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3 Literature and evolution

Joseph Carroll

The occasions and parts of this chapter

The audience at the 2004 symposium on 'Literature, Science and Human Nature' consisted both of academics and educated lay people. I was invited to participate in the symposium because I had published a book and a number of articles in which I had sought to integrate literary study with Darwinian social science.¹ In the talk I gave, I described the way I had arrived at Darwinian thinking, located my own intellectual history in the larger history of modern literary study, and sketched out the main features in my theory of literary meaning. In the second part of the chapter below, 'Coming home to human nature', I'll go back over the main points in that presentation.

To give a more interactive character to the symposium, the presenters were grouped into 'seminars' of twos or threes, and we were encouraged to engage in dialogue with one another and with the audience. I was paired off with the geneticist Gabriel Dover, and our seminar was entitled 'Can Science and Literature Collaborate to Define Human Nature?' Gabriel and I have distinctly different views on evolution, human nature and literature, so this pairing offered an occasion for some vigorous debate. Most of that debate took place in email exchanges before the symposium. To exploit the rhetorical advantages of a debate – the direct conversational speech and the stimulus of differing views – in the third part of this chapter, 'Human universals and individual identities in literature', I'll transcribe portions of the exchange with Gabriel. These comments should give a more vivid and particular sense of how I think human experience is absorbed into literary representation.

It is relatively easy to affirm that we can incorporate information from Darwinian psychology into our understanding of human nature and literary representation. It is more difficult to find ways to incorporate the actual methods of science into literary study: data

collection, empirical testing, falsification. More difficult, but not impossible. In the fourth section of the chapter, 'Taking up the challenge of scientific method in literary study', I'll explore that question, suggest some possible solutions, and describe a collaborative project designed to help bring those solutions into reach.

Coming home to human nature

'What kind of knowledge am I ultimately supposed to produce?' When I was a student, some 30 years ago, that question did not at first present itself to me in a provocative way. My energies were sufficiently challenged by learning the skills of literary research, developing expertise in interpretive analysis, learning languages, and absorbing information about the philosophical and historical contexts of literature. None of this was science, exactly, but I took it for granted that science and literary study shared an ordinary respect for logic and fact. As I matured towards professional scholarly study, I became steadily more sensitive to the difficulties of contributing something new to knowledge and understanding. My earliest solutions to that challenge were twofold: on the one side to seek expansive scholarly contexts in intellectual history and 'comparative literature', and on the other side to delve into authors or texts that seemed particularly difficult or problematic, aiming to tease out structures of meaning that for one reason or another had not yet been adequately understood. (The spirit behind this latter strategy finds evocative literary expression in Henry James's story 'The Figure in the Carpet.') In my first book, on Matthew Arnold's cultural theory, I emphasized the first of these two strategies. In my second book, on the modern American poet Wallace Stevens, and in subsequent work on Walter Pater, I emphasized the second.

While I was following the trajectory I have described, the larger community of academic literary scholars was moving in a different direction.

During the middle decades of the twentieth century, academic literary study had been mainly divided into two fields of action: (a) basic

scholarship for establishing texts, collecting letters and writing biographies; and (b) interpretive exegesis or the close reading of specific texts. In Victorian literature, my own field, signal instances of such basic scholarship include Gordon Haight on George Eliot, Leon Edel on Henry James, and R. H. Super on the prose works of Matthew Arnold. The close reading of specific texts – studies in imagery, tone and verbal structure – is associated particularly with the work of 'New Critics' such as Brooks and Warren in America and I. A. Richards and William Empson in England. The formalistic analyses of the New Critics had been extended and supplemented by ethical or moral content criticism such as that of F. R. Leavis and the Chicago Aristotelians.²

By the late 1970s, both forms of traditional criticism had begun to show signs of fatigue. The basic scholarship on most canonical authors had been completed. And the proliferation of formalistic 'readings' of individual texts had reached a point of rapidly diminishing returns. Saturation and repetition were leading to increasingly desperate and ingenious exercises in over-reading – fabricating imaginary figures in real carpets. The signal for a change of institutional strategy was clearly and effectively sounded in 1975 in Jonathan Culler's *Structuralist Poetics*.³ Culler boldly identified the problem of saturation and pointed the way towards a vast new field of endeavour. Literary scholars should not, he recommended, continue to read literary texts. They should instead concentrate their commentary on the medium and method of linguistic signification. More specifically, they should devote their energies to assimilating and elaborating the theories of the Continental structuralists. This appeal had scarcely been made before structuralism was already obsolete; but the position assigned by Culler to the structuralists was also already occupied by the poststructuralists – by theorists such as Althusser, Derrida, Foucault, Lacan, Kristeva, Jameson and Fish – and the academic literary community migrated en masse into this new territory.

Literary exegesis did not cease, but it did take on a different look. Most traditional literary study, both scholarship and criticism, had presupposed that texts had determinate meanings and that the

business of literary study was to explain or at least describe those meanings. In Matthew Arnold's redundantly emphatic phrase, the business of criticism was 'to see the object as in itself it really is'.⁴ The new poststructuralist doctrines explicitly denied the reality of determinate meanings and instead absorbed literary texts within a universal field of perpetually shifting and self-cancelling semiotic activity. The object-in-itself-as-it-really-is ceased to exist, and the business of criticism became instead the effort to process any given text through some particular theoretical or critical idiom. Lacan's poststructuralist Freudianism gave psychological content to this enterprise; Althusser's poststructuralist Marxism gave it social content; and various forms of radical political affiliation – feminism, postcolonialism, multiculturalism, and queer theory – infused it with moral purpose and social passion.

The deepest ideological animus that united the intellectual and political impulses in poststructuralism was provided by Michel Foucault, and that animus provided also a common ideological stance or persona for the profession. Following Foucault, and citing him with a frequency and submissiveness like that with which the orthodox schoolmen cited Saint Thomas Aquinas, poststructuralist theorists envisioned all texts as media not of knowledge but of 'power'. In the discursive field defined by the Foucauldian poststructuralists, claims for determinate meanings associate themselves with the normative ideological values of dominant social groups – males, heterosexuals, colonial powers and the bourgeois elite – and poststructuralist 'demystification' associates itself with the subversive self-affirmations of social groups previously subordinated or suppressed.

Poststructuralist epistemology and ideology are universalizing. Under the poststructuralist banner, literary culture or humanistic scholarship no longer occupies its own special and distinct enclave within the faculty of the liberal arts. 'There is no outside the text.' Step outside the boundaries of deconstructive rhetorical analysis, and one simply falls off the face of the earth. Chemistry, physics, physiology? They are discourse, and yet more discourse – part of the whole mystified apparatus of phallogocentric domination imposed on an

underworld of subordinate binary terms now rising up, through the medium of academic literary publication, as a subversive subterranean force, volcanically erupting before the astonished and awed gaze of a destabilized epistemic hegemony. Or so it seemed to those under the spell of Derridean epistemology and Foucauldian ideology.

For the first few years, no one outside the academic literary world paid much attention to poststructuralist claims to encompass science within the field of deconstructive rhetorical analysis. But beginning in the middle of the 1990s, a series of whistle-blowing critiques brought this movement into the light of public scrutiny, and public scandal. The scathing exposés of Paul Gross and Norman Levitt, followed up by the devastating parodic duplicity of Alan Sokal, considerably chastened the vainglory of poststructuralist claims for epistemic world hegemony.⁵ The poststructuralists have not repudiated their fundamental tenets, but they are more cautious now about making public claims that are likely to end up only embarrassing them.

In recent years, the revolutionary drive of poststructuralism has lost much of the euphoric energy that attended its early expansion. New theoretical impulses have been lacking, and the liberationist fervour attendant on championing subordinate binary terms has settled into bureaucratic routine. Poststructuralism is now an establishment, and it is confronted with problems of saturation and repetition similar to those which undermined the older forms of literary study that it replaced.

Poststructuralism never tempted me. My epistemic alignments have always been those of the Enlightenment, of reason and empirical study, and that general disposition was strongly supplemented by an imaginative conviction about the truth of evolution, including human evolution. I believed in human nature, and in this respect my views were in concord with those of most authors in world literature. Coming of age in an intellectual world that had been transformed by the discoveries of Darwin, Mendel, Crick and Watson, I conceived of human nature as an innate set of genetically constrained dispositions. In my earlier career, as a traditional humanist, I had supposed I could get by with casual appeals to common knowledge about

human nature. By the late 1980s, though, that old-fashioned sort of Enlightenment humanism had clearly become untenable. It was not wrong, so far as it went, and certainly not inferior, in my own mind, to the strange unrealities of poststructuralist claims for the purely 'constructed' character of human motives and values. But academic scholarship is a social enterprise, and no one hoping to engage the attention of other scholars could simply ignore the triumphalist claims of poststructuralist ideology. One could not ignore them, but one did not necessarily have to go along with them either. Another option was to formulate a completely different basis for literary study and to set that new basis into active opposition with the prevailing paradigm.

In the past 15 years or so, I have been working to develop a new Darwinian understanding of literature. At first, I thought I was working alone, but there were other people like me out there, most of us thinking ourselves isolated; many of us gradually came to know one another through conference panels and publishing ventures. Literary Darwinism now has a distinct profile constituted by a substantial body of publications.⁶ It is an expanding presence within the field of Darwinian social science, but as a presence within mainstream literary study, it is still virtually undetectable.

The prospects for change are most interesting. Over the past three decades, during roughly the same period that poststructuralism rose to domination within literary academe, Darwinian thinking about human nature has emerged as the most powerful productive force within the social sciences. In just the past decade, Darwinian anthropology and evolutionary psychology have made exponential gains in mainstream academic social science, and they have also captured a large readership among the most inquiring minds in the educated lay public. While poststructuralist writing languishes in a period of stasis – an object of distaste and often of ridicule among much of the educated lay public – new and exciting information on human behaviour and cognition appears almost daily from evolutionary psychology and its affiliated disciplines in anthropology, cognitive neuroscience, behavioural ecology, and behavioural genetics. From

the correspondence I receive, I know that many students and younger literary scholars are eager to take advantage of this information, but they are still finding it difficult to gain acceptance for their interests within the academic literary establishment. Within the next few years, there is a good chance that we shall have an opportunity to observe a new epistemic revolution. Meanwhile, those of us who have tenure and have managed to survive on the margins of the literary establishment will continue developing our own research programmes.

I'll briefly outline here the chief claims I have made about literature and human nature. I begin with 'evolutionary epistemology', the idea that the mind has evolved in an adaptive relation to the actual world and that it can give us reasonably adequate access to the world outside ourselves. I also emphasize the structural importance of the biological concepts of organism and environment and correlate those terms with the literary terms 'character' and 'setting'. The third chief element of literary representations is 'plot' or a connected sequence of events in which characters either achieve or fail to achieve fulfilment in their purposes. To delineate the content of those purposes, I make appeal to the idea of a limited and structured set of basic human behavioural dispositions: for survival, mating and reproduction, forming kin networks, negotiating complex social systems, manipulating technology, and constructing systems of meaning through forms such as narratives, art, music, myths, religions, ideologies, philosophies and science. I identify three levels for the organization of human motives: (a) elemental, species-typical dispositions; (b) the variable organization of those dispositions within specific cultural ecologies; and (c) the peculiarities of individual identity, as that identity is modulated through varying innate potentials and the accidents of individual experience. I emphasize that meaning in literature, as in life, is always located in some specific mind, and I draw a direct link between the individual mind and the literary concept of 'point of view'. I argue that literature or its oral antecedents are fundamentally social and communicative in nature, and I specify that literary meaning works itself out in the interactive relations among three points of view: that of the author, that of the

characters depicted, and that of the audience. I note that literature takes as its central subject the nature of human experience and that it is suffused with subjective, affective sensation. I correlate affective sensation with 'tone' in literature, and in order to provide a scientific point of entry for the concept of 'tone' I invoke the theory of 'basic emotions' as delineated by Paul Ekman, Robert Plutchik and others.⁷ To gain a scientific point of entry for the idea of individual identity, I invoke the most advanced current theory of personality: the theory of the Big Five personality factors, or the Five-Factor Model.⁸ In discussing with evolutionary psychologists and other literary theorists the question as to whether the proclivity for producing and consuming literature is an evolved and adaptive behaviour, I reject the idea that literary behaviour is merely a by-product of other cognitive processes; I accept the idea, formulated by Steven Pinker and others, that literature can provide adaptively useful information, but I argue that the deeper adaptive function of literature is to provide an emotionally saturated image of the world in which we live. We use these images to organize and guide our complex motivational systems.⁹ I maintain that the need to produce and consume aesthetic imaginative artefacts is as real and vital a need as the need to eat, to have sex, to tend offspring, and to develop and sustain relations within a social network.

Human universals and individual identities in literature

In our email exchange, Gabriel Dover's formulations prompted me to explain my views about how human experience enters into literary representations. I shall quote only as much of Gabriel's comments as are requisite to establish the occasion for my own remarks. Gabriel's views on such matters are given more scope in his own essay in this volume.

Traditionally, literary people have emphasized the qualitative and mysterious aspect of human experience, and people in science have inclined towards including human experience within the range of

quantifiable phenomena that can be empirically tested. As Gabriel notes in one of the passages I'll quote below, one curious feature in our exchange is the reversal of these traditional roles.

I'll present the comments in dialogue form.

Gabriel Dover:

My main message will be that with reference to the all-important issue of the biological basis of individuality and the definition of human nature, the collaboration between biology and literature (the set theme of our joint session) is decidedly one-sided in that literature captures the essential unknowability of each individual phenotype in a way that biology has not with its generalized talk of 'universals'.

Joseph Carroll:

It looks as if we are well sorted for presenting issues for a discussion. We are concerned with some similar issues and come at them from somewhat different angles. For the past several years, I've been chiefly occupied with developing an adaptationist or Darwinian approach to literature. I've drawn heavily from sociobiology and evolutionary psychology but have also repeatedly criticized evolutionary psychologists and some Darwinian literary critics for discounting individuality and focusing too exclusively on 'human universals'. I don't think it would be possible in practice to predict the precise behaviour of any given individual, but I do believe that all behaviour and all mental experience are ultimately determined by a distinct causal network – a network that can be described as a set of interactions among organismic potentials ('innate' properties or dispositions) and environmental conditions. I agree that the precise configuration of these interactions at any given point in time is unique. That precise configuration has never existed before, if for no other reason than that one new element is always the cumulative force of all previous events, and that changes from moment to moment. Still, the scope that I would accord to individuality is probably considerably less, I would gather, than you would accord to it.

My own temperamental disposition is to believe quite strongly in individuality. When I was a child, I sometimes bemused myself with meditating on the hypothetical sensation of genuinely experiencing the qualitative subjectivity of some other person – any other person. At that time, I gave an emphasis to this qualitative difference much, much stronger than I would give it now. My supposition then was that if for even a single moment we could be placed inside the experiential field of another human being, the sense of alien strangeness would be so strong we might actually expire from sheer experiential shock. I now tend to think that in many of our characteristic modes of feeling and perceiving we are fairly similar to one another. I imagine in basic ways our sensations, passions and perceptions are largely interchangeable.

One of my chief concerns as a literary theorist and practical critic is to find good ways to talk simultaneously about the integration of identity on three levels: the level of shared elemental motives and dispositions ('human universals' or 'human nature'); the level of specific cultural configurations (Homeric Greece versus Victorian England versus medieval Japan, say); and the level of individual identity.

On the level of individual identity, I give a good deal of weight to peculiar genius, but even genius can be classed, I think, within specific parameters. The range of human variation is large but containable within definite categories.

Gabriel Dover:

There is the nub of an important difference between us regarding universals/individuality of human nature . . . In fact it's rather amusing that as a card-carrying evolutionary geneticist I'm empirically opposed to any meaningful definition of human form/nature outside that central unit of biological organization we call the individual; whereas you, as a literary critic, wrap up individuality within the constraints of some ultimate (adaptively inspired) causal network based on shared features . . .

In essence, I would argue against the three levels of identity that you describe (universals; culture; individual); and against your

argument that differences in personalities are adaptive in meeting the needs of their 'evolved motive dispositions'.

Joseph Carroll:

Here are two key points on which we would disagree, with respect to individuality and human nature:

(a) I would argue that human nature or human universals or generalized concepts or pictures of human motives are always an active concern in literary representations. Literary depictions can be ranged on a scale, with highly abstract or generalized depictions at one end of the scale, and with highly individualized depictions at the other end. Some literary works – myths and allegories, for instance – clearly lodge towards the abstractive end. When a character in a medieval allegorical drama steps on to the stage and announces, 'I am Sin', we are not talking about a highly individualized personal identity. When Bunyan depicts his characters in *Pilgrim's Progress* as Christian, and Mr Worldly Wise Man, again, the emphasis is on the general. In modern realist fiction or modernist stream-of-consciousness narrative, there is a clear effort to evoke the particularity of an individual identity, modulated both by innate temperamental dispositions and also by the accidents of individual experience. Between these two extremes, most fiction takes place. The middle ground can be clearly observed in that kind of mixed fiction in which some characters are purely type characters and some characters are highly individualized. Fielding in *Joseph Andrews* or *Tom Jones* presents many characters whose very names identify their types as types, and he presents other characters who are very believably distinct individuals. Mr Allworthy is All Worthy, but Tom Jones and Mr Blifil are distinct individual persons. Dickens, Thackeray and Trollope do the same thing – with the mixing and blending of types and individuals. Sometimes a type emerges for a moment as an individual, with a vividly distinct centre of personal consciousness, and very often the highly individualized characters sink back into stereotypical patterns and formulaic responses. In *Middlemarch* Eliot presents the desiccated old scholar Casaubon from a number of perspectives. In the view of most

characters, he is only a stereotype of the dull, plodding pedant. Eliot makes an explicit point of moving outside that perspective, moving inside Casaubon's own perspective, and evoking the individuality of his own sense of the world.

No character is either wholly generalized or wholly individualized. All allegorical characters are still individual characters – persons, first-person persons. It is Sin who says, 'I am Sin', but it is 'I' who makes that self-presentation. All individual characters share the common humanity of their form – not just their two legs and two eyes, but their common forms of orientation in space and time, perceptual faculties, modes of organizing concepts, and distinctly human ranges of feeling and value. No matter how highly individualized, every character is still also emblematic of elemental forms of feeling, thought and perception. Madame Bovary is an individual, but she is also a type. Prince André in *War and Peace* is an individual, but his social role is stereotypical; he never escapes from it, and his motives and responses are all easily calculable within the standard human repertory of ambition, love, jealousy and disgust.

(b) The sense of the universal or the elemental is an integral part of individual human experience. These are not isolable and separate components, such that one could say, 'Oh, literature is really only interested in individuals.' This too can be conceived as a polar continuum. People sense their peculiar individuality. I actually remember the first time I ever did. I was two years old, sitting in the back seat of a car. The car had been packed with goods and was towing a trailer, because the whole family was moving. The car was parked in a yard, for easier packing, and when it moved off, it went over the kerb stone and there was a sharp bounce. Being quite small, I bounced off the seat. At the top of the bounce, I became self-consciously aware for the first time in my life, glanced around for a microsecond, observed something to the effect, 'Oh, I'm alive', and settled back down. The emphasis in that statement was spread evenly across the personal pronoun and the predicate adjective. 'Oh, I'M alive', and 'Oh, I'm ALIVE'. There is a me, and that me is alive. Being alive is most peculiar. The point of this anecdote is that yes, the sense of individual

identity is something distinct and important. Without it, there would be no literature, no art, nothing but the instinct-guided perceptual apparatus that presumably limits animal consciousness to its immediate sensory surround and the promptings of local action.

People sense their peculiar individuality. All thought and all feeling are contained within individual minds. If one gets carried away by this observation, as Walter Pater did, one might be tempted to make the false claim that every one of us is surrounded by a thick wall of personality through which no other living voice has ever penetrated. But Pater was a neurotic introvert suffering from the self-suppressed sexuality and isolation imposed on him by his position as an Oxford don. He didn't want to end up in jail like Oscar Wilde, and in any case, unlike Wilde, he simply had no talent either for gregariousness or for intimacy.

Pater was wrong. People do sense the experience of other people. It varies a lot from person to person. Differences in empathy are measurable. What one senses in other people is not just the ineffable peculiarity of their unique individuality. What one senses is the common medium of common perception, common thought, common passion. If people were truly 'unique' in any very radical way, it would not be possible for ordinary empathy, ordinary insight into others' minds, to take place. Moreover, even the sense of individual uniqueness is itself one of those human universals that we all recognize in one another. Paradoxically if you will, we all see that every one of us feels distinct. Each of us is a distinct centre of consciousness, feeling, desire and value. That recognition can be the basis for all civil behaviour and tolerance. It can also be used, in a Machiavellian way, to manipulate the gullible, to play on their vanity and credulity. No one has ever occupied my particular point in space and time before, or had the exact combination of neurochemical dispositions and the exact same sequence of personal experiences I have had, or that you have had, or that anyone has had. But your hunger is not much different from mine, your desire for friends or love, your sensitivity to charges against your own self-esteem – all that is as common as dirt, in you, me and everybody.

Art evokes particularity in sensation and identity. Yes. Art evokes elemental and common experience. Yes. One of the features of particular experience is that actual, subjective sensation of elemental experience. We don't just sense ourselves as peculiar and unique moments of feeling and observation. We recognize in our sensations the common animal urges, the elemental passions. That is in itself a feature of great art. I don't think much of pure allegory. Medieval religious dramas are comically simple-minded. And the ultra-individualized internal monologues of Virginia Woolf strike me as tiresome and effete. My own standards of artistic response, and the active standards of many people in our modern Western culture, require both universality and individuality in highly developed forms. We need the sense of highly individualized identity because that is one of the hypertrophic features of our own culture (markedly different from that of many tribal societies, and different even from that of some traditional but highly developed Asian societies), but we also yearn for the sense of archetypal depth. Wallace Stevens and Yeats actively and consciously created new modern mythologies, new archetypal pantheons, connecting us once again with the elemental properties of earth – of time, and night and day, and the seasons, and the weather – and also with the elemental properties of human nature, with the yearning of infants for maternal warmth, the passion of tenderness for women, the exaltation of heroism, and the brooding terror of death. They created mythic figures who emblemized such elemental forces, and invested them with personal identity.

Taking up the challenge of scientific method in literary study

Literary Darwinism offers some new challenges and opportunities to interpretive literary exegesis. It offers new insight into the power and validity of some traditional concepts of literary analysis – character, setting, plot, point of view, and symbolism – and it also suggests new contexts of empirical analysis in which those concepts can be explored

and developed. 'Character' is the largest content category, and it invites research into the fields of adaptationist psychology: for instance, into developmental psychology, sex differences, mating strategies, family dynamics, social life, emotions and personality. Plot is formed out of actions based on human motives, and study of character extends into the understanding of plot. Plot and character both feed into symbolism, and the study of symbolic meaning should gain a new impetus from the cognitive neurosciences. Point of view is the chief locus of literary meaning – meaning is always meaning for someone – and the scientific study of point of view now has a broad thoroughfare opened to it in the theory of 'theory of mind' and 'empathy' to which Simon Baron-Cohen has made major contributions.

Providing new materials for literary exegesis is a legitimate goal of Darwinian literary study, but if that study were to stop there it would not have proceeded, methodologically, past the point at which old-fashioned Marxist and Freudian criticism used to operate – the point at which a putatively scientific vocabulary is used for intuitive and speculative commentary that remains outside the range of ideas that can be tested and falsified. If all Darwinian criticism did was to offer a new vocabulary of interpretive concepts, it would have made some advance; it would have advanced to just that extent to which Darwinian social science is an advance over Freudian psychology and Marxist sociology. But it would still be mired in that range of 'knowledge' in which validity is submerged within cogency, and cogency depends exclusively on the force of assertion, the credulity of response, or the consensus of an orthodoxy.

How do we break through this barrier? We must find ways to bring literary concepts and interpretive hypotheses within the range of testable propositions. One such possibility presents itself in cognitive neuroscience. 'Theory of Mind' is no longer merely theoretical. Research in neuroendocrinology and neuroimaging brings this concept into the range of study susceptible to empirical testing, and there is no good reason that we should not soon find ingenious ways of including literary responses in the phenomena that are thus tested.¹⁰ Another possibility presents itself in the statistical analysis of

literary content ('content analysis') and literary response. In the space remaining to me here, I'll give a brief description, by way of example, of one such project.

Jon Gottschall, a young literary scholar, developed a method for analysing human universals in large numbers of folk and fairy tales from diverse cultures. He also conducted a 'census' of signal features of characters in Western canonical literature.¹¹ Gottschall and I recently adapted this method to the analysis of the characteristics of protagonists and antagonists in Victorian novels – analysing motives, mate preferences and personal qualities.¹² The results from this initial study were intriguing enough to encourage us to undertake a larger, more ambitious project along similar lines. In company with Maryanne Fisher and Ian Jobling, the psychologist Dan Kruger had already developed a method for assessing the response of readers to characters who exemplify different sexual strategies in literary works.¹³ Kruger and another psychologist, John Johnson, are now collaborating with us in setting up a questionnaire on the web. (Johnson is a personality psychologist with extensive experience in web-based questionnaire research).¹⁴ We shall be soliciting ratings of motives, mate preferences and personality for characters in Victorian novels. The website lists about 2,100 characters from about 200 novels (Austen to Forster).

Using the responses we get from these questionnaires, we anticipate being able to draw significant conclusions about the depictions of male and female sexual identity, about motives and mate preferences, and about the characteristics of protagonists and antagonists in the novels. From those conclusions we can make strong inferences about the normative value structures among writers and readers in the period. We shall also be comparing depictions by male and female authors and responses in male and female readers. The data we collect and the conclusions we draw from them will be contributions to a relatively new branch of social science – the empirical study of literary representation. The knowledge thus obtained should have an intrinsic value and interest, and it should also provide a framework of empirical knowledge about the novels of the period. That framework should provide guidance and constraint for the examination of

structures of meaning within individual novels, authors, or groups of novels and authors.

Notes

1. Joseph Carroll, *Evolution and Literary Theory* (Columbia, MO: University of Missouri Press, 1995). All but the most recent articles have now been collected in Joseph Carroll, *Literary Darwinism: Evolution, Human Nature, and Literature* (New York: Routledge, 2004).
2. See M. H. Abrams, 'The Transformation of English Studies: 1930–1995', *Daedalus*, 126 (1997), pp. 105–32.
3. Jonathan Culler, *Structuralist Poetics: Structuralism, Linguistics, and the Study of Literature* (Ithaca: Cornell University Press, 1975).
4. Matthew Arnold, 'On Translating Homer', in *The Classical Tradition*, ed. R. H. Super, *The Complete Prose Works of Matthew Arnold*, 11 vols (Ann Arbor: University of Michigan Press, 1960–77), Vol. 1 (1960), p. 140.
5. Paul R. Gross and Norman Levitt, *Higher Superstition: The Academic Left and Its Quarrels with Science* (Baltimore, MD: Johns Hopkins University Press, 1994); Alan D. Sokal, 'Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity', *Social Text*, 14 (1996), pp. 217–52.
6. For surveys of this literature, see Harold Fromm, 'The New Darwinism in the Humanities: From Plato to Pinker', *Hudson Review*, 56 (2003), pp. 89–99; Harold Fromm, 'The New Darwinism in the Humanities: Back to Nature, Again', *Hudson Review*, 56 (2003), pp. 315–27; Joseph Carroll, *Literary Darwinism*, pp. 11–22; Joseph Carroll, 'Evolutionary Psychology and Literary Study', in David Buss (ed.), *Handbook of Evolutionary Psychology* (New York: Wiley, forthcoming). Also see Jonathan Gottschall and David Sloan Wilson (eds), *The Literary Animal: Evolution and the Nature of Narrative* (Evanston, IL: Northwestern University Press, forthcoming).
7. Paul Ekman, *Emotions Revealed: Recognizing Faces and Feelings to Improve Communication and Emotional Life* (New York: Henry Holt, 2003); Robert Plutchik, *Emotions and Life Perspectives from Psychology*,

- Biology, and Evolution* (Washington, DC: American Psychological Association, 2003).
8. See David Buss, 'Social Adaptation and Five Major Factors of Personality', in Jerry S. Wiggins (ed.), *The Five-Factor Model of Personality: Theoretical Perspectives* (New York: Guilford Press, 1996), pp. 180–207; Gerard Saucier and Louis Goldberg, 'The Language of Personality: Lexical Perspectives on the Five-Factor Model', in Jerry S. Wiggins (ed.), *The Five-Factor Model of Personality: Theoretical Perspectives* (New York: Guilford Press, 1996), pp. 21–50; Jerry Wiggins and Paul Trapnell, 'Personality Structure: The Return of the Big Five', in Robert Hogan, John Johnson and Stephen Briggs (eds), *Handbook of Personality Psychology* (San Diego: Academic Press, 1997), pp. 737–65; Oliver P. John and Sanjay Srivastava, 'The Big Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives', in Lawrence Pervin and Oliver P. John (eds), *Handbook of Personality*, 2nd edn (New York: Guilford Press, 1999), pp. 102–38.
 9. In addition to the essays in *Literary Darwinism*, see Joseph Carroll, 'The Adaptive Function of Literature', in Colin Martindale, Paul Locher and Leonid Dorfman (eds), *Evolutionary and Neurocognitive Approaches to the Arts* (Amityville, NY: Baywood Publishing, forthcoming).
 10. For a commentary that assimilates recent neuroscience advances in theory of mind with a comprehensive model for the evolution of human intelligence, see Mark V. Flinn, David C. Geary and Carol V. Ward, 'Ecological Dominance, Social Competition, and Coalitionary Arms Races: Why Humans Evolved Extraordinary Intelligence', *Evolution and Human Behavior* (forthcoming).
 11. Jonathan Gottschall, *et al.*, 'Patterns of Characterization in Folk Tales Across Geographic Regions and Levels of Cultural Complexity: Literature as a Neglected Source of Quantitative Data', in *Human Nature*, 14 (2003), pp. 365–82; Jonathan Gottschall, *et al.*, 'Results of an Empirical Search for the Virgin-Whore Dichotomy', in *Interdisciplinary Literary Study*, 6 (2004), in press; Jonathan Gottschall, *et al.*, 'Sex Differences in Mate Choice Criteria are Reflected in Folktales from around the World and in historical European Literature', in *Evolution and Human Behavior*, 25 (2004), pp. 102–12; Jonathan Gottschall, *et al.*, 'A Census of the Western Canon: Literary Studies and Quantification', under submission.

12. Joseph Carroll and Jonathan Gottschall, 'Human Nature and Agonistic Structure in Canonical British Novels of the Nineteenth and Early Twentieth Centuries: A Content Analysis', in Uta Klein, Katja Mellmann and Steffanie Metzger (eds), *Anthropologie und Sozialgeschichte der Literatur Heuristiken der Literaturwissenschaft* (Paderborn, Germany: Mentis Verlag, forthcoming). For a summary of other studies in the quantitative, empirical analysis of literature, see Robin Dunbar, 'Why Are Good Writers so Rare? An Evolutionary Perspective on Literature', *Journal of Evolutionary and Cultural Psychology* (forthcoming).
13. Daniel Kruger, Maryanne Fisher and Ian Jobling, 'Proper and Dark Heroes as Dads and Cads: Alternative Mating Strategies in British and Romantic Literature', *Human Nature*, 14 (2003), pp. 305–17.
14. See <http://www.personal.psu.edu/faculty/j/5/j5j/IPIP/> (accessed 27/11/04).