psychological understanding of human nature, we can anticipate that literary representations will depict the way humans perceive individual differences and integrate their perceptions into elemental motives such as mate-selection strategies. For the sake of illustration, I shall cite here one specific kind of individual difference that enters into stories of female mate selection. Jane Austen's *Pride and Prejudice* can serve as the main example. At the level of sociobiological themes of mate selection, we can see that the heroine, Elizabeth Bennet, marries a male, Darcy, who is higher in status than herself, and that he demonstrates his suitability as a mate in part by extending protection to her endangered kin (her sister Lydia). At the level of resolution appropriate to personality theory, Elizabeth undergoes a process of sorting through the personality factors, learning to make allowances for the qualities of manner attendant on Darcy's introversion, and learning through her experience with Wickham the relatively small reliance to be placed on agreeableness when it is not accompanied by conscientiousness. In the largest thematic structure in the book, she rearranges her whole psychic economy to detach herself from her father, who is cultivated but careless, and to attach herself instead to the ethos of responsbility represented by Darcy. This psychological reorientation plays itself out in dialogue that is concerned with the functions of satire and humor, and thus with the tonal, literary dimensions that correlate with the psychological dimensions. All of the characters in the narrative play the mating game, in accordance with sociobiological

rules, but they also form a carefully constructed array of personality types within a psychological economy dominated by the lead couple, and they self-consciously assess one another on the basis of verbal and imaginative styles that reflect their specific psychological constitutions.

Similar kinds of intuitive psychological depictions are integral parts of the meaning system of most fictional narratives. The specific pattern used as the elementary structure of plot in *Pride and Prejudice* is by no means universal but is certainly very common. It appears also, for example, in Hardy's *Far From the Madding Crowd*, Trollope's *Can You Forgive Her?*, and Tolstoy's *Anna Karenina*. In all of these cases, personality dimensions are not alternatives to sociobiological themes of mate selection. They are the more finely nuanced perceptions through which appropriate sexual choices are made. (For literary analyses that integrate sociobiological themes and assessments of personality within specific cultural contexts, see Boyd 1998; Carroll 1995; Storey 1996. For literary analyses that tacitly limit consideration to basic mate selection strategies, see Thiessen and Umezawa 1998; Whissell 1996.)

The one configuration of personality characteristics I have given as an example could be supplemented with a wide range of configurations. To give just one more example, sociopathy is a prominent feature of personality analysis. Though it is a characteristic in which individuals display a high degree of variability, it has been conceptualized within the framework of evolutionary psychology (see Mealey 1995; Wilson 1993. On the related topic of Machiavellianism, see Wilson 1998.) The sociopath presents a serious challenge to all human social groups, and it is thus to be expected that literary authors would seize upon this character type as a means of focusing on the problems of social integration. And as it happens, a survey of the antagonists in prominent English novels presents a whole gallery of sociopaths: Blifil in *Tom Jones*, Becky Sharp in *Vanity Fair*, Heathcliff in *Wuthering Heights*, Bill Sikes in *Oliver Twist*, and Ferdinand Lopez in Trollope's *The Prime Minister*. The list could be extended almost indefinitely.

Personality factors can be used in the analysis of characters, authors, and readers. They provide points of entry into the values and sensibility of any given author and a means for assessing the evaluative response of audiences to any given author. For instance, Fielding and his protagonists are robust and good natured, sensual but friendly and open, outgoing but a little lax in their moral fiber. Rather than attempting to locate this configuration within some supposedly absolute standard of literary merit, we can instead understand that certain kinds of critical temperaments will respond to Fielding with genial warmth, and that others, more neurotically sensitive, withdrawn, and antagonistic, will find him an uncomfortable companion. Pater, in contrast, is introverted, sensual, and narcissistic. He has evoked a narrower range of sympathetic response, but he has a small, distinct cadre of like-minded readers—readers for whom words such as "aestheticism" and "decadence" evoke no unpleasant connotations.

The use of personality factors as categories of analysis need not pretend to be exhaustive. These factors can be combined with any array of significant traits—for instance, of sex or gender, age, social class, national or ethnic identity, and cultural

period (Sugiyama 1996: 406–411.) But if personality dimensions are, in fact, part of the evolved structure of the human psyche, they provide us with terms that are in themselves important and that can serve as stable points of comparison.

Pinker (1997: 315) observes that "cognitive scientists think of people as Mr. Spock without the funny ears," and a similar observation could be made of the cognitive rhetoricians. If we accept the stipulation that the organizing principles of literary representation run parallel to the structure of human motives and concerns, we must also accept an implication that takes us outside the range of conceptual analysis in cognitive rhetoric and brings us into the psychology of emotion. Motives and concerns are mediated not, in the first place, by conceptual patterns or metaphoric systems. They are mediated most directly by feelings or affects, by desire and fear, by pleasure and pain. Ekman (1994: 147) argues that "the commonalities in the antecedent events that call forth each emotion are the product of our evolution and reflect the most important or frequent events our ancestors encountered." Motives and emotions evolved together. Both have to be understood within the framework of evolutionary psychology.

Metaphors have imaginative and specifically literary value only if they are able to engage and evoke the subjective quality of experience. Feelings are the basis of tone in literary texts, and tone is the basis of generic structure. Working out from a concept of the evolved structure of human motives and concerns, we can derive a reasonable framework for analyzing both the subjects of literary representation and the emotional affects that give subjective value and meaning to represented events. To give value and meaning is to impose shape; it is to define what, subjectively, constitutes an "event."

In the study of emotions, as in the study of cognitive domains and personality factors, there is a good deal of controversy over the identification of the specific units of analysis and the larger categories within which they are grouped. There is nonetheless a fair consensus on certain core emotions, particularly on the six emotions identified by Ekman as having distinct facial expressions that are recognizable across diverse cultures. These six basic emotions are joy, sadness, fear, anger, disgust, and surprise. All of these emotions are essential components in the tonal and generic structures in literary texts. Sadness is the basis of elegy and tragedy; and happiness the basis of comedy. Surprise is essential to suspense, and anger and disgust are the animating sentiments of satire. (On universal, species-typical emotions, see Brown 1991: 134; Ekman and Davidson 1994; Lewis and Haviland 1993; Pinker 1997: 366.)

The main plot structures in literary representations map simultaneously onto elementary human motives and basic emotions. The story of growth from childhood to adulthood, the adventure quest, the romantic comedy love story, the saga of revenge, the drama of jealousy—all have their place in the structure of elemental human motives, and they each have their characteristic set of emotions. The reading audience characteristically participates in the emotional experiences of the characters, sympathizes with them, experiences anxiety and hope as their fortunes vary, and finally experiences satisfaction or disappointment at the outcome of the action.

The basic emotional trajectory of any plot can be modulated through any combination of other emotions. The joy and anxiety of a romantic comedy plot like that

of *Pride and Prejudice*, for example, can be modulated by anger and disgust, fear, remorse, shame, defiance, gratitude, and compassion. The main plot structure nonetheless follows a primary emotional trajectory, and this trajectory serves as the principle around which all the other emotions are organized. In this respect, the emotional trajectory of a literary work is parallel to the representation of motives. That is, the array of incidental motives in any representation is brought into subordinate order to the elemental motives that determine the primary plot structure. Elemental human motives and emotions provide the deep structure of literary representations, and this deep structure serves to organize subordinate motives and subordinate emotions.

Recall for a moment Mithen's appeal to cognitive fluidity: "When thoughts originating in different domains can engage together, the result is an almost limitless capacity for imagination" (Mithen 1996: 71). The range of metaphoric combination is limitless, but combinations become meaningful only by being integrated with the elemental structure of human motives and human emotions. Even the most fanciful and fantasmagoric literary texts—for example, George MacDonald's hallucinatory allegories of spiritual experience, *Phantastes* and *Lilith*—speak to us and move us because their fantasies give metaphoric form to elemental passions and universal concerns—to themes of life and death, personal identity, sexual desire, parental affections, and to the love of friends and the hatred of enemies.

The question of the adaptive function of literature is at present highly controverted. Literary theorists who take fitness maximization as a direct motive speculate that the writing of literature is a form of social manipulation or of sexual display (Constable 1997; Miller 1998; Sugiyama 1996). From this perspective, writing is a means of attracting attention, enhancing prestige, and thus advancing one's reproductive prospects. The question of function is reduced directly to "ultimate" function, and the psychological functions specific to literature are simply passed over. Pinker (1997: 534–543) follows the traditional division of literary function into two parts—use and pleasure, or instruction and entertainment. As instruction, he says, literature serves an adaptive function because it provides us with models for situations we might meet with in our own lives. As a form of pleasure, literature is a nonfunctional by-product of higher cognitive processes. In describing the pleasures specific to literature, Pinker, like Freud (1959: pp. 146–147), suggests that literature is mainly a means of fantasy fulfillment (see also Buss 1999: 407–410).

The argument I am making for the way literature grounds itself in elemental motives and basic emotions suggests a different hypothesis about its psychological function. Literature is satisfying—moving or disturbing—not in the degree to which it fulfills fantasy expectations—though it can do this—but in the degree to which it provides a sense of psychological order. It provides order by depicting the particularities of time and place—of cultural context, individual circumstance, and personal character—and by integrating these particularities with the elemental structures of human concerns. Through literature and its oral antecendents, we recognize the elemental structures of human concerns in our own lives and in those of others. We filter out the trivial and the tangential aspects of experience and see into the deep structure of our nature. And we not only "see"—not only understand objectively.

Through stories and verse and dramatic enactments—whether written or oral—we realize our deeper nature in vividly subjective ways. Through such realization, we situate ourselves consciously within our environments and organize the feelings and thoughts through which we regulate our behavior. Literature produces pleasure, but it is not merely a "pleasure technology" equivalent to recreational drugs (Pinker 1997: 528). It is one of the primary means through which we regulate our complex cognitive machinery. It contributes to personal and social development and to the capacity for responding flexibly and creatively to complex and changing circumstances (Boyd 1998; Carroll 1998; Dissanayake 1992, forthcoming; Storey 1996).

As Pinker argues, literature presents simulated situations through which we can model our own behaviors, but it does not only provide game plans for specific situations. It integrates emotional processes with elemental motives in highly particularized circumstances that we might never encounter—for example, the circumstance of being stranded on an island like that of Robinson Crusoe. The utility of reading about such experience does not depend on duplicating it in literal terms. Readers register the qualities of character through which Crusoe sustains himself in solitude, and they integrate these perceptions with the repertory of their psychological potentialities. Moreover, imaginatively assimilated experience serves not only to guide our own behavior but also to assess the experience of others. In this latter regard, literature is a medium for cultivating our innate and socially adaptive capacity for entering mentally into the experience of other people (Brown 1991: 135; Buss 1995: 17.)

The predominant forms of literary study at the present time offer unqualified assent to a "historicist" belief that all experience is determined by autonomous and historically unique cultural processes (Carroll 1995; Dissanayake 1992; Storey 1996). Such beliefs are parallel to the belief in cultural autonomy that distinguishes the Standard Social Science Model (Brown 1991; Degler 1991; Fox 1989; Freeman 1999; Tooby and Cosmides 1992). Evolutionary psychology can revise such views by demonstrating that elemental, species-typical motives constrain all specific cultural forms. Of all competing theoretical alternatives, evolutionary psychology gives the most access to the elemental structure of human concerns. It thus offers the best available framework for understanding the psychological functions and represented content of literature. As a framework for literary study, evolutionary psychology can best fulfill its promise by integrating the basic principles of inclusive fitness with models for the analysis of personality and emotion.

## REFERENCES

Alexander, R.D. *The Biology of Moral Systems.* New York: Aldine de Gruyter, 1987.

Arnhart, L. *Darwinian Natural Right: The Biological Ethics of Human Nature.* Albany, NY: State University of New York Press, 1998.

Ashton, M.C., Paunonen, S.V., Helmes, E., and Jackson, D.N. Kin altruism, reciprocal altruism, and the big five personality factors. *Evolution and Human Behavior* 19: 243–255, 1998.

Barash, D.P. In search of behavioral individuality. *Human Nature* 8: 153–169, 1997.

Barkow, J.H. *Darwin, Sex, and Status: Biological Approaches to Mind and Culture.* Toronto: University of Toronto Press, 1989.

Barrow, J.D. *The Artful Universe.* Oxford: Clarendon Press, 1995.

Betzig, L. History. In *The Sociobiological Imagination*, M. Maxwell (Ed.). Albany, NY: State University of New York Press, 1991, pp. 131–140.

Bouchard, T.J., Jr. Genes, environment, and personality. *Science* 264: 1700–1701, 1994.

Boyd, B. Jane, meet Charles: literature, evolution, and human nature. *Philosophy and Literature* 22: 1–30, 1998.

Brown, D. *Human Universals.* Philadelphia: Temple University Press, 1991.

Buss, D.M. Evolutionary psychology: a new paradigm for psychological science. *Psychological Inquiry* 6: 1–30, 1995.

Buss, D.M. *Evolutionary Psychology: The New Science of the Mind.* Boston: Allyn and Bacon, 1999.

Carey, S., and Spelke, E. Domain-specific knowledge and conceptual change. In *Mapping the Mind: Domain Specificity in Cognition and Culture*, L.A. Hirschfeld and S.A. Gelman (Eds.). Cambridge: Cambridge University Press, 1994.

Carroll, J. *Evolution and Literary Theory.* Columbia: University of Missouri Press, 1995.

Carroll, J. Steven Pinker's cheesecake for the mind. *Philosophy and Literature* 22: 578–585, 1998.

Constable, J. Verse forms: a pilot study in the epidemiology of representations. *Human Nature* 8: 171–203, 1997.

Cosmides, L., and Tooby, J. Origins of domain specificity: the evolution of functional organization. In *Mapping the Mind: Domain Specificity in Cognition and Culture*, L.A. Hirschfeld and S.A. Gelman (Eds.). Cambridge: Cambridge University Press, 1994, pp. 85–116.

Daly, M., and Wilson, M. Is parent-offspring conflict sex-linked? Freudian and Darwinian models. *Journal of Personality* 58: 163–189, 1990.

Darwin, C. *The Descent of Man, and Selection in Relation to Sex,* 2 vols., 1871, Reprint (2 vols. in 1), with an introduction by J.T. Bonner and R.M. May. Princeton: Princeton University Press, 1980.

Degler, C.N. *In Search of Human Nature: The Decline and Revival of Darwinism in American Social Thought.* Oxford: Oxford University Press, 1991.

Digman, J.M. Personality structure: emergence of the five-factor model. *Annual Review of Psychology* 41: 417–440, 1990.

Dissanayake, E. *Homo Aestheticus: Where Art Comes From and Why.* New York: Macmillan, 1992.

Dissanayake, E. *Art and Intimacy: How the Arts Began.* Seattle: University of Washington Press, forthcoming.

Ekman, P. Antecedent events and emotion metaphors. In *The Nature of Emotion: Fundamental Questions*, P. Ekman and R.J. Davidson (Eds.). New York: Oxford University Press, 1994, pp. 146–149.

Ekman, P., and Davidson, R.J. (Eds.). *The Nature of Emotion: Fundamental Questions.* New York: Oxford University Press, 1994.

Eysenck, H.J., and Eysenck, M.W. *Personality and Individual Differences: A Natural Science Approach.* New York: Plenum, 1985.

Fox, R. *The Search for Society: Quest for a Biosocial Science and Morality.* New Brunswick, NJ: Rutgers University Press, 1989.

Fox, R. Sexual conflict in the epics. *Human Nature* 6: 135–144, 1995.

Freeman, D. *The Fateful Hoaxing of Margaret Mead: A Historical Analysis of Her Samoan Research.* Boulder, CO: Westview, 1999.

Freud, S. *The Standard Edition of the Complete Psychological Works of Sigmund Freud.* Trans. and ed. under the general editorship of James Strachey, in collaboration with Anna Freud, assisted by Alix Strachey and Alan Tyson. Vol. 9, *Jensen's "Gradiva" and Other Works.* London: Hogarth, 1959.

Gazzaniga, M.S. What are brains for? In *Mind and Brain Sciences in the 21st Century*, R.L. Solso (Ed.). Cambridge: MIT Press, 1997, pp. 157–171.

Johnson, M. *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason.* Chicago: University of Chicago Press, 1987.

Lakoff, G. *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind.* Chicago: University of Chicago Press, 1987.

Lakoff, G., and Johnson, M. *Metaphors We Live By.* Chicago: University of Chicago Press, 1980.

Lakoff, G., and Johnson, M. *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought.* New York: Basic Books, 1999.

Lewis, M., and Haviland J.M. (Eds.). *Handbook of Emotions.* New York: Guilford Press, 1993.

MacDonald, K. A perspective on Darwinian psychology: the importance of domain-general mechanisms, plasticity, and individual differences. *Ethology and Sociobiology* 12: 449–480, 1990.

MacDonald, K. Evolution, the five factor model, and levels of personality. *Journal of Personality* 63: 525–567, 1995.

McCrae, R.R. (Ed.). The five-factor model: issues and applications [Special issue]. *Journal of Personality* 60: 175–532, 1992.

McGuire, M., and Troisi, A. *Darwinian Psychiatry.* New York: Oxford University Press, 1998.

Mealey, L. The sociobiology of sociopathy: an integrated evolutionary model. *Behavioral and Brain Sciences* 18: 523–541, 1995.

Miller, G.F. How mate choice shaped human nature: a review of sexual selection and human evolution. In *Handbook of Evolutionary Psychology*, C. Crawford and D. Krebs (Eds.). Mahwah, NJ: Erlbaum, 1998, pp. 87–130.

Miller, G.F. Looking to be entertained: three strange things that evolution did to our minds. *Times Literary Supplement* No. 4985: 14–15, October 16, 1998.

Mithen, S. *The Prehistory of the Mind: The Cognitive Origins of Art, Religion, and Science.* London: Thames and Hudson, 1996.

Pinker, S. *The Language Instinct: How the Mind Creates Language.* New York: William Morrow, 1994.

Pinker, S. *How the Mind Works.* New York: W.W. Norton, 1997.

Sperber, D. The modularity of thought and the epidemiology of representations. In *Mapping the Mind: Domain Specificity in Cognition and Culture*, L.A. Hirschfeld and S.A. Gelman (Eds.). Cambridge: Cambridge University Press, 1994, pp. 39–67.

Spolsky, E. *Gaps in Nature: Literary Interpretation and the Modular Mind.* Albany, NY: State University of New York Press, 1993.

Storey, R. *Mimesis and the Human Animal: On the Biogenetic Foundations of Literary Representation.* Evanston, IL: Northwestern University Press, 1996.

Sugiyama, M.S. On the origins of narrative: storyteller bias as a fitness enhancing strategy. *Human Nature* 7: 403–425, 1996.

Symons, D. On the use and misuse of Darwinism in the study of human behavior. In *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, J.H. Barkow, L. Cosmides, and J. Tooby (Eds.). Oxford: Oxford University Press, 1992, pp. 137–159.

Thiessen, D., and Umezawa, Y. The sociobiology of everyday life: a new look at a very old novel. *Human Nature* 9: 293–320, 1998.

Tooby, J., and Cosmides, L. On the universality of human nature and the uniqueness of the individual: the role of genetics and adaptation. *Journal of Personality* 58: 17–67, 1990.

Tooby, J., and Cosmides, L. The psychological foundations of culture. In *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, J.H. Barkow, L. Cosmides, and J. Tooby (Eds.). Oxford: Oxford University Press, 1992, pp. 19–136.

Turner, M. *Reading Minds: The Study of English in the Age of Cognitive Science.* Princeton: Princeton University Press, 1991

Turner, M. *The Literary Mind.* New York: Oxford University Press, 1996.

Whissell, C. Mate selection in popular women's fiction. *Human Nature* 7: 427–447, 1996.

Wilson, D.S. Adaptive genetic variation and human evolutionary psychology. *Ethology and Sociobiology* 15: 219–235, 1994.

Wilson, D.S. Individual differences in Machiavellianism as a mix of cooperative and exploitative strategies. *Evolution and Human Behavior* 19:203–212, 1998.

Wilson, J.Q. *The Moral Sense.* New York: Macmillan, 1993.