In his recapitulation and conclusion to *The Origin of Species* Darwin writes, "Nothing at first can appear more difficult to believe than that the more complex organs and instincts have been perfected, not by means superior to, though analogous with, human reason, but by the accumulation of innumerable slight variations, each good for the individual possessor" (O. 426). In this sentence Darwin quietly announces a new reading of the Book of Nature that inaugurates an intellectual and philosophical scandal to complement the emotional shock produced by his theories. The spatial metaphors of deanthropocentrism—man toppled from the pinnacle of creation or displaced from the center of the universe—inadequately reflect the radical shift of reason from producer to product of nature. The resulting crisis is one of Authorship. As model and analogue of human reason, God is abolished along with the fiction of the subject as the origin of the text. Nature is transformed from a mimetic text, a representation of divine thought, to a self-referential and self-reflexive text, disclosing only its own origin in unconscious, involuntary, mathematical processes ("accumulation" and selection) that are as dispersed ("innumerable"), trivial ("slight"), arbitrary ("variations"), and autotelic ("good for the individual possessor") as the play of differences that constitute language itself.

The semiological aspect of Darwin's method was recognized as early as 1877, when Dean Goulburn of Norwich opened his preface to Sir Frederic Bateman's *Darwinism Tested by Language* with a reproof to Darwinians for their misprision of differences.

There are two contrary intellectual tendencies, which characterize minds of different orders, and, when indulged to excess, become intellectual vices. The one is the tendency to see a distinction where there is no real difference. This is the snare of cultivated (or perhaps of over-cultivated) minds, whose constitution may never have been robust, and what vigour they once had has been refined away by speculation. . . . Opposed to this is the tendency to ignore real differences; to bring rapidly under the same category two cases which have
one or more superficial features of resemblance, but which are so fundamentally unlike that they cannot with any justice be classed together.¹

Goulburn charges Darwinians, in effect, with confusing ‘-etic’ and ‘-emic’ orders of linguistic signification.² Bateman’s book was written in outraged response to Darwin’s collapse of the cardinal differences (physiological, intellectual, emotional, moral, and even to some extent cultural) between humans and higher animals in The Descent of Man. Bateman, a specialist in aphasia, used the anatomical researches of Broca and Gall, together with his own clinical experience at La Salpêtrière and the Eastern Counties’ Asylum for Idiots, to salvage language as the final, incontrovertible difference in kind between man and animal: ‘Language is our Rubicon, and no brute will dare to pass it.’³ Although Bateman’s arguments have, in their gross form, prevailed and only recently come under challenge by zoosemioticists, the modern philosophy of language has gradually eroded the religious agenda he intended to buttress.

He aims at illustrating the truth in ‘the grand old book,’ that ‘God made man in his own image; in the image of God created he him;’ and with this view he shows that (just as in the precinct of the Divine Nature the Word, or Second Person, represents the Father, and reveals the Father to the creatures, so) the word is man’s distinguishing characteristic, represents him, is the great medium whereby he throws into other minds the thoughts conceived in his own. Language is unquestionably the great outcome of Reason; indeed it is the Reason.⁴

Goulburn lays the foundation for Bateman’s privileging of language as the analogue (and even locus) of the human soul⁵ by revealing in his substitutions (“the Word, or Second Person”), synonyms (“Language . . . is the Reason”), metaphors, and analogies a logocentric system of belief in which God functions as a transcendent Signified, an immanent Meaning. The heresy of Darwinian thought was the implicit transformation of the theomorphic premise of this formulation (man created in the image of God) into a theanthropic explanation of theological thinking (God as a deduction from a model of human reason and intelligibility). Perhaps the simultaneous outrage of the Victorian religious and scientific establishments was inspired by Darwin’s parricide of their common ideological ancestor: the Enlightenment rationalism that engendered both physics and

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natural theology and thereby yoked science and religion together upon the same model of textual intelligibility. God wrote the Divine Book, whose alternate versions could be read either by the cleric as Scripture or by the scientist as Nature, a dual ambition to which the youthful Darwin aspired before embarking on the voyage of HMS *Beagle*.

While Darwin was at sea upon his naturalist’s adventure, the eight “Bridgewater Treatises on the Power, Wisdom and Goodness of God as Manifested in the Creation” appeared in England. Their philosophical enterprise was the argument from Design, according to which the complicated contrivances of Nature presuppose, and therefore prove, the existence of a Creator. “Natural Theology in the eighteenth and early nineteenth centuries flourished in an age when the behavior of deterministic machines, such as clocks and music boxes and Babbage’s calculating engine provided the only comprehensible physical analogies of complex behavior. For the Natural Theologian the seeming music-box perfection and precision of complex instincts was a source of wonder and pleasure, and a testament to the existence of the designing hand of the greatest Mechanic of all’” (Gruber, 231). The argument from Design transforms the Book of Nature into a performative text, a text that verifies the truths that Holy Scripture (a constative text) can only state. Its function as demonstration is similar to that of miracles in Biblical times in its attack on the incredulity and skepticism of the faithful. But its status as proof or testimonial reduces Nature to a mediated object with an abstract function in God’s polemical struggle for the faith of mankind. Nature’s materiality becomes ontologically unimportant, and its study becomes reduced to a kind of primitive cybernetics.

Bateman’s references to Disraeli’s *Lothair* betray the emotional impetus behind the argument from Design: “Nothing can be more monstrous than to represent a Creator as unconscious of creating.” The odium of the monstrous, with its connotations of the alien, the abnormal, the unfamiliar, reveals how powerfully the normative and the conventional governed intellectual possibilities in nineteenth-century thought. Bateman, like Disraeli, cannot imagine an unconscious creator (let alone creation dispersed among numerous unconscious factors) because their favored paradigm of creation (and I am using paradigm here in a Kuhnian sense) presupposes anthropomorphic rational activity. The affective motive behind the argument from Design was to make the world (and its Creator) familiar

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and tame by founding it upon those analogies to the self, reason and human will,\(^8\) that assure the existence of control over Nature's power and the domestication of Nature's otherness. Even Sir John Herschel, whose *Introduction to the Study of Natural Philosophy* Darwin much admired (A. 33), and whose methodological influence might first have suggested to him the function of force as the *vera causa* of natural phenomena, anthropomorphized natural force in terms of the human personality, as force of will, "if not man’s, then presumably God's."\(^9\) Darwin’s discoveries required an intellectual leap that was ontological before it became methodological: he was able to imagine a nonanthropomorphic model of the self by divorcing law from reason, force from will, and creation from invention.\(^10\) He was able to recognize that madness was not the only alternative to reason and that chaos does not logically follow the abolition of conscious design. In short, he rehabilitated the organic body, both animal and vegetable, with its unconscious interplay of form, function, and force, as model of natural creation and design.

Darwin’s contemporaries understood perfectly the philosophical implications of a deanthropomorphized universe. Bateman cites with alarm the modern scientific creed, "I believe in Law, but no Lawgiver; in the life-giving power of Force and Substance; Intelligence from Non-Intelligence, without conscious Author."\(^11\) Whether or not Darwin recognized the logocentric nature of the metaphors that dominated natural science and natural theology in his day, he liberated both language and Nature from the Subject—the *auctor* (Latin, originator), Author, Authority—by making language analogous to natural life in its developmental and evolutionary processes.

Languages, like organic beings, can be classed in groups under groups; and they can be classed either naturally according to descent, or artificially by other characters. Dominant languages and dialects spread widely, and lead to the gradual extinction of other tongues. A language, like a species, when once extinct, never, as Sir C. Lyell remarks, reappears. The same language never has two birth-places. Distinct languages may be crossed or blended together. We see variability in every tongue, and new words are continually cropping up. (DM, 90)

Modern philology not only gave Darwin evidence of the historicity, variability, and mutability of language, but also allowed him to assume the independence of its structure and function from

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conscious thought and human invention. "It certainly is not a true instinct, for every language has to be learnt. It differs, however, widely from all ordinary arts, for man has an instinctive tendency to speak, as we see in the babble of our young children; whilst no child has an instinctive tendency to brew, bake, or write. Moreover, no philologist now supposes that any language has been deliberately invented; it has been slowly and unconsciously developed by many steps” (D.M., 86).

If Nature has no Author, then who (or what) speaks it? Is it even intelligible, and can it be considered, even metaphorically, as a text? Darwin seems to have grasped that the concept of the Author is as much a prosopopoeia as Nature itself: a fictive individualization of the multiple, dispersed processes and functions that constitute any production, whether material or intellectual.

It has been said that I speak of natural selection as an active power or Deity; but who objects to an author speaking of the attraction of gravity as ruling the movements of the planets? Every one knows what is meant and is implied by such metaphorical expressions; and they are almost necessary for brevity. So again it is difficult to avoid personifying the word Nature; but I mean by Nature, only the aggregate action and product of many natural laws, and by laws the sequence of events as ascertained by us. (O, 88)

Michel Foucault not only analyzes the convergences of myriad functions that constitute the fiction of the Author, but has given the phenomenon itself a historical character. "The coming into being of the notion of 'author' constitutes the privileged moment of individualization in the history of ideas, knowledge, literature, philosophy, and the sciences." In nineteenth-century science this privileged moment collapsed even at the level of attribution as the honors for the discovery of evolution were dispersed among Alfred Russel Wallace, Darwin, and numerous other contributors of odds and ends to the theory, including Robert Chambers's *Vestiges* and Patrick Matthew's "complete but not developed anticipation" of evolution, which had appeared in a work on naval timber. But Darwin further abolished the individualization of the Author at the levels of metaphor and analogy by substituting the many for the one, the dispersed for the unitary, the gradual for the instantaneous, the trivial for the portentous, and the oxymoron of unconscious choice for the anthropomorphism of deliberate decision. "I have said Natural Selection is to the structure of organised beings

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what the human architect is to a building." Darwin skillfully undermines the "Deification of Natural Selection" by two shrewd rhetorical maneuvers. He first constructs a deliberately unparallel analogy (Natural Selection /is the human architect) and then proceeds to correct it, not by personifying Nature once again but by dismantling the human architect down to the natural processes of his own production. "The very existence of the human architect shows the existence of more general laws; but not one, in giving credit for a building to the human architect, thinks it necessary to refer to the laws by which man has appeared."

As the son of a physician, and himself an erstwhile Edinburgh University medical student with a local summer clinic "practice" (A, 120), Darwin had no doubt derived his grasp of semiology in its medical form of symptomatology. Quite likely the comparative habits required for the analysis of the oblique and secondary indications of medical symptoms would have sharpened Darwin's hermeneutical skills more than the simplistic and arbitrary decoding procedures of contemporary physiognomists and phrenologists. Darwin was almost rejected for the Beagle voyage because Captain Fitz Roy, "an ardent disciple of Lavater," read lassitude into the shape of Charles's nose. "I think he was afterwards well satisfied that my nose had spoken falsely" (A, 36). But Darwin continued throughout his life to attend to the "speech" of inorganic structures and animal bodies, geological strata and coral reef formations, bird beaks and wing markings, human male nipples and stag horns—all spoke their origins and functions and the web of relations in which they are embedded. In the great diabole at the end of The Origin of Species, the body's powers of historical utterance, however metonymic, become immense and exalted. "We possess no pedigrees or armorial bearings; and we have to discover and trace the many diverging lines of descent in our natural genealogies, by characters of any kind which have long been inherited. Rudimentary organs will speak infallibly with respect to the nature of long-lost structures. Species and groups of species which are called aberrant, and which may fancifully be called living fossils, will aid us in forming a picture of the ancient forms of life" (O, 448). Darwin's later work on The Expression of the Emotions in Man and Animals (1872), although largely appropriated by ethologists and behavioral scientists, continues his semiological interest in the nonverbal language of the body and of the inarticulate impulses, sensations, and emotions, in humans and animals.

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The abolition of the subject and the consequent collapse of the intentional fallacy in the study of Nature may have followed rather than preceded Darwin's recognition that the burden of signification resides, in any event, with the reader rather than with the author. Perhaps thanks to his Whig upbringing and the easy (if imperfect) erosion of his ethnocentrism, for which the abolitionist fervor of his Wedgwood relatives had prepared him, Darwin learned early of the opacity of ideology and its devious role in interpretation. Here is Darwin's account of his famous quarrel with Captain Fitz Roy over slavery: "We had several quarrels; for instance, early in the voyage at Bahia, in Brazil, he defended and praised slavery, which I abominated, and told me that he had just visited a great slave-owner, who had called up many of his slaves and asked them whether they were happy, and whether they wished to be free, and all answered 'No.' I then asked him, perhaps with a sneer, whether he thought that the answer of slaves in the presence of their master was worth anything?" (A, 37). The anecdote admirably suited the requirements of Fitz Roy's hidden agenda. Wishing to be both Christian and imperialistic, he was able to trick slavery out in moralistic garb, as the generous accommodation of a perverse savage nature and as an institution whose spiritual locus lay not in the politics of the master's force but in the sublimity of the slave's desire. The anecdote only required affirmation by a skeptic that the slaves spoke the truth, that they uttered a true statement rather than performed an obedient act, and that they could be identified as the proper subjects of their speech. As the better reader, Darwin discerned that it was not the slaves, but their master's force, that spoke their "No," a force that caused them to mimic their master's desire for their voluntary submission. To this invidious display of human logic and reasoning, Darwin's sneer, an animal gesture derived from wolves and dogs that bare their teeth in warning (EE, 248), was the fitting response.

"If man had not been his own classifier, he would never have thought of founding a separate order for his own reception" (DM, 150). The success of Darwin's hermeneutical approach to Nature depended upon the dismantling of his own anthropocentrism, a psychological process that, I believe, preceded its conscious emergence in his theories, and whose crucial role in his methodology is too often overlooked in the contemporary debate over the "new ways of thinking" that he inaugurated. The advent of the theories of Thomas S. Kuhn (The Structure of Beasts of the Modern Imagination
Scientific Revolutions) and Karl Popper (The Logic of Scientific Discovery) has begun to place the question of scientific methodology within the greater social context of the behavior of scientific communities. But although for the study of Darwin this has resulted in the production of thorough and fascinating documentation of his intellectual and social influences, the approach itself is too tainted with anthropocentrism to account adequately for Darwin’s unique emotional engagement with Nature.

One can, in a sense, regard the voyage of the Beagle as a romantic interlude. One can point out that every idea Darwin developed was lying fallow in England before he sailed. One can show that sufficient data had been accumulated to enable a man of great insight to have demonstrated the fact of evolution and the theory of natural selection by sheer deduction in a well-equipped library. All of this is doubtless true. Yet it is significant that the two men who actually fully developed the principle of natural selection, Charles Darwin and Alfred Russel Wallace, were both travelers to the earth’s farthest reaches, and both had been profoundly impressed by what they had seen with their own naked eyes and with the long thoughts that come with weeks at sea. It cannot be denied, however, that both had the additional advantage of literary counsel.  

Eiseley never tells us the significance of Darwin’s travels, perhaps because historians and philosophers of science have no good way of assessing their role in disrupting Darwin’s ontological and metaphysical preconceptions. Yet I would argue that Darwin’s five-year journey halfway around the world constituted an imaginative adventure that invaded him with a sense of otherness, a spirit of the wild, a feeling of alienation, or at least separation, from culture that allowed him to imagine the seeming impossibilities that became his theory.

True, Darwin’s antianthropocentrism flourishes not in the early accounts of the Beagle adventures but in the later Descent of Man, and in the final studies of orchids, climbers, insectivorous plants, lythrum, and earthworms conducted by the most domesticated, sedentary, and reclusive of English country squires. This aspect of Darwin’s thought—his abjuration of an anthropocentric coign of vantage—which I believe responsible for the most radical aspects of his work, tends to elude scientific commentators while falling quite naturally within the purview of the literary critic sensitive to the philosophical ramifications of point of view. Stanley Edgar Hyman therefore draws a delightfully eccentric (if slightly ridiculous) picture of the aged Darwin’s Reading of Nature.
Darwin’s imaginative engagement with his flora and fauna. “In this imaginative design, Darwin is himself a kind of insect: he imitates the proboscis of an insect by pushing ‘very gently a sharply-pointed common pencil into the nectary,’ or ‘I imitated this action with a bristle’; ‘Accordingly I imitated the action of a retreating insect’; once, carried away, ‘The walls of this cavity have a pleasant nutritious taste.’ Even acting and thinking like an insect, Darwin cannot fertilize some flowers and cannot figure it all out.” The prophetic shades of Gregor Samsa in this passage are not purely accidental; Kafka had read Darwin and Ernst Haeckel as a young man, and his animal narrations (“Researches of a Dog,” “The Burrow,” “Josefine, the Singer or the Mouse Folk,” and the explicitly Darwinian “Report to an Academy”) constitute metaphysical elaborations on Darwin’s own zoocentric play. Hyman only gives a playful nod to the methodological significance of these imaginative incursions into animal consciousness and instinct. “Darwin discovered these values in the earthworm by his usual processes of empathy and identification. . . . Sometimes Darwin played worm with them; as he wrote to Romanes in 1881, ‘I tried to observe what passed in my own mind when I did the work of a worm.’ ”

But the Darwin who emerges from this stylistic analysis is a researcher secure and comfortable with highly unconventional procedures, a very different portrait from Peter Vorzimmer’s impotent and obsolete old naturalist, devastated by the just attacks of his critics upon his logical and methodological inadequacies.

It is tempting to attribute Darwin’s success as a naturalist to his failure in classics, that is, to his timely escape from the influence of what D. H. Lawrence (echoing Nietzsche) called “the anthropomorphic Greeks.” But perhaps his truly great gift was the ability to combine a capacity for immense wonder with a powerful tendency to demythify. His mimetic response to the schoolboy text Wonders of the World was both the wild desire to travel to the ends of the earth, and disputation “with other boys about the veracity of some of the statements” (A., 17). Homeric metaphors express his amazement. “The day was glowing hot, and the scrambling over the rough surface and through the intricate thickets, was very fatiguing; but I was well repaid by the strange Cyclopean scene. As I was walking along I met two large tortoises, each of which must have weighed at least two hundred pounds. . . . These huge reptiles, surrounded by the black lava, the leafless shrubs, and large cacti, seemed to my fancy like some antediluvian animals” (JR, 374). But while
encountering worlds scarcely less fantastic than those of his fictional precursors (Odysseus, Gulliver, Candide, among others), he is endowed with the critical capacity to explore the literal residue of his own hyperbole, to wonder if the giant turtles are not indeed "living fossils" of prehistoric times. I take issue with Hyman's emphasis on the Apollonian nature of Darwin's response to the "poetry of the landscape" in the Journal of Researches, as though he perceived Nature purely visually, aesthetically, and superficially. Darwin's emphasis on the ferity of the landscape ("None exceed in sublimity the primeval forests undefaced by the hand of man; whether those of Brazil, where the powers of Life are predominant, or those of Tierra del Fuego, where Death and Decay prevail" [JR, 503]) suggests an ontological response to the wilderness not unlike that of D. H. Lawrence many years later, in which the perceptive subject is negated and Nature can be imagined in the absence of a romantic imagination.

The process of demythifying becomes for Darwin the collapse of metaphorical thinking. "The terms used by naturalists, of affinity, relationship, community of type, paternity, morphology, adaptive characters, rudimentary and aborted organs, &c., will cease to be metaphorical, and will have a plain signification (O, 447)." His procedure reverses that of Goethe, who anthropomorphized chemical properties to make "elective affinities" a metaphor for human passion. Darwin demythifies sexual selection at length in The Descent of Man by discovering the biological exigencies and their enabling mechanisms (the organic passion behind the emotional passion, the genetic choice behind the situational choice) of pairing, mating, and reproduction. By reading Darwin's work on sexual selection largely through Freudian spectacles, Hyman obscures both the essential contribution of Darwin's deanthropomorphic approach to sexuality and the philosophical (and hermeneutical) implications of the discoveries themselves. Reading Darwin's ostensible fascination with male breasts as a "fantasy of the male mother" consistent with his "Oedipal identification," 20 Hyman makes of the work on sexual selection a map of Darwin's personal erotic obsessions and repressions. Yet the male nipple, like its hypothetical counterpart, Eve's belly button, or, for that matter the mammalian navel per se, was the bugbear of the argument from Design, God's little practical joke, a lie or red herring ("Were they created bearing the false marks of nourishment from the mother's womb?" [O, 445]) whose function could only be that of a lure to
misprision. In the light of special creation, the Book of Nature becomes a deliberate hoax in which the anatomical features of reproduction that serve as metonymic figures of connection and descent become the "deceptive marks" of "a mere snare laid to entrap our judgment" (DM, 25).

Darwin's passion for collecting, which began in early childhood and which he believed to be innate ("None of my sisters or brother ever had this taste" [A, 14]), evolved into the Baconian method of collecting facts "on a wholesale scale" and "without any theory" (A, 53) in adulthood. This tendency almost proved Darwin's undoing by making of him a kind of Bouvard and Pécuchet21 whose mania for totalization and completeness in the face of infinitude delayed the publication of *The Origin of Species* for twenty years.22 It even then led him to consider his work only in synecdochic terms, as an abstract of an unwritten greater work, a hypothetical compendium of such supererogatory documentation that, he conceded, "very few would have had the patience to read it" (A, 57). Darwin's salvation was his distraction from the Baconian inventory (which would have transformed the Book of Nature into a mere lexicon) by the fragments, disjunctions, paradoxes, and anomalies that surfaced as soon as he regarded his phenomena as a network of relations, as a text, rather than as a statistical table. The faith in plenitude and continuity (which formed the ripened residue of the eighteenth-century idea of the Great Chain of Being)23 crumbled for Darwin as his increasing preoccupation with problems of relation and their significance (differences, variations, disjunctions, absences, traces) led him to abandon the empiricist road for the nonpositivistic paths of hermeneutical thinking. David Hull points out that at least one of the difficulties Darwin's evolutionary theory encountered in gaining acceptance by contemporary philosophers of science lay in its rejection of metaphysical belief in essences. "Why not evolution? The answer can be found at a deeper level in a belief which Whewell shared with Aristotle, Bacon, Herschel, and Mill, a belief in the existence of natural kinds definable by a single set of necessary and sufficient conditions, a belief in essences. Empiricists wanted to eliminate so-called 'occult qualities' from science and yet they retained that element in earlier philosophies which contributed the most to the prevalence of metaphysical entities—essentialism."24

Darwin is not quite an empiricist (nor does he share the empiricist's metaphysical assumption of "presences") because

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what he construes as "facts" are neither observable phenomena nor demonstrable forces but rather the relations between them. "Facts" are able to "speak" or signify precisely because they are differences; when Darwin writes at the conclusion of The Descent of Man, "It is incredible that all these facts should speak falsely" (DM, 607), his syntactic antecedents show the "facts" to be similarities, affinities, distributions, and successions. Darwin sounds like a protostructuralist when he writes, "The great principle of evolution stands up clear and firm, when these groups of facts are considered in connection with others" (DM, 607). Ostensibly, the difference between the savage and the scientist is, to Darwin, precisely the ability to think relationally, the savage apprehending only the objects of Nature, the lexical items or words, as it were, while the scientist possesses the syntactic knowledge to order them into a language. "He who is not content to look, like a savage, at the phenomena of nature as disconnected, cannot any longer believe that man is the work of a separate act of creation" (DM, 607). The savage does not, of course, apprehend Nature in this way, as Lévi-Strauss has shown us (The Savage Mind), and the metaphysician is no less mythopoetic in his thinking, as Derrida has pointed out. But Darwin, who counted himself a "poor critic" (because he lacked "the great quickness of apprehension or wit" of a Huxley [A, 67]), was actually a great critic, according to our contemporary notions, because he discovered the modes of signification that make of Nature a text. If genetics is analogous to linguistics in its exploration of microevolutionary processes, then Darwin's macroevolutionary work functions as a kind of poetics of Nature.

The philosophical ramifications of Darwin's theories are so immense that they strike at the most fundamental oppositions at the heart of Western culture: the difference between human and animal, male and female, Nature and culture. He reverses a system of signification at least as old as the Greek polis with whose emergence the images of hybrid and intermediary forms (centaurs, Amazons, Cyclops) were banished to the realms of monstrosity and otherness. With the disappearance of the Author from Darwin's universe, these oppositions, which had been elevated virtually to the status of logical categories or necessary ways of thinking about the world, collapsed into a kind of Derridean freplay. In reading the traces of natural life, the interplay of presence and absence in the fossil record or in the vestigial or rudimentary organs in living creatures, Darwin discovered form as linked not to the eternal action of mind or the
intelligence of a Creator, but to the absent action of force: force extinguished and obliterated, or deferred in its effects, by time. Natural form becomes the representation not of an anthropomorphic Divine thought but of the forces of nature, which exist only in the present moment, but which disperse their signatures of violence or desire among the past and future matter of the world. Michel Serres speaks of the "isomorphic relation between force and writing" with respect to the politics of knowledge and to the reading and decoding of Nature, and, indeed, one could probably best represent the affective consequences of Darwin’s discoveries with the metaphor of his own 1835 experience of the earthquake at Valdivia (Chile). "A bad earthquake at once destroys our oldest associations: the earth, the very emblem of solidity, has moved beneath our feet like a thin crust over a fluid;—one second of time has created in the mind a strange idea of insecurity, which hours of reflection would not have produced" (JR, 302).

By the time he wrote The Origin of Species, Darwin had abandoned the Baconian notion of treating the universe (and particularly the "geological record") as an encyclopedia and had begun to speak of it as a disorderly and incomplete sort of museum. "The crust of the earth with its imbedded remains must not be looked at as a well-filled museum, but as a poor collection made at hazard and at rare intervals" (O, 448). The spatial metaphor of the museum, with its abolition of time (by exhibiting historical objects simultaneously) and force (by displaying them static and discrete) is inadequate to represent the historical drama of inscription that produced the palimpsest of the earth.

Successive formations are in most cases separated from each other by blank intervals of time of great length; for fossiliferous formations thick enough to resist future degradations can as a general rule be accumulated only where much sediment is deposited on the subsiding bed of the sea. During the alternate periods of elevation and of stationary level the record will generally be blank. During these latter periods there will probably be more variability in the forms of life; during periods of subsidence, more extinction. (O, 431)

The earth’s successive inscriptions and erasures, its imprinting and obliteration of organic forms upon its surface, is itself a writing born of trauma and produced by the active forces of nature, by upheavals of the land and the subsidence of the sea.

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Darwin even speculates in the above passage that extinction and inscription are temporally linked, as common effects of the same forces. His lament, “The noble science of Geology loses glory from the extreme imperfection of the record” (O, 448), is prompted by the geological record’s failure to provide him with the intermediary links he requires for the proof of his theory of gradual descent. Yet it is also disingenuous, for such “proof” would make of the earth a purely representational text, a museum, a genealogical table, an ancestral portrait gallery in which only types are represented while the traces of their wars, their flourishings, their migrations and hardships, are elided. As a palimpsest, a surface of alternate inscriptions, erasures, traces, superimpositions, and blanks, the earth tells in the very nature of its inscription the historical drama of natural force behind the organic forms.

Darwin’s journeys to the farthest reaches of the earth (Patagonia, Tierra del Fuego, Tahiti, Australia) eventually led him home in his scientific interests not only to the pouter pigeons and herbaceous borders of rural England, but, even more intimately, to the human body itself. The body, Darwin discovered, was as much a palimpsest as the earth, an irregular, haphazard, and incomplete inscription (and erasure) of its own evolutionary history—of changing conditions and their impact on its form, of habits acquired and abandoned, of necessities emergent and vanished, of instincts developed and repressed, and of shifting affinities and departures. In order to read the body in this way, certain metaphysical preconceptions about its unity and integrity had to be scuttled. No doubt the traditional purview of medicine over the study of the body, with its heuristic and normative orientation, perpetuated the Greek philosophical and aesthetic heritage of conceiving the body in Platonic and idealistic terms even when, as in modern times, the metaphor of its integration becomes the machine. But Darwin, like Freud in his approach to dreams, studied the human body en détail rather than en masse, not in its unity and internal coherence, but in its fragments (organs, structures, functions) and their correlation to those of other creatures. He found that, quite unlike an efficient machine, the human body exhibits many anachronisms, and The Descent of Man ends with the summary, “Man still bears in his bodily frame the indelible stamp of his lowly origin” (DM, 619).

Among the erasures of the human body Darwin counts the os coccyx at the base of the spine, the trace of the absent tail that
“corresponds with the true tail in the lower animals” (DM, 23) and that suggests its own, somewhat comical, disappearance as man’s ancestors became arboreal and erect and began to sit upon it: “the tail has disappeared in man and the anthropomorphous apes, owing to the terminal portion having been injured by friction during a long lapse of time” (DM, 60). The male breast and nipple, on the other hand, is very much present, and well enough developed to be potentially functional for lactation. “They often secrete a few drops of milk at birth and at puberty. . . . In man and some other male mammals these organs have been known occasionally to become so well developed during maturity as to yield a fair supply of milk” (DM, 163). The male breast speaks of an obsolete function, of a time when the ancestors of human females were multiparous, and their inadequacy to nurture their many young was supplemented by the lactating capability of the males. Amid the sentimental hoopla surrounding the birth of the Dionne quintuplets in 1934, scarcely anyone seemed to have reflected that the event was a biological regression, or “reversion,” as Darwin would have called it: the production of a human litter. Human behavior is as marked by anachronistic residues as the body, as Darwin discovered in exploring emotional expressions. In anger, for example, the traces of animalistic aggression survive in the human grimace. “The lips, however, are much more commonly retracted, the grinning or clenched teeth being thus exposed. . . . The appearance is as if the teeth were uncovered, ready for seizing or tearing an enemy, though there may be no intention of acting in this manner” (EE, 241). To stress the role of cultural socialization in the repression and erasure of these instincts further, Darwin chooses a homely example. “Every one who has had much to do with young children must have seen how naturally they take to biting, when in a passion. It seems as instinctive in them as in young crocodiles, who snap their little jaws as soon as they emerge from the egg” (EE, 241). Read in this way, as a palimpsest, the human being is no longer the prototype of ideal form in its unity, its originality, its integrity, and its perfection. Hybrid and even teratoid, as it were, in both body and mind, it contains little bits and traces of other animals (the modified swim bladder of fish for its lungs, its hand homologous to “the foot of a dog, the wing of a bat, the flipper of a seal” [V, 1: 12]), aspects of male and female, and primitive instinctual glimmers suffused throughout its civilized behavior.

The palimpsest destroys the illusion of the purely representa-
tional nature of the text, and with it the validity of a positivistic approach to its interpretation. It is a performative text, written by force and desire, by the need to preserve some words and destroy others, by the wish to remember selectively and to forget, by the erosion of natural forces acting over time upon the material of inscription. Darwinian Nature signifies quite similarly, for it is also written by needs, deprivations, migrations, adaptations, sexual desires—by all of the absences that propel natural organisms in their relationship with their environment and each other, and that propel them through time. Because its language depends on differences, Nature speaks most loudly and eloquently through its least normative forms, through its excesses and anomalies. "According to Aristotle, neither accidental properties nor monsters allowed of explanation and hence were not the proper subject matter of science. . . . On the modern view of science, it is precisely the 'accidents' and 'monsters' which call for explanation. It was Darwin's attention to so-called accidental variations which led to his theory of evolution, and it in turn demolished the Aristotelian distinction between essential and accidental characteristics." Darwin did indeed attend the spectrum of anomalies in Nature, such as "rogue" plants, black sheep and white rabbits; old hens that "assumed the plumage, voice, spurs, and warlike disposition of the cock" (V, 2: 26) and capons that brooded eggs and brought up chicks; human monstrosities like the hirsute Crawfords or the even more unfortunate Lambert's with their "porcupine-like excrescences" (V, 2: 53). Without benefit of modern genetics and endocrinology, Darwin had to resort to a theory of atavism or reversion. But he accounted for his throwbacks without resort to the occult premises of his contemporaries ("Some naturalists look at all such abnormal structures as a return to the ideal state of the group to which the affected being belongs" [V, 2: 35]) and, without understanding recessive character in genes, he described its effect in metaphors the reverse of the erasures of the palimpsest: "written as it were in invisible ink, yet ready at any time to be evolved under certain conditions" (V, 2: 59).

Darwin's theory of the mutability of species struck at the normative thinking that made of monsters deviations from Platonic or ideal form. In a universe where the hybrid is perceived as a "living mosaic-work, in which the eye cannot distinguish the discordant elements" (V, 2: 23), the fabulous monsters of Greek mythology, for example, Pegasus and the Sphinx, centaurs and griffins, become conceivably no more than hybrids with their
discordances exaggerated by selective reversions over vast periods of time. Modern women with supernumerary but symmetrical mammae ("Of this I myself have received information in several cases" \([DM, 37]\)) are not so much living monsters to Darwin as creatures affected by a biological time warp, who would be perfectly normal had they lived eons ago among man's early progenitors, who were undoubtedly "provided with more than a single pair" \([DM, 37]\), and who appear anomalous in modern times only because the ascendancy of the human species, with the resulting improvement in the conditions of its survival, made uniparity possible. Anomalies are thus symptoms of change, for the better, as in the case of humans who can successfully raise single offspring to maturity, or for the worse, as in the case of animals whose coloration marks the inevitability of their domestication. "Sheep have never become feral, and would be destroyed by almost every beast of prey" \(V, 2: 5\), and white rabbits, likewise, would not long survive in the wild, where their coloration would make them conspicuous to predators. Quite logically, then, Alice's white rabbit, with its watch and waistcoat pocket and white gloves, is depicted by Carroll as thoroughly domesticated. The whiteness of sheep and of rabbits speaks the desire of their masters for white wool, fur, angora, and the dyed woolens that may be produced from them.

Darwin's attention to monstrosity, excess, and incongruity makes his universe exceedingly strange and alienating to the modern as well as to the Victorian mind. Hyman repeatedly uses the term surreal to describe this brave new world: "The sexuality of the lower animals in the \textit{Descent} is wildly surrealistic. A cast-off cuttlefish tentacle goes off on its own and mates with the female." \(51\) Here, as with his Freudian reading of Darwin, Hyman engages in a circular metaphorics. Freud was made possible by Darwin, as was Surrealist art and thought. Darwin's Nature does not imitate Surrealism; Surrealism expresses the ruptures in conventional ways of thinking about the world inaugurated by Darwin's discoveries. Biological forms are infinitely plastic, and they conform to no a priori logical or conceptual categories. Consequently, notions of the fixity of living form, for example, of unity, uniformity, homogeneity, constitute fictions that correspond to an older metaphysics of Nature. Darwin discovered that no normative representations exist in Nature and that even parts of the human body are so infinitely variable from one individual to the next that in one particular study of human musculature "a single body presented the extraordinary number..."
of twenty-five distinct abnormalities" when compared to "the standard descriptions of the 'muscular system given in anatomical text books'" (DM, 27). The human body is inevitably perceived and represented in tropes of a cultural nature ("the beau-ideal of the liver, lungs, kidneys, &c., as of the human face divine" [DM, 27]) that imply a spurious identity among individuals of the same species. These infinite variations among individual organs are elided in our own thinking because they no more signify than do the infinite phonetic variations of the sounds of a single phonemic pair. But Nietzsche finds it important to emphasize not only the fictive nature of form itself, and particularly biological form, but also that these figurations, these fiction-making processes, are themselves anthropomorphisms that serve human psychological needs.

Form counts as something permanent and therefore more valuable; but form is merely something invented by us. . . . Form, species, law, idea, purpose—here the same error prevails in each case in that a false reality is slipped under a fiction. . . . One must not understand this need to form concepts, species, forms, purposes, laws ("a world of identical cases") as if we were thereby able to fix the true world; but rather as need to ready a world for ourselves that makes our existence possible—we create thereby a world that is calculable, simplified, intelligible, etc., for us. (4, PW, 17)

Darwin would quite have agreed as to the purely conventional and anthropomorphic nature of scientific categories: "I look at the term species as one arbitrarily given, for the sake of convenience, to a set of individuals closely resembling each other" (O, 67).

Darwin's famous analogy between natural and artificial selection (a controversial argument because of the disrepute of analogy as a logical tool) could be easily misconstrued as a reintroduction of the Author, here the breeder in the guise of the artist, as the originator of natural form. Darwin cites Mr. Youatt's deific description of using selection as "the magician's wand, by means of which he may summon into life whatever form and mould he pleases" (O, 48). Lord Somerville reputedly endowed breeders with Platonic powers ("It would seem as if they had chalked out upon a wall a form perfect in itself, and then had given it existence" [O, 48]) as though the breeder were a kind of Pygmalion able to give both form and life to his desires. The implication of these deific artistic metaphors for the eugenicist is
that it makes Nature once more representational, a reflection or realization of preexisting forms, like the sketch of an artist or the statue of the sculptor ("The sheep are placed on a table and are studied, like a picture by a connoisseur" [O, 48]). Indeed, these metaphors are inspired by the protean quality of natural forms being described as a kind of plasticity ("Breeders habitually speak of an animal's organisation as something plastic, which they can model almost as they please" [O, 48]). Organic reproduction, an unconscious process impelled by natural forces and animal instincts, is transformed by eugenics into representation, an intellectual, conscious, anthropocentric process governed by human desire in the form of the idea, or the fantasy of the ideal.

While in the beginning of *The Origin of Species* Darwin stressed the breeder's power to modify and alter domestic breeds of plants and animals radically, in *The Variation of Animals and Plants under Domestication*, published almost a decade later, he took pains to dismantle the eugenicist's role. He did so by pointing out that the natural process remains independent of the breeder, who can control its direction but not its workings, and whose intervention will therefore have the same effect whether it is conscious or unconscious, voluntary or involuntary. "It is an error to speak of man 'tampering with nature' and causing variability. If a man drops a piece of iron into sulphuric acid, it cannot be said strictly that he makes the sulphate of iron, he only allows their elective affinities to come into play. If organic beings had not possessed an inherent tendency to vary, man could have done nothing" (V, 1: 2). By implication, then, sulphate of iron would be produced whether the man were a scientist intent on producing the compound or a bystander walking past the vat of sulphur, who accidentally trips and drops his iron key into it. Darwin stresses that many of man's modifications of domestic breeds are quite unconscious and, strictly speaking, unintentional. "We may confidently infer that no man ever selected his water-dogs by the extent to which the skin was developed between their toes; but what he does, is to preserve and breed from those individuals which hunt best in the water, or best retrieve wounded game, and thus he unconsciously selects dogs with feet slightly better webbed. The effects of use from the frequent stretching apart of the toes will likewise aid in the result. Man thus closely imitates Natural Selection" (V, 1, 42). The breeder *imitates* natural selection. When he culls the inferior members of a herd and destroys the weaklings to prevent
their reproduction, he *imitates*, consciously or unconsciously, the action of animal predators.

We might resort to a linguistic analogy to say that the process of natural selection, like linguistic competence, is beyond conscious control or interference. Human action influences the performance, as it were, and the eugenicist, like the rhetorician, exercises sufficient conscious control over the performance to achieve specific results. Of course, modern recombinant DNA research and biogenetic engineering do indeed allow man to control natural genetic processes that, like linguistic competence, were once beyond human influence or interference. Darwin, who worked without benefit of even Mendel’s theories of heredity (which did not become known until the turn of the century) could scarcely have imagined a field like modern biotechnology, in which man indeed “tampers with nature” and performs virtually deific acts of creation. Darwin’s difficulty in distinguishing the breeder’s anthropocentric teleology (“domesticated breeds show adaptation to his wants and pleasures” [V. 1: 4]) from the faulty implication that artificial selection actually anthropomorphizes the natural process (permitting breeders to “create” new species) results largely from the anthropomorphic encrustations of scientific language. Much as he tries, Darwin cannot rid himself of them, and his only recourse is to protest the figurative nature of much of his discourse. “For brevity sake I sometimes speak of natural selection as an intelligent power;—in the same way as astronomers speak of the attraction of gravity as ruling the movements of the planets, or as agriculturists speak of man making domestic races by his power of selection” (V. 1: 6).

In place of an Author, or a governing intelligence, Darwin discovers force and desire (including human force and desire) as the power shaping natural forms. Adaptations in natural organisms speak of it, and whether or not the human desire behind domesticated forms can be articulated is ultimately irrelevant to its power. A breeder explains to Darwin the crass economic motive behind the “complete metamorphosis” (V. 2: 182) of the domestic pig: “The legs should be no longer than just to prevent the animal’s belly from trailing on the ground. The leg is the least profitable portion of the hog, and we therefore require no more of it than is absolutely necessary for the support of the rest” (V. 2: 178). Indeed, the domestic pig has been appropriated entirely to human food production and the cost to itself in

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terms of its animal autonomy can be measured by comparison with the wild boar, which is equipped with tusks for defense, longer legs for mobility and flight, and a more compact musculature for powerful impact in battle. Yet beneath the layers of human cultural motives, the desire for economic profit and agricultural efficiency, competition with other breeders, and so on, lurks Darwin’s blind survival instinct. From a wider evolutionary perspective, the farmer’s “development” of the biologically monstrous domestic pig is an adaptation in the interest of human survival at least teleologically equivalent to the giraffe’s development of a grotesquely elongated neck in order to reach the foliage of tall trees. In a parenthetical remark deleted from the published Journal of Researches, Darwin notes, “If an animal exerts its instinct to procure food, the law of Nature clearly points out that man should exert his reason & cultivate the ground” (Gruber, 433; from the Beagle Diary).

Darwin not only places biological man within Nature, giving him an animal genealogy and a mutable mammalian form, but he places reason, morality, culture, art, and language within Nature as well. In the most famous passage of the “N Notebook” he writes: “To study Metaphysics, as they have always been studied appears to me to be like puzzling at astronomy without mechanics. —Experience shows that the problem of the mind cannot be solved by attacking the citadel itself. —the mind is function of body” (Gruber, 331; my italics). The most anthropoid attributes are consequently read and explicated for traces of man’s animal ancestry: reason is explained as a refinement of instinct, morality as a development of social and parental instincts, taste and art as elements of sexual desire and gratification, language as a sophistication of animal communication systems. Darwin’s “consistent interest in the dethronement of reason and conscious will as the sole governors of human behavior” (Gruber, 369) prepared the way for Freudian psychology, as his correlation of morality with the social organization of the human species anticipated Nietzsche’s Genealogy of Morals. Human cultural evolution is as much propelled by force and desire as the rest of organic creation, which is a nonidealist, non-Hegelian view of human history. Only in his attempt to grapple with those mysteries of human desire that require a more complex phenomenological grasp of intersubjectivity than he possessed—an ability, for example, to understand the relationships among human desires—did Darwin encounter a cul-de-sac
chat prompted him to cry out in the notebooks, "What is the Philosophy of Shame & Blushing?" (Gruber, 293).

In The Descent of Man, Darwin states flatly, "My object in this chapter is to shew that there is no fundamental difference between man and the higher mammals in their mental faculties" (DM, 66). Darwin collapsed perhaps the cardinal traditional difference between humans and animals by suggesting that the mind is not a fixed spiritual entity but a heuristic form as protean as the body. Not only did it evolve, diachronically, from animal instinct and even plant tropisms (for example, the movement of climbing plants: "It is hardly an exaggeration to say that the tip of the radicle . . . acts like the brain of one of the lower animals") (DM, 33). But also, viewed synchronically, the mind consists of myriad conscious and unconscious, rational and irrational heuristic behaviors (emotions, curiosity, imagination, memory, reason, self-consciousness, among others) that take their forms not from ideal entities but from the forces, needs, and desires that propel the body also in its relation to the world.

"Plato / Erasmus / says in Phaedo that our 'imaginary ideas' arise from the preexistence of the soul, are not derivable from experience.—read monkeys for preexistence" (Gruber, 290).

Darwin's notebooks show two complementary arguments developing for breaking down the differences between animal and human intelligence, and they both depend upon his psychological approach to questions of mental function. Humans, he reasons, can think without (strictly speaking) "thinking" consciously, while animals can know without (strictly speaking) "knowing" consciously. His physician father's theories about the gradation between sanity and insanity, and the ambiguity of such twilight conditions as intoxication, delirium, somnambulism, and what he calls "double consciousness" (Gruber, 288), provide him with evidence of modes of intelligence disengaged from reason. But although such conditions might be extruded on grounds of their pathology, Darwin also monitored his own dreams and made proto-Freudian observations on them. "Characters of dreams no surprise, at the violation of all (rules) relations of time (identity,) place, & personal connections—ideas are strung together in manner quite different from when awake" (Gruber, 285). Without benefit of a theory of repression, he nonetheless detected the palimpsestic nature of the human psyche, whose topology Freud was to mark as a terrain of inscriptions, erasures, superimpositions, blanks, and traces. "Now if
memory / of a tune & words / can thus lie dormant, during a whole life time, quite unconsciously of it, surely memory from one generation to another also without consciousness, as instincts are, is not so very wonderful" (Gruber, 267). Darwin adumbrated in this cybernetic analogy of human memory and organic replication a common grammatical principle, a notion of writing as the production of traces, underlying the continuity of life.

Concerning the higher mental processes, particularly the power to abstract and to form general concepts, Darwin questions whether animals (no less than savages) might not possess them in effect, that is, practically, intuitively, being able to demonstrate but not articulate them. Darwin points out, for example, that monkeys are as frightened of a stuffed or dead snake as a live one, and that their fear seems attached to a category of animal, perhaps the reptilian category, rather than to particular threatening signals, such as movement or a hiss. "It would almost appear as if monkeys had some notion of zoological affinities, for those kept by Brehm exhibited a strange, though mistaken, instinctive dread of innocent lizards and frogs" (DM, 72). He reports examples of animals that without benefit of Newton's laws behave in practical ways as though they understood the law of gravity, for example, Houzeau's parched dogs searching hollows and depressions on the desert surface for water. In his "M Notebook," Darwin writes, "It will be good to give Abercrombie's definition of 'reason' & 'reasoning' & take instance of Dray Horse going down hill . . . & then go on to show, that if Cart horse argued from this into a theory of friction & gravity, it would be discoverer [of] 'reasoning' or 'reasoning' [sic]—only rather more steps. —dispute about words" (Gruber, 293). Darwin reports a relatively complex reasoning process in some monkeys, who, accustomed to receiving lumps of sugar wrapped in paper, were stung when a live wasp was put in the paper instead: "after this had once happened, they always first held the packet to their ears to detect any movement within" (DM, 78). The monkeys apparently discriminated animate from inanimate on the basis of movement, and, consequently, sound. Another account tells of polar dogs that "instead of continuing to draw the sledges in a compact body, diverged and separated when they came to thin ice, so that their weight might be more evenly distributed" (DM, 75). They thereby exhibit what appears like a practical, intuitive knowledge of the relationship of mass, stress, and surface. "All Science is reason acting /

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systematizing / on principles, which even animals practically know (art precedes science—art is experience & observation) in balancing a body & an ass knows one side of triangle shorter than two'' (Gruber, 333). No doubt, many of these interesting examples of animal intelligence could be reduced to crude stimulus-response behavior by modern behaviorist psychology. But it is symptomatic of our prevailing anthropocentrism that animal psychology has been by and large relegated to behaviorism with its occlusion of the mind’s inner life, while the human psyche reserves the complexities of psychoanalytic explanations for itself.

A crucial factor in Darwin's attribution of reason and moral sense to animals is the argument that possession of these faculties is not identical with consciousness of their possession. Referring to the intuitive search of savages and dogs for water in low places, Darwin notes, "The savage would certainly neither know nor care by what law the desired movements were effected; yet his act would be guided by a rude process of reasoning, as surely as would a philosopher in his longest chain of deductions" (DM, 77). An analogy with linguistic competence bears him out: the possession and use of language does not presuppose or require a conscious awareness of the laws of syntax.

Although careful not to oversimplify the question, and giving cultural factors their due (DM, 132), Darwin grounds morality in the social and familial instincts of animals and even gives conscience a biological etiology as the discomfort attending the frustration of the protomoral instincts in social creatures. Aware of the ramifications of such notions—that morality thereby becomes as subject to heredity as insanity and that the "above views would make a man a predestinarian of a new kind, because he would tend to be an atheist" (Gruber, 279)—Darwin nonetheless dismantles "free will" by arguing its determination by prior, ulterior, unconscious, and irrational motives.

When a man says I will improve my powers of imagination, & does so,—is not this free will,—he improves the faculty according to usual method, but what urges him,—absolute free will, motive may be anything ambition, avarice, etc., etc. An animal improves because its appetites urge it to certain actions, which are modified by circumstances, & thus the appetites themselves become changed.—appetites urge the man, but indefinitely, he chooses (but what makes him fix!? frame of mind, though perhaps he chooses wrongly,—& what
is frame of mind owing to— I verily believe free will & chance are synonymous. (Gruber, 271)

Morality and virtue themselves become factors in the evolutionary scheme of things, and Darwin reads them not only for their biological origins, but also for their eugenic effects. And although Darwin finds particular virtues counterprogressive (for example, courage, which causes the boldest young men to fall in battle and leave fewer progeny; or chastity, which lessens the fecundity of individuals) he maintains that morality ultimately serves a positive genetic function in promoting the survival of larger social units. "A tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection" (DM, 132).

Although aesthetic sensibility may arguably be considered the most distinctly anthropoid trait next to language, Darwin also displaces the concept of beauty from the realm of the ideal and the spirit and attaches it to the sexual and erotic instincts in humans, animals, and even plants.—"We can to a certain extent understand how it is that there is so much beauty throughout nature. . . . Flowers and fruit have been rendered conspicuous by brilliant colours in contrast with the green foliage, in order that the flowers may be readily seen, visited and fertilised by insects, and the seeds disseminated by birds" (O, 436). Interestingly enough, Darwin implicitly suggests that desire (for oral gratification, as in the case of the bee or the hummingbird, or for sexual gratification) requires a process of selection (since a bee may visit only a limited number of flowers, or since only a single mate may be accommodated at any one time) that operates precisely on the determination of difference. In other words, since the female can choose only one mate from among all of her possible options (for any given copulation), she will choose the most conspicuous, the one who is distinguished from the rest by a difference, perhaps a difference from herself or her own sex (an "other" that is still the same), and in so doing she genetically institutionalizes and perpetuates that difference. One could ask, of course, why some species such as birds have highly distinguished sexes, while the sexes of dogs are virtually indistinguishable in terms of secondary sexual characteristics. The most plausible answer might be that birds, having keener vision because of

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their aerial habits, respond more readily to visual stimuli and therefore differentiate minure color variations, while dogs with their terrestrial habits might respond more readily to such nonvisual stimuli as odors. This state of affairs has interesting implications for the roles of the sexes, for it suggests that in many species it is the female whose erotic desire works through her "intellectual" activities (acute perception, attention to detail, powers of discrimination) ultimately to call into being the red of the male cardinal, the splendid fantail of the peacock, or the wonderfully complex horns of the stag. "Just as man can give beauty, according to his standard of taste, to his male poultry . . . so it appears that female birds in a state of nature, have by a long selection of the more attractive males, added to their beauty or other attractive qualities" (DM, 211).

Darwin discovers that sexual selection depends on animal subjectivity, on an awareness of the "other," although its status (whether as object, force, or subject) remains indeterminate. Unlike Hegel, who distinguishes animal subjectivity from human intersubjectivity, Darwin cannot finally solve the mystery of why humans blush and animals do not. "Blushing is the most peculiar and the most human of all expressions. Monkeys redden from passion, but it would require an overwhelming amount of evidence to make us believe that any animal could blush" (EE, 309). The mystery is significant for it would make blushing a rather singular phenomenon: physiological in nature, depending on the involuntary actions of the circulatory system, and yet seemingly purely cultural in origin. Darwin reports contemporary interpretations of the blush as a kind of automatic writing of the soul, a sign of the conscience, an internalized Scarlet Letter, as it were, "designed by the Creator in 'order that the soul might have sovereign power of displaying in the cheeks the various internal emotions of the moral feelings;' so as to serve as a check on ourselves, and as a sign to others, that we were violating rules which ought to be held sacred" (EE, 336). Darwin humanely points out that most blushing is caused by shyness and modesty and benefits neither the blusher nor the spectator. He further produces two significant insights: that blushing is the product of psychological phenomena ("When a blush is excited in solitude, the cause almost always relates to the thoughts of others about us" [EE, 335]) and that it is part of an intersubjective experience ("It is not the simple act of reflecting on our own appearance, but the thinking what others think of us, which excites a blush" [EE, 325]).
These same insights might have served to explore other inter-subjective emotions that baffled Darwin ("Is [sic] shame, jealousy, envy all primitive feelings, no more to be analyzed than fear or anger?" [Gruber, 294]) and to produce more rigor in ascribing them (along with emulation and deception) to animals. Without benefit of a psychology of object relations and without a consideration of the ontological status of mediated objects, Darwin could not explore what is, perhaps, the cardinal difference between human and animal: the perception of the desire of the other and the alienation that comes with perceiving the self as a mere object in the other's consciousness. Darwin did not consider that competition for pure prestige might indeed be of a different ontological order from competition for survival.

But Darwin's research leads him to the abolition of differences rather than their definition. As Hyman writes of The Expression of the Emotions in Man and Animals, "the final sense we get is of a community of feeling and reaction in infant and adult, elephant and keeper, degraded woman and galvanized man, Darwin and small American monkey sharing his snuff. It is a world as teeming with emotion as the natural world teems with life." Hyman sees, I believe, a natural connection between Darwin's humanistic tendencies (his humanizing of beasts and anthropomorphizing of Nature) and the peculiarly literary qualities of his scientific writing with its heavy dependence on the imaginative use of metaphor and anecdote. But Darwin's writings express an even more complex activity of the literary and critical imagination: an awareness of the constraints placed upon scientific thought by a language whose very syntax permeates Nature with the metaphysics of the subject ("It rains," "Es regnet," "Il pleut") and whose words for natural processes (selection, creation, affinity) must be continually purged of their anthropocentric residue. Conversely, the animal, qua animal, comes ontologically into its own, as an autotelic product of natural forces, living for itself. It is no longer a mere metaphor standing for the repressed and censored aspects of human nature nor, strictly speaking, even a "creature," product and object of a designing mind. "Origin of man now proved," Darwin writes in his notebook. "Metaphysics must flourish.—He who understand [sic] baboon would do more toward metaphysics than Locke" (Gruber, 281).