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Abstract Rather than denying the insights of post-structuralist theory, literary interpretation and theory with an evolutionary cognitive perspective actually nestles nicely within a central niche of deconstructionist thinking, that is, the critique of representation. What we learn from recent cognitive science is that the meanings of texts are indeed unstable and dependent upon contingent contexts. While theories of neuronal activity can be understood as analogous to the critique of representation, the cognitive evolutionary argument supports Stanley Cavell's counterproposal, that is, that while our representational powers are not ideal they are sufficient. It is possible then to argue further that the very flexibility that destabilizes meaning is not only good enough, it is responsible for our success, such as it has been, in building and revising human cultures.

Situated within and enriching the insights of post-structuralist theory, cognitive literary theory confirms and clarifies issues previously dealt with by philosophical, psychoanalytical, and cultural theorists and is beginning to produce the kind of sophisticated literary scholarship rightly valued within our profession. Were I to locate the source of my optimism in a single moment of epiphany, I would refer to my having been convinced that Darwin's theory of evolution is significantly homologous to the post-structuralist critique of representation. A helpful text here is Daniel Dennett's (1995) reading of Darwin as a natural theory of permanently unstable ontological cate-

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gories. Based on Darwin's observation that evolved mechanisms might be reused for new purposes in new environments, Dennett (1995: 404–11) extends this natural argument against biological essentialism to a performative theory of natural (and perpetual) meaning. In this theory language meaning is fundamentally contingent or, as Jacques Derrida (1977: 174) described it in his deconstruction of J. L. Austin's speech act theory, compromised by the unsaturability of context. This confirms, for me, Hillis Miller's (1987: 291) claim that there is no escaping the "performative or positional power of language as inscription." The deconstructionist project has made it impossible to ignore "how the rhetorical or tropological dimension of language" undermines our confidence in stable, iterable, meaning (ibid.). My understanding of the usefulness of the cognitive way of talking about the cultural production of human minds and brains is, thus, based on an analogy between some elementary facts about the human evolved brain and the post-structuralist view of the situatedness of meaning and of its consequent vulnerability to the displacements and reversals that deconstructionist criticism reveals.

My neurons, it seems, are like me. They spend their time collecting messages from different (often differently reliable and often conflicting) sources and weighing them. The complicated "decisions" they make about whether or not to continue the transmission (to fire) seem not unlike mine on a normal day of watching, thinking, making connections with other information, and finally acting, often on less than the best evidence. My decisions, that is, are often, like my brain's, preference judgments.[1] Although an evolved brain cannot be said to have been built for all that I use it for, it has adapted, and for now at least its functioning is good enough to get me through the day. (Mostly.)

The philosophical parallel to the brain's not-after-all-so-oddly human way of working is to be found in the critique of metaphysical idealism as expounded, for example, in the work of Stanley Cavell. Cavell's rereading of Ludwig Wittgenstein in *The Claim of Reason* (1979) moves philosophical discussion toward a neurologically authentic plane by struggling to find a way to display, express, and understand how ordinary everyday truths indeed work for us well enough most of the time. Cavell's work enlightens and also lightens the problems of miscommunication, arriving again and again at the claim that it is possible to live an intelligent, satisfying, and even a moral life with the mental equipment that is the human inheritance. It is possible to

1. Preference models were first described in Jackendoff 1983 as a way to display word meaning without fatal rigidity. Ellen Schauber and I (1986) demonstrated how the model describes literary genres.

recover, in his words, from the tragically debilitating skepticism that rejects "good enough" knowledge in a vain struggle for an impossible ideal.

But this is to jump too quickly to the happy ending. We need neither neurology nor philosophy to tell us that human beings are hardly perfect knowers. Sometimes we get it, but often we just get confused. People are often rather pathetic misunderstanders not to mention megaforgetters, chronic confusers, malaproposers. We laugh at the human comedy of television sitcoms and cry at the high cultural texts that display the tragic limits of our understanding. Homer Simpson stumbles through, but Oedipus, Hamlet, and King David—leaders of men, philosophers, poets—using their senses and all the intuition they can muster, fail to know enough when it matters most.

From an evolutionary perspective, then, Aristotle's opening assertion in his *Metaphysics* is incomplete. "All men, by nature," he said, "desire to know." Forfeiting his gnomic elegance, the sentence might be expanded thus: "It is a good guess that the survival of the human species depended and probably still depends on an ability to collect, collate, and apply reasonably reliable information about the environment to the projection of possibilities (including counterfactual possibilities), and to decision-making processes. If this assumption is true, then it is probably true that all people by nature desire to know and that those who did not innately desire to know and who did not develop reasonably accurate (but not necessarily perfect) ways of assessing their relationships to the world around them have long since died off."

One general answer to the question of how the capacity to know has developed with the requisite flexibility is suggested by a modular theory of cognition. Briefly, modularity hypotheses explore the implications of our having developed parallel systems of knowledge acquisition. Like other animals, and even some plants, humans learn about an object in more than one way at once, by seeing *and* hearing *and* touching it, for example. While this has on the whole been good for survival, modularity also produces intermodular conflicts.

Consider the advantages first. One advantage of modularity is that by having a set of different receptors/processors (ears *and* eyes, etc.) instead of having a single all-purpose one, we are equipped to respond variously to the various kinds of energy in the world (to sound waves *and* to light waves, to words *and* to smiles). Another positive consequence of modularity is that if one system fails all is not lost. The various modules are sufficiently independent to defer and perhaps avoid general shutdown, often allowing the individual to survive even if compromised.

There is, however, a price to be paid for the relative insularity of modules,

and that is that translation systems are needed to integrate the knowledge received and produced in the separate modules (Jackendoff 1987). And here we can make use of another evolutionary postulate: If the translation systems between modules were perfect—if knowledge from one module were so well translated into knowledge from another that the two were entirely the same (that is, seemed the same to consciousness and functioned in the same way)—then we would lose the advantage of being made aware of the differences. If you know that there is a stream nearby *both* by noticing the relative richness of vegetation in a linear pattern *and* by hearing it, you can find it, day or night. The modular system of knowing makes good use of a set of less than ideal receptors by combining them to produce redundancy, that is, confirmation, even at the cost of producing conflict now and then. The gaps or miscalibrations between the information from the different modules may be filled by analogy with memories of past experience or by inference and deduction. This story of modularity was originally told by Jerry Fodor (1983), but the version offered here includes revisions by Ray Jackendoff (1983), who first noticed the gaps between structures of information. In *Gaps in Nature: Literary Interpretation and the Modular Mind* (1993), I adduced a further advantage of modularity: the creative potential of the gaps. Since a gap must be filled by an inference based on individual experience and memory, even in similar situations different people will make different inferences. The evidence of cultural diversity (indeed the difficulty of locating and describing cultural universals) strongly suggests that the genetic inheritance does *not* predict how it will be used, nor does it control the outcome of its processes. Assuming then that at least a gap if not a conflict always exists between what can be learned from vision and from, say, words or between words and touch, a cultural historian will have to understand the historical/ideological/cultural context in order to gain insight into the question of why any particular intermodular conflict (itself presumably an age-old physiological miscalibration; something *Homo sapiens* had long ago learned to compensate for, ignore, and even profit from), suddenly becomes a cultural crisis.[2]

Let me pause for a minute to punctuate. I have begun to suggest that cognitive and evolutionary hypotheses produce new questions about history and culture, questions that require further historical study. Because the human genetic inheritance is so complex, providing so many possibilities differently actualized in different circumstances and by different people, it

2. I have explored some examples of these miscalibrations in Spolsky 1996. See also Spolsky 2001a, where I explore in depth a variety of creative productions that display and order the anxiety that results from these gaps within the specific historical context of early modern Europe.

will not be possible to answer the new and interesting questions about literature and culture without consulting the historical context of the questions. The evolutionary perspective will not relieve us of our responsibility to understand how conflicts produced by our inherited human brains are modulated and managed within their cultural contexts. Taking this responsibility seriously then, it must be argued that the two kinds of study—cognitive and cultural—are noncontradictory before their complementarity can be considered.

I will argue, then, that the assumptions that emerge from the study of evolved human brains in their successive contexts, far from being inconsistent with post-structuralist thought, actually extend and enrich it. My questions and my mode of response arise of course from my own intellectual econiche, specifically from the barrage of skeptical challenges to the human ability to know raised in the last forty years. The historical situation itself, in a cognitive evolutionary literary theory, provides a way to see into the larger question of how people make or produce knowledge from the combined resources of body (including the mind/brain) and culture. How does the cognitive equipment allow people to learn from the world around them? What role does culture (or do various cultures) play in that process, and how does any specific historically situated culture negotiate its claims with the innate and grown claims of the human body and brain? What kind of knowledge can be had, and how is it acquired? How do I presume to get a piece of it and share it with you?

The claim that the ultimate goal of literary theory is to tell a story about the human mind can be traced back to Aristotle and, in modern criticism, to Northrop Frye. In his *Anatomy of Criticism* (1957), Frye claimed that the generic forms of literary works have a psychological reality that is separable from what he dismissed as "the history of taste." Literature, he assumed, displays the structure of the mind, the same claim Claude Lévi-Strauss had made for the material culture of Brazilian peoples in *Tristes Tropiques* (1955) and that Noam Chomsky was making for syntax in *Syntactic Structures* (1957). Whatever empirical data are studied, syntax or poems, face painting or pottery, the goal is ideologically humanist: the proper study of humankind is the human mind.

Although the details of Frye's proposals linking the seasons to the genres of literature have not weathered well, many cultural historians and literary scholars still pursue the same goal and still seek to find the theory that will describe the interconnections between being human and living in a culture. To what extent is artistic work predicted or projected from a culture, and how does artistic production work to produce that culture? The paradigm I believe this kind of study fits into is most accurately called post-structuralist,

with the hyphen preserved deliberately because both parts of the word remain important, as will become clear. The oversimplification of the phenomenon of post-structuralism I am about to produce here is motivated by my intention to display as sharply as possible the multiphase emergence of the paradigm in the course of the twentieth century. Any more complex exposition would quickly lose sight of the forest for the trees, the undergrowth, the mossy rocks, the rolling stones, the nonbiodegradable postpicnic rubbish.

As the references above suggest, the first breakthrough was the discovery of structure. Although there are good reasons to trace this to Ferdinand de Saussure's linguistics, it was actually a discovery made simultaneously in several branches of the human and the physical and biological sciences as well.[3] The structuralists directed our attention to connections between phenomena that previously had seemed unconnected, denigrating in the process the "merely" empirical. Methodologically it moved social science away from an interest in description and taxonomy of particulars and toward the description of the underlying dynamic or structure, the self-sustaining and self-modifying system that describes the function of the empirical data. Scholarly work in many fields was now fundamentally revised; the task was not just to collect and record but to posit or discover relational hierarchies and syntax, that is, grammars. The meaning of the structures, as Saussure argued for language, lay in the relationships, not in the words (or data or artifacts) themselves.

As the structuralist perspective in language study became familiar, even routine, and was generalized throughout the humanities and social sciences (one might credit Umberto Eco's interpretive work on semiotics here), it became possible to understand several great pre-Saussurean thinkers as proto-structuralists. Among these were Darwin, Marx, and Freud. All of them had described substructures and superstructures, the former "governing" the latter such that hitherto unexplainable or unintegrated phenomena could be seen as systematic. The substructures were understood by both the structuralists and the proto-structuralists as the equivalent of the forces of gravity that keep the planets in their orbits. Borrowing the language of science, they also borrowed the assumption that these forces were stable and eternal.[4] "Human nature" was understood to be the equivalent in the human world of the laws of physics.

A later phase in the articulation of the paradigm was a critique of

3. See Piaget 1968 for a survey of early structuralism.

4. This may be an instance of what Paul de Man (1971) called the blindness that comes with insight. While such blindness is probably inevitable, as he thought, it is not necessarily paradoxical, as he asserted, but maybe just wrong and misleading.

structuralism, now widely called deconstruction. Its roots were in philosophy rather than in the social sciences. It also has founders and proto-deconstructors. Aspects of human life and culture (motherhood, poverty) that had been understood to be as permanent as Platonic ideals and had, after the Romantics, been demoted to "human" but still stable aspects of nature were now redescribed as indeed changeable *because* historically determined. Nietzsche was noticed as having called attention to this in his critique of the historical scholarship of his day.[5] The "historicizing" of philosophical and historical categories of knowledge had already been adumbrated in theoretical physics as the recognition of the dependence of knowledge on the spatial location of the observer.[6]

The deconstruction of language, indeed of representation in general, which Derrida popularized in the late sixties and the seventies was well underway in the work of Husserl, Heidegger, and the later Wittgenstein. Husserl, for example, challenged both concepts ("the concept of man") and distinctions that had been assumed to be axiomatic in metaphysical philosophy. It was now possible to appreciate the power of the conventional to make itself felt as natural and thence to surmise that the hierarchies of the binary oppositions and their weightings, which had been thought to be as natural as the orbit of the Earth, are in fact sustained in their current configuration by dynamic tension—not to say war—by and within specific cultural settings.[7] Most important to literary studies, both theory and practice, was the deconstruction of language or of logocentricity, as it was called in the new vocabulary, itself begun by Saussure. The relationship between a word and its referent had been assumed to have a transparent bond and natural directionality: there is a solid "real" world of objects and a secondary representational system that is assumed to mirror, define, or describe it. In this view, a word (every word) has a primary, a "real," a literal meaning, though it may also serve other uses. Although Saussure's revolutionary insight into the arbitrary nature of the sign and the conventional nature of its functioning provided the crucial wedge by which objects and words could be pried apart and reinvented as signified and signifier, he seems not to have fully recognized the price that would have to be paid for the disconnection when the stabilizing power of convention itself could be (and was) deconstructed.

However, in spite of that logical possibility, human discourse has not re-

5. A key text was Nietzsche 1980 [1874]. These links are summarized by Gayatri Chakravorty Spivak in Derrida 1976: xxiff.

6. Einstein's general theory of relativity in 1916 and Heisenberg's uncertainty principle in 1927 recognized this.

7. Culler 1982 contains a clear explanation of how these reversals are argued.

turned entropically to chaos, and as Malcolm Bradbury (1989: 7) reassured us, "Just for the moment the instructions on a jar of instant coffee remain more or less usable." While human communication surely depends on the relative stability of word meaning and its iterability across contexts, the maintenance of the rich cultural life of human societies probably depends as fully on our ability to trope or to distort the probable or conventional meaning of a word and to be understood when we do so. This catechresis, or misuse of language, has long been recognized; its varieties were cataloged by the early rhetoricians as a set of "devices." But the effect of the work of the deconstructionists in describing phenomena such as metaphor and irony has been to make clear the implications of these figures, exposing the weakness of the traditional distinctions between literary and ordinary language or literal and figural meaning. The result of several decades of poststructuralist argument has been to allow the emergence of an important insight: the functioning of human language depends on both its iterability *and* its instability. The combination is more than just a paradox of simultaneous transcendence and limitation. It also allows a glimpse at how words that are vulnerable in their instability are also usable for the propagation of new meanings.

Saussure's original observation, namely that meaning was in the relationship between words and not in the words themselves, was slowly understood to have destabilizing implications for the study of just about everything. Since the study of just about everything is conducted in words, these inherent instabilities or ambiguities, previously described as "literary" phenomena parasitic on "normal" language (Austin 1962), were now understood as a general condition of language use, including language used to conduct scholarly debate. And if words are only unreliably anchored to referents, their meanings determined by the context of other words and cultural artifacts, how can scholarship proceed?

The effect of this simultaneous skepticism and liberation on the activity of literary criticism, both Anglo-Saxon and French, is well known. If we previously had to be right, declared Stanley Fish (1980), we now only have to be interesting. We have a new freedom—freedom to play, as Derrida's punning language exemplified, and to eschew concluding. As long as the context can change as easily as the weather, the life span of a scholarly conclusion is not much longer than that of a cloud. The observation that the center cannot hold briefly produced a comic vision for those who were, sociologically speaking, in the right places during the right years.

The arguments continued, however, and the skepticism became too deep to be borne lightly by many scholars. It is important to see how it was that the deconstructionist critics and their exciting and flagrantly boundary-

breaking essays had backed themselves into a corner over the issue of representation. The entirely defensible assertion that language representation is not stable was transformed by a kind of rhetorical hyperbole into the indefensible assertion that language cannot ever provide access to truth (even if there were any). Surely because that assertion is so counterintuitive, it provoked an eruption of professional hysteria eventually somewhat calmed by the concession that self-referentiality (meaning within a closed system), since that is all we have, works almost as well as what we thought we had: referentiality or representation.

Fish, for example, soon regretted his dismissal of "being right" and recast the situation in a way that returned some of his (and our) lost scholarly dignity. Being right has not disappeared as a standard, he argued; there still are standards, but their ontological position has moved over a notch. Since we are always somewhere, always within a context, there is always a literal meaning and a right interpretation (well, maybe a few). And there are always some wrong ones—for now (Fish 1980: 174). Fish's clear responses to the light-headedness induced by French rhetorical interpretation of German antimetaphysics produced a certain degree of containment, although it took the Paul de Man scandal finally to subdue the American literary academy's enthusiasm for the unbounded transformational activity of deconstructive criticism.[8]

What has taken some time to establish, then, is not the error of the claim that representational systems such as language provide no access to a "real world," only the absoluteness of that claim and, further, the interpretations of that claim as comic or tragic. If human representational systems indeed provided no access to unmediated reality, it would entail our rejection of the entire Darwinian program of evolution and adaptation. Here's why: if it were the case that human beings (or any species for that matter) could not get some relatively reliable information about the world external to their bodies, they could not survive for long, could not reproduce, etc. Note that this does not mean that the representational systems on which we depend are entirely or ideally reliable; it just means that they are reliable enough to have ensured the survival of the species thus far.

The evolutionary argument thus compromises the absoluteness of the deconstructive claim but also, crucially, affirms the gradience of the claim.

8. Probably the most poignant evidence that the hyperbolic promotion of the recognition that words are unstable was indeed an unsustainable claim was the inability of de Man's good friends and colleagues to entirely erase, reread, or reinscribe the dram of anti-Semitic fascism in his early essays. When these boa-deconstructers, as Geoffrey Hartman (see Bloom 1979) called them, could not entirely or satisfactorily deconstruct some texts that they wanted to deconstruct, the power of trope found its limit. More analysis is still needed, not of de Man's juvenilia but of the apologetics produced in their wake.

Precisely because the human species and its ways of knowing are evolved by the accumulation of random mutations in interactions with changing environments rather than genetically engineered for the task of knowing, it is not at all surprising that they are unstable. They are not purpose designed and are always vulnerable to further environmental change. It is just this instability, however, that provides the possibility for advantageous flexibility. People, their ways of knowing, and their languages are *responsive* (a word without the negative connotation of *un*reliable or *un*stable), that is, adaptable within a changing environment. The only "goal" we can speak of with reference to adaptation is species survival, and the only thing required for that is the survival of a certain number of individuals long enough to breed and rear offspring to the age when those offspring can breed. This does not mean that everyone has to understand everything or that understanding is a logically watertight, foolproof system. All it has to be is *good enough*.

This argument produces two inferences: first, that there has been, over the course of human evolution, a curve of adaptational improvement toward a good enough representational system and, second, that the curve eventually will flatten out, that is, stop producing an ever more reliable system since, once it is *good enough* for the survival of the species, improvements due to random mutations will cease to be selected for. (To put it the other way, once a *good enough* level is attained, both the good enough and the more successful representers can survive.) This hypothesis in itself supports the claim that the representational system is indeed unstable but not the claim that it is always paradoxical or always misleading. Furthermore, the counterpressure would be against the tendency for the representational system to become increasingly more rigid: the flexibility of the system has its own advantages. The evolutionary success of the species would actually be compromised by an entirely rigid, that is, dependable, representational system. As I argued in *Gaps in Nature*, the gap between the signifier and the signified is no tragedy; it builds in the flexibility to allow the system to meet the challenge of new contexts and to use old words in new combinations and with new meanings. It is true that deviations from conventional or expected uses are risky. Attempts to communicate might fail or might not succeed unless buttressed with other communications—facial or hand gestures, pictures, paraphrases, and wordy explanations. And even then they might fail. But the prospect of never being able to adapt the representational system to new contexts is worse from the point of view of species survival. Thus one could hypothesize that the human representational system evolved in response to a tension between two needs, the need for good enough (reliable enough) representation and the need for a flexible representational system. Evolution in that area would slow down when the lines of the two curves

intersected, and thus we live with a system that is a gradient version of the deconstructive hypotheses: the system is not entirely stable; it is always open to catechresis, that is, to deliberate rhetorical hijacking or troping. And that vulnerability is just what allows creative innovation, keeping the species going at the two jobs that never get done, survival and adaptation.

In sum, both the deconstructionist debates of the last thirty years and the evolutionary argument collude in stripping us of our innocence. We are no longer able to continue as if words simply mean what they say, as if we did not know that words cannot be entirely reliably identified with the things they normally, habitually represent (even though they often do just that) or that language cannot be "mis"read, since we now understand that its nature, its cultural function is to be available for misreading. A misreading in this sense is a judgment about the suitability of a reading in a context, not about any absolute or objective meaning.[9] Since words cannot always be identified with what they "normally" represent (a matter of numerical probability in a context), in principle the system is entirely destabilized. However, it works fine a lot of the time, although it is always at risk. For better or for worse, familiar language structures may be spoken in new contexts, may be slanted, troped, or otherwise betrayed—forced, as Humpty Dumpty insisted—to mean what their masters want them to. Literary texts, not to mention diplomatic documents, historical records, diaries, and many other genres, in fact depend on this margin for their creativity. The system is good enough for most of us to get through the day with no more than the accustomed undertow of misunderstanding. And often it is just what is needed.

We might have been back where we started, as indeed those who declared that theory changed nothing argued.[10] But we are not, because there is another stage of post-structuralism to be reckoned with—different and difficult to resist. This disturbance arises from the recognition of the possibility, exposed in the powerful rhetoric of Michel Foucault, that if the representational center is indeed movable, as it is now understood to be, then it is probably manipulable. It does not just change, it is changed by someone or some group (Rabinow 1984: 51–75.) In this phase of the post-structuralist debate it was repeatedly argued that theoretical hypotheses of structures are not only "out there" somewhere in the contexts of the schol-

9. There is an instructive parallel here with Austin's (1962) felicity conditions. Appropriateness, rather than truth, is the standard by which the success of the utterance is judged. Note also the parallel with the Darwinian idea of fitness. See Spolsky 2001b for a more detailed version of this argument.

10. For the argument that theory changes nothing, see Fish 1980: 370, 1989: 315–41; and Knapp and Michaels 1982, 1987.

arly world (though they are that) but are also, and in chartable ways, determined by the interests and contexts of their proposers and supporters. The subject of subjectivity becomes central. Lévi-Strauss (1955) never asked why the unnaturalness of infanticide should be manifest by asymmetrical face painting among the Caduveo women of eastern Brazil. It seemed to him self-explanatory on the grounds of analogy (or reduction): both were "unnatural" behaviors (killing one's children and painting one's face without regard for its natural features). He still relied, as Derrida pointed out, on an untenable opposition between nature and culture.[11] However, once the question of agency and subjectivity was raised, it was immediately seen to have two aspects. Who decided that infanticide is "unnatural"? Would the Caduveo women agree with the French anthropologist? Who produces and/or polices the cultural structures that determine human self-definition and freedom of movement within the inherited structures? And inevitably, can I, or how can I, seize that power of structuration for myself or my group? This challenge to the assumption of structural essentialism now meant that suspicious reading was inescapable, as the reader is challenged to locate the prime mover, so recently banished by the dynamic of structuration itself. Furthermore if one agrees that someone is pushing the buttons within one's own society, it begins to seem that it may be within one's power to direct change.

Suspicious reading itself is not a Derridean or Foucauldian invention. Few could have been more suspicious than Freud about the discrepancies between what was said and what was meant, where the "said" came from and how and why it was distorted. But for Freud, the god-in-the-machine was a set of dark instincts that might be unmaskable and understandable but probably unappeasable. Heidegger also, it would seem, considered individuals to be helpless: caught in a hermeneutic circle with nowhere to stand from which to survey all the possibilities and no way to control the levers that move them. For some prominent post-structuralists, Paul de Man, for example, the source of this dark, even classically tragic situation in which the possibility of honest representation is warped by forces greater than any individual is itself a mystery. It might well be objected, however, that the history of Europe in the twentieth century, in which the promise of scientific progress was mocked by the violent uses to which science was put, backlights painfully, and not so mysteriously, Foucault's recognition that someone's interests are served by the definition and manipulation of the

11. A sustained critique of a Lévi-Strauss text is Derrida's talk, entitled "Structure, Sign, and Play in the Discourse of the Human Sciences," in 1966 to the symposium at Johns Hopkins University. It was translated and reprinted in Derrida 1972.

material and cultural substructure. One of Foucault's early arguments was that the use of language and grammar as a metaphor for human structuration, a metaphor that the early structural linguists had claimed was no metaphor but "truth," had concealed as much as it had revealed. War, he proposed, was the more instructive metaphor. It would not conceal that someone or some class of people always benefits from an established structure and furthermore does so specifically by insisting on its naturalness and permanence. If mystification or mythification is insufficient to maintain the status quo, then force can be used to do so, revealing to a suspicious reader that the structure is not entirely natural after all.

In today's usage post-structuralism (or more generally post-modernism) is the cover-all term for the generalized suspiciousness of interpretation. In spite of its rhetoric, however, post-structuralism does not replace structuralism; post-structuralists still understand the phenomena of human bodies, minds, cultures, and theories to be structured. They may not be structured entirely "naturally" and are certainly not structured entirely permanently, as was assumed at one time. They are, it is now said, constructed (and variously so) by the interface of our genetic inheritance with the environment into which we are born, that is, by the constantly changing interaction of individual needs, hegemonic cultures, and an unstable class of culturally empowered arbiters (Oyama 2000). The flexibility of the cultural system as a whole does not mean that it does not exhibit fairly reliably repeated sequences of events. It is not necessary to adopt the view that the world is a Borgesian encyclopedia, even though postmodernist art and literature produce both tragic and comic views of a world freed from many of the specific structures so long assumed to be inevitable. But if I remain a structuralist, I am also a post-structuralist because I believe both that structures are describable simultaneously in more than one way and that they are permanently open to revision. I am thus a skeptic in the sense that I do not believe in the singleness of truth,[12] and I am a suspicious reader. I feel unsettled until I can determine the assumptions of the current context and who institutes and enforces its prevailing rules. This suspiciousness of the contexts others have established—"agendas" that they have declared or not declared—combined with the distrust of rational argument as just one of many possibilities has made it attractive to simply declare one's own agenda more loudly or, in our discipline, more widely and interestingly (Stanley Fish again). But the sword cuts two ways; it must be acknowledged that others may find their own concerns more compelling.

12. The argument for the multiplicity of truths from the scientific point of view is made nicely in Arbib and Hesse 1986.

Yet if the ground for truth is no longer what it was, and if there is no other, then an oddly Buddhist resignation is produced from a supposedly radical critique. Foucault, it seems to many, saves the day, producing a neo-Marxism usable for literary studies. Whatever is, he urges, might be otherwise. And so Foucault provides the rationale for readers and interpreters who want to see their scholarship as *praxis*, as effecting their world. After Foucault it has become difficult to pretend that one does not know that social structures produce gains and losses and not randomly. It seems to me that it would be difficult to justify *not* asking how the structures we investigate as literary or cultural historians are constructed and valued. Many feel that traditional scholarship is newly energized by the possibility that the mechanics of social structures, that is, their politics, might be understood and that individuals or groups might be in a position to discover tools with which to challenge them. The possibility that "discourse," for example, literature, might be one of those tools understandably has been exhilarating to scholars in a field long patronized as decorative.

My defense of the cognitive study of literature, then, having located it within the post-structuralist paradigm, needs now to make clearer what has already been broadly suggested, and that is how Darwin also fits there. Just as Freud and Marx provided literary scholars with productive questions about their texts and their interpretive procedures, so Darwin's texts, through the readings of them by recent scholars in anthropology, biology, neurology, philosophy, psychology, and literary study, have opened new ways of talking about our subject. This perspective is an important new tool for the literary scholar because it asks new questions about the relationship between the biological and the cultural, between the living human body and its environment.

The general shape of my claim is that nothing could be more adaptationist, more Darwinian than deconstruction and post-structuralism, since both understand structuration—the production of structures (and this is the same thing as the production of theories of structures ad infinitum)—as an activity that happens within and in response to a specific environment. It is an activity that is always already designed for cultural use but also always ready to be reused or redesigned as needed. It is important, however, to emphasize here that this is not a Panglossian vision in which satisfaction is always available. In fact the opposite is more likely true. Since the cultural/biological nexus is always in motion, it never exactly fits. It is always on a journey between novelty and obsolescence. The motto of this world is certainly not "whatever is, is right" but more accurately, "whatever fits well enough will do for now." The categories of the world, and the structures of categories, remain the same or revise themselves depending on their

interrelation with other categories in their environments, but only slowly. There are no absolute unchanging categories or structures. Like the reciprocal mutations between parasites and hosts, recategorization is constantly in process (Dawkins 1982; Dennett 1995). The variations and revisions for both Darwin and post-structuralists are neither divinely nor benignly directed. Here Darwin and Foucault must part company. Darwin would no more have attributed change to a malignant intention, as Foucault always seemed to, than to an angelic intention.

Darwinism is appealing as a theory of mind and of meaning because it is a theory of survival that depends upon adaptation (troping, reinterpretation, rerepresentation) by recategorization. To put it another way, it is a theory that justifies the centrality of potential recategorization by describing it as a mechanism for survival. It is a theory of how living organisms survive in an unreliable environment by dynamic metamorphosis. In its extensions into the realms of culture it suggests how metamorphoses spread throughout populations and become entrenched (Dawkins 1976; Sperber 1996). Water-dwelling creatures became amphibious as the swamps dried up; Syrinx was changed into a reed to escape Pan.

The comparison with Ovid is not as far-fetched as it may at first seem because, although the word *adaptation* sounds good-naturedly cooperative, Darwinism is in fact also a theory of unpredictable death and catastrophic variation and recategorization, or as Tennyson put it, it is a theory that understands nature to be "red in tooth and claw." The grotesqueries with which Ovid's stories often end bear comparison with the random variation and sudden loss that are necessary conditions of evolution under conditions of natural selection. Ovid was often circumspect about the causes of the metamorphoses he described, which were mostly overdetermined. If they were punishments, it may not be clear who was the punisher. Did Syrinx decide she would rather be a reed than a victim of Pan's lust? Or was someone punishing her by her recategorization? Darwin similarly never credited the individual mutant animal or plant with solving a problem of environmental change by deciding to develop lungs or chlorophyll.

Indeed, I see the value of Darwin's theory as a description and not as an explanation of change, adaptation, and recategorization. On these grounds it is attractive to literary theory because the processes it hypothesizes for the natural world of plants and animals, that is, spontaneous change/variation, followed by survival and loss and temporarily stable subspeciation, are consistent with many of the most interesting recent theories of mind, knowledge, meaning, and interpretation. Insofar as it can be argued that an evolutionary theory of how living creatures in the natural world adapt and survive is also a theory of mind, that is, a theory of the way the human

mind/brain adapts and learns (I am assuming these are not two different things), then both theories are strengthened.

Theorists working in several fields of human sciences indeed have described the activities of minds in ways that seem parallel to Darwin's description of natural evolutionary processes. The case has been explicitly argued of course for connectionist or parallel processing models of mind, but Darwinism is implicit as well in the Chomskian hypothesis of an innate language module that is modified in interaction with the environment to produce knowledge of a specific language.[13] Wittgenstein's (1953) model of language games as conventions similarly suggests the simultaneous systematicity and plasticity that allow both meaning and meaning change. Stephen Greenblatt's (1988) view of the circulation of social energy in a dynamic of challenge and containment, my discussion of genre change in *Gaps in Nature*, and Lorraine Code's (1991) feminist, relational epistemology are also models of dynamic and interactive adaptation and self-regulation. Susan Oyama (2000) makes clear the importance of what she calls "constructivist interactionism" as a replacement for the misleading distinction between a presumably unchangeable nature and the flexibility of culture.

All of these theories are Darwinian, I would claim, for at least this reason: they all manage to account for systematicity, that is, for stability and predictability, while allowing the possibility of adaptive change. Crucially they do so without the notion of an unchanging anchoring center, a set of platonic universals or literal meanings. The givens of these systems are only as mysterious as the architecture of the mind/brain itself (although that is still pretty mysterious). The "well-defined species" of Darwinian theory is like the literal meaning of a word. Both are, at least for now, the most probable meanings of the word in a given community. Both are liable, even likely to change eventually because they are embedded within unstable semantic and ecological systems. As Dennett describes Darwin's description of the origin of species, the process begins and ends with well-defined species, but for the stages in between the differences are infinitesimally small. This sounds a lot like the kind of differences that poets can risk in making use of words for new purposes on the assumption that they want to be both original and understood. Experienced readers of poetry (or any unconventional text) have learned a set of cognitive procedures whereby they can make sense of novelty (Culler 1975; Schauber and Spolsky 1986). Eventually what was novel (metaphorical, say, using the word *broadcast* for radio transmission instead of for sowing seed) may become probable or literal meaning,

13. Dennett (1995: 384) discusses Chomsky's denial of this. Deacon (1997) describes how the language module might have evolved not before but within a context in which human language developed.

and a mutant may come to be recognized as a well-formed species. Darwin, according to Dennett (1995: 44), "declines to play the traditional game of declaring what the 'essential' difference is."[14] Remember here Wittgenstein's example of games: no single condition is required of all members of the category.

> "Well-defined" species certainly do exist—it is the purpose of Darwin's book to explain their origin—but he discourages us from trying to find a "principled" definition of the concept of a species. Varieties, Darwin keeps insisting, are just "incipient species," and what normally turns two varieties into two species is not the *presence* of something (a new essence for each group, for instance) but the *absence* of something: the intermediate cases, which used to be there—which were necessary stepping-stones, you might say—but have eventually gone extinct, leaving two groups that are *in fact* reproductively isolated as well as different in their characteristics. (Dennett 1995: 45)

So if the well-defined species is the literal meaning, it is as fuzzy a category as literal meaning ever was and as unstable, measurable by its difference from other species. A permanently literal meaning can no more exist than can a natural category that will never change. The potential for change is all that is permanent, and the direction of the change is not predetermined. Just as the algorithmic process of evolutionary change contributes to the survival of life on earth in changing circumstances, the systematic flexibility of language keeps it able to serve changing communicative needs. Neither system changes without lurches and loss; both are self-stabilizing over time, but neither is rigid. If the systems were rigid, neither could serve its purpose.

The analogy between Darwin's stable categories and literal meaning can be extended further. In both there is a difference between the material situation of continuous change, disappearance, and survival, clearly a gradient process, and the description of the resulting state of affairs. Naming and categorizing, like the rest of language, have an inevitable ad hoc quality, yet once they become entrenched, changes are not made easily. At any given moment, the set of names and categories available for use by any individual is only a near approximation of the set of material phenomena that might need describing. Speakers are bound to use words and language in a rough way to remain within a communicative community. For a small child, *doggie* will do fine for all varieties of dogs, while at the same age *cat* will certainly not encompass lion and tiger but may include a toy cat. Biologists of course

14. Dennett (1995: 44ff) notes a "standard" way of marking species differentiation, the existence of interbreeding, but then shows examples of exceptions to this rule. It is thus not a necessary rule.

will try to come closer to "cutting the world at its joints" with their terminology, but they also recognize that new empirical evidence (the so-called missing links) may some day prompt recategorization. Poets similarly try to get it right, to use the full range of language resources to make the description fit the speaker's singular perception as closely as possible, although by the community's conventional standards the utterance may sound odd or unusual—deviant, as structuralists called it, since, and to the extent that the result is less than conventional, it will be less easily understood. This flexibility in categorization, even with its limitations, is extremely fortunate: it allows innovation. We can invent words when the need arises (gridlock) and can make sense of someone else's neologisms (pied beauty). We can also influence our niche, that is, effect a change. A speaker can comfort his or her beloved before a separation by a comparison to a pair of compasses, and an essayist can stimulate the political will of his or her peers by inventing the word *phallocracy*.

The project of cognitive literary studies is only just beginning. It will, I hope, continue to explore the new questions that emerge from a consideration of literary issues in the light of various kinds of cognitive evidence and to reconsider old issues with new evidence. Elaine Scarry (1999), for example, proposes several ways literary texts take advantage of the brain's ability to reproduce and understand what writers want us to envision. My recent study of early modern texts and pictures charts some of the ways in which creative works may provide satisfaction in a violently changing social world (Spolsky 2001a). Mary Crane (2001), in her recent study of Shakespeare, argues for the importance of a consideration of embodied brain processing to an understanding of the author function in a literary text. Alan Richardson's (2001) exploration of the growth of Romantic-era brain science extends and deepens the ways in which post-structuralist cultural studies can be enriched from a cognitive perspective. My assumption is that, with due precaution[15] and always taking care not to confuse the analogical or metaphoric use of data from cognitive science with its analytic use, cognitive literary study is uniquely positioned to carry forward the advances in understanding made by the post-structuralist critique of representation, to understand, that is, the simultaneous good-enoughness and the instability of meaning. It will do this, I believe, without the high unseriousness of post-structuralism.

15. Literary scholars can inoculate themselves against the naïve overestimation of what social science or evolutionary biology can offer by remembering to ask themselves: What is the probability that *their* field (as compared with mine) is *not* riven by competitive hypotheses? What is the probability that, while I struggle to deal with apparently irreconcilable complexities, *they* know exactly what they're doing, so that I may borrow their theories and empirical

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data as unimpeachable evidence to resolve my controversies? Indeed the field of evolutionary biology is in the throes of several different controversies, which literary scholars are not professionally trained to evaluate.

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