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Performed Being: Word Art as a Human Inheritance

Frederick Turner

The study of the oral tradition presently lies at the crossroads of several new lines of research that promise to transform the shape of literary criticism and critical theory forever. The nature of this change may perhaps be indicated by an analogy with the revolution in the study of biology which was wrought by the theory of evolution.

Before Darwin and Wallace proposed the mechanism of natural selection, biology was essentially disconnected from the other sciences of the physical world. Various strategies or approaches existed for the pursuit of biological studies: the descriptive (corresponding to the common or “garden-variety” descriptive criticism one finds in the standard surveys of literature), the taxonomic (corresponding to classical genre study), the functional (corresponding to the study of rhetoric and reader response), the developmental (corresponding to biographical and historical criticism), the anatomical (corresponding to the New Criticism and Structuralism), the mystical/vitalist (corresponding to Deconstructionism), and the ecological (corresponding to “influence” criticism). But no single principle unified these strategies; no way of relating living matter to other forms of organization existed; no concrete connection appeared between higher and lower forms of life; and no opportunity was offered for the use of mathematical models on one hand and experimental analysis on the other, though these tools had proved extremely powerful in understanding less complex physical entities such as planetary motions and chemical compounds.

The evolutionary perspective, however, provided a single underlying principle uniting all branches of biological science. It

opened the way for the development of biochemistry, which links nonliving with living matter and derives the latter from the former. It showed how the higher forms of life derived from the lower. It spawned population genetics and the elegant statistical mathematics of gene pool models. And it not only provided a starting point for biological experimentation, but also demonstrated that many “experiments” already existed in the form of isolated evolving ecosystems like the Galapagos Islands, or in the selective breeding of domesticated species. Above all, evolutionary theory provided the biological phenomena of the present moment with a deep history, so that their significance sprang suddenly into three-dimensional clarity. The result of these changes was to transform biology—as a discipline—from a hobby of gentleman scholars to a central and vital element of public life and cultural development.

Would it not be a worthy goal for the literary scholar to seek an equivalent unifying idea? The various schools of critical theory and practice all have their successes, but taken together their differences cloud rather than sharpen the student’s vision; we have no theory of the relation between literature and the other arts, and those human activities such as religion and politics; we have little coherent idea of the connections between “high” literature and folk and popular literature; we have not seriously studied how literature might be understood in terms of the organs which produce and appreciate it, the linguistic and auditory systems of the brain; and we have no way of constructing genuine literary experiments, because we have no basic language for asking the questions experiments are designed to answer. (A merely random reshuffling of linguistic elements, which characterizes much modern “experimental” literature, is not, for this reason, truly experimental at all.) We do not know what existed before literature that made literature come to be possible, and thus cannot recognize the relationship between its archaic “grammar” and its expressive novelty. Literary study remains the mandarin pursuit of a leisured minority, despite the pervasive importance of the arts of words in the lives of all human beings.

Even the *analogy* of a unifying paradigm in natural science is productive, in that it suggests requirements for a working body of knowledge that have been neither exacted nor met in literary criticism. Perhaps, indeed, the analogy should not be taken too far. Literary criticism is a field of humane studies, not a science.

But to the extent that the achievements of evolutionary theory in biology provided that discipline with the humblest commonsense rational virtues—consistency, unity of language, fertility of hypothesis, clear criteria of significance—the stricture implicit in the analogy should not be rejected. Perhaps literary criticism should never be an exact quantified science. But then, neither should biology: life, after all, is itself a survival strategy of finesse against the cold numbers of entropy, complexifying the molecular game, raising the stakes, delaying the payment of physical debt, changing the rules so as to keep ahead of the literalistic determinism of thermodynamics. Evolutionary theory did not falsify by reduction the complex and qualitative richness of the biosphere: rather, it helped us to reveal it.

Several characteristics qualify the oral tradition to be the Galapagos Islands,¹ so to speak, where a unifying literary theory may begin to take shape. First, its antiquity: the roots of oral tradition reach back as far as our scholarship can trace. Second, its association with ritual, a kind of behavior which we share, in part, with other animals and which appears to be fundamental to human nature. Third, its association, in practice, with pleasure, on which there is now an increasing body of neurophysiological research. Fourth, its use of psychic technologies such as rhythmic driving and mnemonics. Fifth, its cultural universality, which points to a shared human inheritance. Sixth, its nature as a tradition of *performance*: an activity now increasingly recognized as having its own rules and structures, which may in turn cast light on the literary arts in general. Seventh, its complex and profound involvement with speech acts and performative utterances, forms of language which linguistic philosophy has recently begun to explore and which are in turn connected to the most fundamental questions of truth, reality, and being.

The oral tradition is the one branch of literary studies which reaches back far enough in time to invite a consideration of that crucial period in human prehistory when biological evolution overlapped with cultural evolution. During this epoch the physiological adaptations which produced modern Homo Sapiens were not complete; but according to paleoanthropology, there is unmistakable evidence that quite complex behaviors, including speech, were already in place and in process of further development. The length of this period is a matter of vigorous controversy among anthropologists, archaeologists, and human

ethologists. The shortest estimates, however, are in at least hundreds of thousands of years; many authorities would say millions.² A large proportion of those physical characteristics which are uniquely human and which mark us off from the other primates evolved during that period of overlap; and—most significantly of all, though the natural divisions between subdisciplines have obscured it until recently—those human characteristics of body and brain must have evolved under the strong influence and selective pressure of the earliest forms of culture. In other words, the human brain and body are at least as much the product of human culture as human culture is the product of the human body and brain! We are a domesticated species—self-domesticated, or, better still, domesticated by culture even before we had what we might truly call a human self. There was ample time for *cultural* requirements to become genetically embodied in human tissue: and thus, of course, we are hairless, oversexed, brainy, long-lived, infantile, and artistic. Thus also, perhaps, we like stories and poetic rhythm. Of this more later.

The point is that we can no longer look at human cultural activity—especially the very ancient kind, like oral performance—as simply arbitrary in form and structure. There are, so to speak, real artistic rules, just as the classical critics maintained (though for different reasons). Our brains and bodies will be happy, facile, vigorous, and inventive—radiant and porous, as Virginia Woolf (1957) puts it—when they use one kind of artistic structure, and not when they use another kind. We are better at telling stories than at saying concatenations of utterances that won't make some kind of story. Babies prefer nursery rhymes to other kinds of sounds. We are better at reciting three-second chunks of language than eight-second chunks. And perhaps the “rules” of human art are quite exact and complex, and are discoverable, and may form the basis of a coherent literary criticism.

The oral tradition is linked to one of the most fundamental of human activities: ritual. Indeed, it would be hard to think of an occasion in which a traditional oral performance would not itself be part of a ritual occasion, and nearly as difficult to imagine a ritual without some kind of traditional oral performance. However, the significance of this relationship has not been entirely clear, largely because the oral tradition has been the province of folklorists and literary scholars, while ritual has belonged to anthropology, religious

studies, and ethology. Furthermore, it is only fairly recently that certain aspects of ritual have come to light, which have very exciting implications for the oral tradition as well.

Ritual, until the last few years, was often regarded as little more than superstitious, repetitive, neurotic, backward, and conservative behavior, beneath the notice of humane scholars, and discussed by social scientists as part of the flummery by which the harsh economic realities of society were disguised. Now, however, ritual is increasingly considered as one of our most vital, creative, and healthy activities. Three new discoveries have helped bring about this change. First, in anthropology and religious studies, it became clear that ritual, far from being a mindless activity, is often—indeed in many societies, exclusively—the place where society stands back from itself, considers its own value system, criticizes it, and engages in its profoundest philosophical and religious commerce with what lies outside it, whether divine, natural, or subconscious. In ritual, human beings decide what they are and stipulate that identity for themselves, thereby asserting the most fundamental freedom of all, the freedom to be what they choose. The great life-crisis, calendrical, sacrificial, celebratory, and mystical rituals propose counter-structures to the normal structures of society, as Victor Turner has argued, and thereby constitute a large part of a society's evolutionary and adaptive potential (espec. V. Turner 1968, 1969). Like the recombinations of genes which take place in sexual reproduction, they introduce variability and hybrid vigor into their society. What Turner calls "communitas"—the recognition of human siblinghood—comes to the fore in rituals and is reinvigorated for the sake of social cohesion. Rituals, moreover, are by no means static and unchanging, but are continually reinvented at that fertile interface between the individual and the collectivity. Students of the oral epic and the ballad will be quite familiar with this process.

Second, it is becoming obvious that human ritual is not entirely unique but belongs to a set of ritualized behaviors to be found among many species of higher animals. The great ethologists, Huxley, Lorenz, and others, have shown how pervasive is that marvelous counterfactual activity we call ritual among our fellow inhabitants of the planet (Eibl-Eibesfeldt 1975, Lorenz 1962, Huxley 1966). One of the chief priorities of contemporary anthropology is to *avoid* drawing the obvious analogies between human and other animal rituals. Mating, aggression, territory,

home-building, bonding, ranking, sexual maturity, birth: all have their ritual behaviors, human and animal. In fact the only major aspects of the life of an animal which are ritualized by human beings but not by other animals seem to be time and death.

But there is another, much greater difference between human and animal ritual. Animal rituals are passed down from one generation to another by essentially genetic means. The specific “fixed action patterns” that act as mutual triggers in ritual interaction are either expressed automatically in a healthy animal or lie ready to be released by some stimulus (such as hearing the species-specific birdsong of a conspecific). The inborn ritual instincts of animals can be distorted by natural or artificial interference, but such distortions can only lead to permanent changes in a species’ ritual if the new behavior has a genetic basis and that genetic alteration confers a selective advantage upon the breeding individuals that possess it.

Human ritual, on the other hand, is passed down, in its particular details and even in many of its large structures, by means of tradition: a process of teaching and learning which need not wait for genetic changes to produce real novelty from one generation to the next. It may seem strange to describe tradition as a means of rapid change: but compared to genetic evolution, tradition is a positive hotbed of newfangledness. Some animals—the classical example is the Japanese macaques (see Imarishi 1957, Frisch 1959, Kawai 1965, Itani 1958) which invented the art of potato-washing and spread it through the whole population—can pass down simple technological innovations from one generation to another by means of tradition. But only humankind does so with ritual.

This does not mean that humankind does not inherit a genetic predisposition to ritual behavior in general: its universality and its evident psycho-physiological basis attest to an important genetic element. Further, there are many particular behaviors and forms which seem to be common to much human ritual and which are no doubt related to inherited anatomical, neural, and behavioral features of our species: rhythmic chanting, body decoration, *communitas*, tripartite structure, storytelling, and so on. But the crucial point is that we do not genetically inherit particular rituals, as other animals do, but rather a disposition to ritual in general and a fundamental grammar and lexicon of ritual elements with which we can generate an infinite variety of rituals. Moreover, we

can very rapidly change the rituals we already possess, through that reflexivity that the anthropologists have observed in ritual practice.

All the foregoing of course applies to the oral tradition. Beneath the oral tradition we can dimly make out its roots in more general primate and mammal ritualization; and if we look carefully we may begin to discern the inherited grammar and lexicon that we unconsciously use to make oral performances, and perhaps to make literary art.

Thus at the heart of human artistic performance we find an archaic genetic armature of mammalian/primate ritual. Surrounding this core we find a layer composed of the new, genetically-transmitted grammar and lexicon of human ritual performance, created by the interplay of biological and cultural evolution. Next, we find the oral tradition itself: culturally evolved but directly reliant on the genetic structures which it itself imposed by selective pressure upon the species. Next above that is the recorded tradition, in which the limits of human memory are transcended by the technology of writing and print. Finally we encounter the realm of exegesis, criticism, and metacriticism, activities themselves conducted within the subtle ritual space of literature. This structure which I have described here is also the record of a historical development of increasing reflexivity, and at each point the leap from a more archaic system to a more sophisticated and reflexive one takes place through the needs and pressures of performance. The performance of the ancient genetic rituals led to their imitation, with variation, by the young, and the birth of the ritual tradition. The performance of the traditional rituals exerted selective pressure on the nervous systems of our ancestors—those who could not perform the rituals would not get a mate or even survive—which ingrained the performance “grammar” into the genes. In turn the demand of the priest-actors for external memory storage of complex ritual dramas led to the development of literary recording; and the performance of literary productions led to the need for exegesis and criticism, as recorded directorial notes to the actors, so to speak.

From this perspective it becomes clear that the arts should properly be regarded as the most fluid, sophisticated, and reflexive subset of the broad general category of ritual performance, and the oral tradition as one of the crucial areas connecting the arts with the rest of the ritual continuum. The implications of this way of

looking at the arts are especially striking for literary criticism, as we shall see.

The third exciting development in the study of ritual has been the recognition that ritual activity is tuned to observable mechanisms in the human brain and nervous system. The pathbreaking book *The Spectrum of Ritual: A Biogenetic Structuralist Perspective* (d'Aquili et al. 1979) has explored ritual trance and the massive cognitive, emotional, perceptual, somatic, and social changes it involves, and shown that it performs indispensable functions for the human individual as well as the group. Further, the book describes specific ritual techniques by which the trance state—whether light and barely noticeable or heavy and obvious—is brought about; the varieties of types of trance ranging from meditation to frenzy; and their characteristics in terms of brain chemistry, brain rhythms, and the functions of the ergotropic, trophotropic, sympathetic, and parasympathetic systems, and the left and right hemispheres of the brain. Most interesting of all, perhaps, for our purposes, are two points: the close resemblance between the subjective effects of ritual trance and aesthetic pleasure; and the observation that the rhythmic driving of an endogenous brain rhythm by a synchronized external beat is one of the chief means by which those changes in brain state are produced. I and Ernst Pöppel, the German psychophysicist, have investigated the curious fact that all human poetry possesses regular lines that take roughly three seconds to recite, and have recently published our findings in an article entitled “The Neural Lyre: Poetic Meter, the Brain, and Time” (Pöppel and Turner 1983). We concluded that poetic meter is a way of inducing much larger regions of the brain than the left-brain linguistic centers to co-operate in the poetic process of world-construction, and that one of the chief techniques of that world-construction is the creation and maintenance of a hierarchy of temporal periodicities which makes sense of past events and is powerfully predictive of future ones. Recent work on the preferences of babies for nursery rhymes has confirmed our findings (Glenn and Cunningham 1983).

One of the most interesting questions in the contemporary study of the biology of aesthetics concerns the biological basis and evolutionary necessity of pleasure in general and aesthetic pleasure in particular. We participate in oral performances, just as we look at sculpture or listen to music, not primarily to be informed or edified, but to be delighted. To an evolutionary biologist pleasure,

like any other activity of an organism, serves an adaptive function; in this case, reward. The neuropsychologist James Olds (1976) and others (Routtenberg 1980, Snyder 1977, Guillemin 1978, Konner 1962) have begun a close study of the reward systems of the brains of higher animals, with special attention to human beings. Other investigations in the same field, such as Lionel Tiger (1979; see also Willer et al. 1981), have discovered an extensive group of very large peptide molecules which the brain can produce and in turn take up, and which are associated with the various subjective sensations of pleasure, ranging from high arousal to deep relaxation. These peptide molecules are large enough—only one step removed from the proteins—to carry information on their own account. Like most great scientific discoveries, this one was in a sense obvious, but only once it was pointed out. All it took was the question “Why do opium derivatives, cocaine, and other drugs produce such great pleasure?” Obviously our species could derive no adaptive advantage from consuming the resins of certain oriental poppies or South American shrubs, nor were they available to most members of the species. Thus the presence of the specific receptors in the brain which respond so sensitively to these chemicals cannot have anything to do with poppies or coca as such. They must then be designed to respond to internally generated chemicals which are crudely mimicked in structure by those herbal resins.

It soon became obvious that the internally generated brain rewards were more powerful, by many orders of magnitude, than the conventional motivators proposed by crude materialists and behaviorists. Rats will ignore the pangs of extreme hunger and thirst, and the presence of strong sexual stimuli, in order to press a bar which will either deliver the chemicals of delight or electrically stimulate their own brains to do so. If even rats do not live by bread alone, *a fortiori* neither do humans.

It is becoming clear that the “higher pleasures” of creative mental effort, of beauty, of goodness, of truth are indeed independent pleasures of their own and not merely perverted or sublimated versions of sexual or nourishment drives. The endorphins, as the endogenous brain chemicals are called, are clearly involved in aesthetic pleasure. Let us now return to our earlier question: what is the adaptive significance of aesthetic pleasure? Why should we be designed to appreciate beauty, and to enjoy it with an intensity which is potentially much greater than that of hunger or lust?

One clue is afforded us by the fact that the “pleasure-chemicals” are by no means “sure-fire” in their effect. Indeed they can even apparently be painful if administered without warning and without the control of the subject (Valenstein 1974). Thus these pleasures must be associated with the autonomy, the power over the future, and the predictive capacities of the organism. Yet the sense of beauty is not the same as the exultation of power, though it can resemble it. We associate beauty with a certain set of perceived objects, and with a certain manner of perception, cognition, and emotional comprehension, but not necessarily with action as such; some of our strongest experiences of beauty take place in response to our own endogenous imagery of dream, fantasy, or memory. The feeling of beauty, then, is a reward for a certain autonomous activity of the brain, one which gives the brain a grip on the future, which is, however, not necessarily involved with immediate external actions to change the environment. We are rewarded powerfully by the pleasures of taste and sex, for the metabolically expensive activities of foraging and reproducing ourselves; otherwise we might not bother. But the creation and appreciation of beauty is much more metabolically expensive, and is rewarded by a pleasure which, according to neurochemistry, is fifty times stronger than heroin, for which in turn human beings will happily neglect the delights of sex and eating. What activity can be so much more important than nourishment and reproduction?

The answer to this question necessitates an understanding of the ethological term *Umwelt*, in the special sense that Von Uexkull (1909) used it when describing the behavior and perception of animals. Every animal has a species-specific world, a set of relevant factors in its environment which its receptors—its senses—are designed to detect and its effectors—its limbs and other active organs—to act upon. Outside that world, that *umwelt*, nothing exists as far as that animal is concerned: for instance, visual phenomena have no existence for an eyeless species, nor subterranean ones for an animal not equipped for digging. For those animals with simpler nervous systems, the *umwelt* is a crude one containing only a few unrelated elements: there is a fairly direct link between stimulus and action, without much intermediate interpretation of the various sensory inputs. For advanced species, on the other hand, with a much higher ratio of nervous tissue to body weight, and with complex cortical development, the evidence

from many receptors is continuously integrated into a coherent universe of enduring objects in motion relative to each other and to the organism, with their own smell, sound, taste, and touch and their own sensitivity to each other and to the organism that perceives them. Now nowhere in physics is it asserted that such entities as enduring objects exist. They come into existence, as far as we know, as the highly elegant constructs of the brains of higher animals: physics knows only a complex interplay of the four fundamental forces at various intensities, wavelengths, and vectors. The concrete universe of objects as we, the higher animals, know it is just the most parsimonious, ordered, powerful, coherent, and comprehensive hypothesis that will reconcile our inherited expectations with our experience.

When we encounter words like “elegant,” “parsimonious,” “ordered,” “powerful,” “coherent,” and “comprehensive,” we are already in aesthetic territory. There is no reason, logical or empirical, why the world should be elegantly and economically organized, nor is it necessarily better, in a moral sense, that it should be. It is simply more beautiful that way; and can therefore be more efficiently dealt with. Before a species can reproduce itself or even eat, it must enter a consistent working relationship with its world, its *umwelt*, which will generate confirmable or deconfirmable predictions. Such a relationship is the harder to maintain, the more information an organism is capable of absorbing, and the more it is capable of doing—the human brain uses about one-third of the body’s oxygen and nutrients. Thus this world-constructing, cosmogenetic activity must be provided with a very powerful inducement and motivation. World-creation is hard work, and has high rewards.

Now what distinguishes artistic performance from ritual in general is that the sense of beauty, the aesthetic, is more directly and specifically involved in the former. Thus we may say of oral performance, which lies toward the artistic end of the ritual spectrum, that it is a cosmogenetic activity, perhaps vital to the maintenance of the human *umwelt*. Further, we might speculate that because the human *umwelt* is itself much more learned than inherited—though we inherit a predisposition to learn a complex *umwelt*—the activity of world construction is for humans much more vital, much more difficult, and much more highly rewarded than it is among the other animals, whose *umwelt* is relatively more inherent in their genes. Thus the tradition of oral

performance may be much more closely tied to our survival as a species than we think, since it is our specialization to create worlds to be tested against sensory experience, as it is the mole's to dig and the bird's to fly.

It should, moreover, be stressed that "world-creation" is not a metaphor, or rather not a metaphor *only*. As we know from quantum physics, the precise characteristics of the fundamental constituents of the physical universe are not decided until they are registered or measured by some other system that is selectively sensitive to those characteristics themselves (Wheeler 1977, Finkelstein 1982). This in fact follows, as does relativity theory, from the basic scientific principle that the only things that can be said to exist are those things which are measurable. All entities selectively measure each other, and thus we can say that the universe is exactly and only what its constituents appear to each other to be. Thus human world-construction is a perfectly genuine activity, with as much ontological legitimacy as the reaction of any particle to any other particle: indeed, more, because human perception and cognition sifts out much more severely than does an elementary particle any phenomena that are not highly probable and mutually confirming. Of course, human world-construction is more effective if it has already, by scientific observation and experiment, canvassed the reactions of a good sample of non-human entities and placed itself in a position which can be construed as being in agreement with them, or at least not in contradiction. But anything about which the universe is not already in agreement with itself is not yet decided: and there remains an infinite number of topics which have not yet come up for consideration. Human ritual, performance, and art are ways of setting the stage, creating the frame, arranging the agenda, and picking the topic in such a way as to give human beings a home ground advantage in making the ontological contract. Much human art and ritual does not even need, and would be embarrassed by, confirmation by non-human participants: fiction is explicitly counterfactual as are the phantom antagonists in the triumph-ceremony of the geese; and a congregation would be rightly horrified to find the contents of the chalice to be arterial red, sticky, and liable to swift clotting.

But how exactly are the brains of individuals prepared and synchronized with each other to work the marvelous transubstantiation of artistic and ritual performance? Here the

study of oral tradition is especially valuable.

We have already touched on the power of rhythmic repetition as a psychic technology. Perhaps the fundamental characteristic of the oral tradition is its use of rhythmic language. At its crudest level, chanting is a form of rhythmic driving, affecting the limbic system of the brain. A strobe light tuned to a 10 cps period can produce trance states and even epileptic-like seizures, by “driving” the brain’s alpha rhythm. Likewise, as Pöppel and I (1983) discovered, the three-second period of chants and poetry is tuned to the largest periodicity in the hearing-system: the subjective present, the basic “chunk” in which the auditory cortex digests and processes acoustic information. The effects of this “driving” stimulation include trancelike feelings, joy, peace, harmony, certainty, a coherent mood, and even mystical elevation. More interesting still was the use of rhythmic variation within the three-second unit: when the line differs in rhythm from the metrical expectation, that difference itself carries information (as a carrier-wave is distorted by the message it transmits). But the kind of information it carries is not linguistic, and is not accessible to left-brain linguistic/temporal processing. Instead, it is registered and interpreted in the right-brain mode, as a gestalt, like a musical melody or a pictorial image. Thus metered poetry and chanting force the brain to operate in a “stereo” mode, so to speak, integrating left and right brain channels of information and translating them into each other. Rhythmic metered language—“numbers” as the neoclassicists were wont to say—brings to bear not only the limbic system but also the right brain on its verbal, left-brain content. There are two consequences of these effects. One is social: it enables a community to become synchronized, “on each other’s wavelength” as we say, or “in synch,” so that significant variation is instantly perceived as meaningful by all participants; and the feelings of pleasure and love produced by the endorphin reward help weld the individuals together. The other is spiritual: by extending the region of the brain that is at work on its integrative, cosmogenetic functions, it prepares us for that active inventive imposition on the world of our own cultural *umwelt*, our own construction of it.

There is increasing evidence (Levy 1974, 1984, forthcoming) that it is the exchange of information between right-brain and left-brain modes which constitutes what various researchers have called the human “cognitive imperative,” the “aha” or “eureka”

moment, “monocausotaxophilia,” or the “what is it” syndrome: the human capacity to make sense of the world. At present fascinating research is being done by Colwyn Trevarthen, Robert Turner, and others, using new Nuclear Magnetic Resonance Scanning techniques to examine the myelination (that is, the activation of neural fibers by acquisition of a coating of myelin) of the corpus callosum, the body that connects the left with the right side of the brain. This research may show how acculturation actually changes the structure of the brain, wiring together various brain elements across the commissure.

But the cooperation of left and right brain which is sponsored by rhythmic language not only makes us more intelligent and creative, but also enormously increases the power of our memory. Here we may note a remarkable convergence between the work of the psychophysicists on the bilateral asymmetry of brain function, the brilliant investigations of traditional mnemonic systems by Frances Yates and others, and the pathbreaking work of Parry, Lord, and their modern followers on methods by which illiterate epic poets are able to perform thousands of lines of poetry.

Yates (1969) describes the Renaissance system as essentially a mapping of the discourse to be remembered onto the interior of a large house with many rooms, upon each of whose walls there are niches (or places, the “commonplaces” of a common-place book) which contain objects associated with the topics of the discourse. By imaginatively walking around this “memory theater” in a particular order of rooms, an orator can recall a highly complex series of points with great exactness, and even be able to retrace his steps or take a different route.

A brain scientist would instantly recognize this procedure as a way of translating left-brain temporal sequence, for which we have a very poor memory—telephone numbers are only seven digits long because any more would overload our short-term memory buffer—into the right-brain spatial gestalt mode. We can remember very complex locations and images, and with some subjects, for instance dwelling-places, our powers of recall and recognition of spatial patterns are astonishing. Thus mnemonic systems remedy the deficiency of left-brain memory by means of the pattern-recognition talents of the right brain.

Oddly enough, the procedure of memorizing a sequence by mapping it onto a series of rooms in a house has also been

described to me independently by a flamenco guitarist and a jazz musician, when asked how they remember musical compositions. On the other hand, a composer has told me that he sometimes records a musical phrase in his memory by associating it with the rhythm of a quotation from the Bible that he knows by heart. Here a right-brain pattern is remembered by its connection with a left-brain sequence. Perhaps the fundamental point is that any memory is safer if kept in both modes, left and right. We might go so far as to say we only *know* something truly when we have translated it back and forth between the two sides of the brain a few times. The great authority on lateral brain function, Jerre Levy, has indeed said just this (1984: 31-33).

Do we not find a similar basic strategy in the techniques of the oral epic (see Parry 1971 and Lord 1960)? Homer and the Yugoslav epic poets evidently strung formulaic half-lines upon the melodic gestalt geography of a plotline, reinforcing the mnemonic properties of their words by poetic rhythm, calling into play by the “driving” mechanism the affective capacities of the midbrain, and activating the right brain by means of significant metrical variation. The muses may indeed be daughters of memory, in this sense.

In such a perspective plot, or story, becomes crucially important. The “unity of action” Aristotle talks about—the homecoming of Odysseus, the wrath of Achilles, the avenging of Agamemnon—functions as a sort of connected series of rooms, containing places for memory storage. Plot, moreover, with its capacity to organize large units of time, extends the harmonious patterning of temporal periodicities that we find in poetic meter to larger and larger scales, organizing a voluminous body of material and broadening the temporal horizon of memory and expectation. The “now” or present moment of a story (if “now” is, say, Odysseus’ journey home) can cover a length of many years. Once the “now” of a story reaches out to include even the death of the hero or heroine, tragedy, and the highest forms of literary art, become possible. What makes us human, what enables us to transcend the worldviews of other animals, is our greater capacity to organize and comprehend time (see Fraser 1975). Perhaps this is the reason why rituals of temporality and funeral are unique to human beings.

Plot not only unites right-brain pattern recognition with the left-brain capacity to deal with large units of time; it also connects

these cortical functions in turn with the limbic system and its powerful rewards. It does this by the process of identification. If the self is the governing subset of mental relations, including a set of symbols reflexively representative of that subset, then other persons whom I know, including characters in a story or drama, are smaller subsets with their own symbol clusters. The integrative activity of relating those subsets with each other and especially with one's self-subset is rewarded neurochemically by the subjective feelings of love, sympathy, insight, pity, or satiric triumph. Further, the self is the focus of those sensations of fear, desire, anger, and so on with which the organism responds to its environment, sensations under the control of the limbic system. Identification, as we all know who have followed the fate of a character in an adventure with bated breath, makes us feel the character's emotions as if they were our own. Thus plot promotes and exercises the relations between cortical world-construction and limbic reward. We shall return to the issue of plot later on, in a literary-critical context; suffice it to say here that the modernist tendency to dispense with or demote plot may have been a grave mistake.

The fact that comprehension and memory demand the literal cooperation of both sides of the brain, and that the cortex as a whole is motivated and rewarded by the limbic system, may afford us fascinating insights into the nature of symbolism. The arts inherited the technique of symbolism from earlier forms of ritual, where it served a purpose not unlike that of rhythmic meter. On the cortical level a symbol evidently acts as a connective between a left-brain linguistic proposition, or network of propositions, and a right-brain image or image cluster. This may explain why the more obvious forms of allegory and emblem are sometimes tiresome, unmemorable, and insipid, for they connect only linguistic with linguistic, left-brain with left-brain information, and do not possess the fertile suggestive tension and memorability which comes about when the corpus callosum must translate, with only partial success, from one mode to the other.

Symbols also, as Victor Turner has pointed out (1967), connect the higher brain with the lower. Symbols possess two poles: ideological (cortical) and orectic (limbic). The great ritual and artistic symbols are reward systems of their own, relating pleasurable emotion or sensation with the higher values, and priming the pump of self-reward.

In a memory system symbols correspond to the suggestive objects which are to be found in the niches or places of the memory theater. From the analysis it follows that mere images in themselves, without a left-brain discursive component, will be insignificant and insipid; and that symbolism only makes sense when it is set in the context of a comprehensible and reproducible sequence of places, rather than jumbled up together as in much modernist literature. To the extent that symbolists and imagists abandoned argument, plot, and discursive reason, to that extent they broke the mysterious and fertile connection between left cortex, right cortex, and limbic system. Eliot's phrase in *The Wasteland*, "a heap of broken images," is very apt: and we may now see this poem, despite the disorganizing interference of Ezra Pound, as an attempt to restring those images together upon the primeval sequences of ancient myth. And to turn from heroic pathology to heroic health, consider the Shield of Achilles passage in the *Iliad*, or even the whole of the *Divine Comedy*, as a memory theater within which symbols, themselves memorably uniting left with right and higher with lower, are in turn memorably and significantly positioned in a varied metrical medium along a temporal plotline and within a spatial, gestalt geography. These passages are summative statements of the healthy and productive human psyche, and also of the cosmos that is generated by the performative fiat of such a psyche, and apparently they have delivered to generations of reader/performers the sweet shock of endorphin reward.

It may be that modern literary criticism, by treating literature as if it were merely a linguistic left-brain art—with the authority, one might speculate, of Lessing's *Laocoon*, which insisted on purity of medium in the arts—was doing literature a grave disservice. Once literature becomes only a pattern of "differences," of words translating other words, and the left brain is cut off from the right and from the limbic system, then the way is open to the vacuity and anti-cosmos that the deconstructionists perceive at the heart of all literary art. It is interesting that this was also the period in which the poetic narrative was replaced by more exclusively left-brain prose genres, the plotless "new novel" replaced the traditional "page-turner" of Austen and Tolstoy and free verse replaced metered poetry. Story and rhythm, plot and image, image and rhythm, were increasingly separated. Meanwhile, in the visual arts the Renaissance dictum *ut pictura poesis*—a

bilateral epigram—was set aside, as, in modernist music, tonality, melody, recognizable rhythm, and articulated temporal structures were often abandoned. Even in modern architecture there has been what almost seems to be a conspiracy to detach the left brain from the right, by creating spatial structures which are so uniform and repetitious that pattern-recognition becomes impossible and we are reduced to counting to find our way through them. And “functionalism” sometimes appears to be a way of denying the viewer the comfortable and organic rewards that are provided to the limbic system. No wonder, perhaps, so many of the younger generation turned to artificial substitutes for the endorphins.

The neurological perspective also offers insights into the matter of discursive argument and logical persuasion in literature. In Plato's *Dialogues*, which at points are little removed from the philosophical exchanges in Sophocles and Euripides, we can clearly see that the origins of argument and discourse may be found in plot and story. Argument is basically a kind of story, the story of a war of words between heroic verbal antagonists. As such it possesses the integrating properties, in neural terms, that I have already described. Like a story, a good argument is memorable, and transcends, because of its hierarchical organization of larger and larger temporal units, the left-brain weakness in recalling mere lists (the limitation that the spatial mapping of the memory system is designed to overcome). What follows from this analysis is that when the treatise succeeds the dialogue we have stepped away from the integrative properties of a plotline. We only hear one side of the story, so to speak; and unlike Plato, Aristotle must replace the gestalt structuring of plot with a sort of geometrical structure of logical dependence. Aristotle, without the continuing story of the actors in the dialogue, cannot afford those delightful wayward changes of subject which we find in Plato, unless he has already prepared a logical place for the new block of discursive masonry. Yet even the stonemason Socrates, the oral philosopher, is one step away from the agonistic story of the Atreides.

The lessons to be learned for literature, if we are to preserve its ancient ritual powers of psychic and cosmic integration, are that discursive argument has a vital place in literature, as long as it preserves its primal ties with story, or else replaces those ties with powerful integrative symbolism.

It might be argued that despite evolution, ethology, and brain chemistry, the study and practice of oral performance does not

necessarily require a “deep grammar,” a set of natural classical rules, an explanatory evolutionary paradigm, such as I am postulating here. However, a serious consideration of the matter from a cross-cultural perspective reveals, across a wide range of human activities and types of culture and social organization, an extraordinary unanimity of cultural forms that points to a powerful and significant common inheritance. I quote a remarkable list, compiled by the anthropologist George Peter Murdock (1968: 231) “of items . . . which occur, so far as the author’s knowledge goes, in every culture known to history or ethnography”: “. . . age-grading, athletic sports, bodily adornment, calendar, cleanliness training, community organization, cooking, cooperative labor, cosmology, courtship, dancing, decorative art, divination, division of labor, dream interpretation, education, eschatology, ethics, ethnobotany, etiquette, faith healing, family, feasting, firemaking, folklore, food taboos, funeral rites, housing, hygiene, incest taboos, inheritance rules, joking, kin-groups, kinship nomenclature, language, law, luck superstitions, magic, marriage, mealtimes, medicine, modesty concerning natural functions, mourning, music, mythology, natal care, pregnancy usages, property rights, propitiation of supernatural beings, puberty customs, religious ritual, residence rules, sexual restrictions, soul concepts, status differentiation, surgery, tool making, trade, visiting, weaning, and weather control.”

Murdock would probably not object if we added to this list the additional cultural forms of combat, mime, friendship, lying, love, storytelling, murder taboos, and poetic meter; and it would be tempting to propose that a work of literary art can be fairly accurately gauged for greatness of quality by the number of these items it contains, embodies, and thematizes. They are all in the *Iliad*, *The Divine Comedy*, *King Lear*, and *War and Peace*; and most of them can be found in relatively short works of major literature, like Wordsworth’s *Intimations Ode*, or Milton’s *Nativity Ode*, or even—very compressed—in Yeats’ “Among School Children.” These topics indeed virtually exhaust the content of the oral tradition; taken together they constitute a sort of deep syntax and deep lexicon of human culture. It is the function of the oral tradition to preserve, integrate, and continually renew this deep syntax and lexicon, while using it to construct coherent world-hypotheses. Literature, which is to the oral tradition as the oral tradition is to ritual, extends these functions by means of that

greater reflexiveness and sophistication obtained by the technological prosthesis of script and books, so that those world-hypotheses gain in power, predictiveness, and beauty.

The relative universality of a given theme or form in human linguistic art can serve to test its legitimacy as a correct usage of the genetically inherited cultural grammar and lexicon. If we find a story (the descent into the underworld, say) or a technique (metrical variation, for instance) which is repeated in hunter-gatherer, peasant, city-state, and technopolitan cultures, then we know that we have encountered a paradigm declension or definition of a pan-human verbal artistic element. Further, as artists, and even as critics searching for a way to describe an unusual literary work, we can use the rich variety of types in human verbal art as a storehouse of sound, handy, and vital ideas. Cultural universals are to our new ontological criticism what Darwin's voluminous collection of examples of adaptation in nature were to his theory of natural selection.

For instance, the study of poetic meter conducted by Pöppel and myself showed the three-second line (or rather, lines of about 2-4 seconds, with a strong peak at three) in English, Anglo-Saxon, Celtic, French, German, Spanish, Italian, Hungarian, Ancient Hebrew, Chinese, Japanese, New Guinea Eipo, Ancient Greek, Latin, and African Ndembu poetry. Syllable-counts suggest the same for Finnish, Russian, and some Amerindian cultures. More remarkable still, I am informed by Deborah Wasserman, the authority on mime, that a phrase or beat in mime is usually about three seconds long, a fact which suggests either that the three-second period is the "specious present" not only of the auditory information processing system, but also of human temporal information processing in general; or that mime is paradoxically a partly, if implicitly, linguistic art. An interesting test would be to time the intervals between pauses in congenitally deaf users of standard American Sign Language, using as controls signers who were once able to hear, and signers with perfect hearing.

What a poet or critic will learn from this is that very probably the peculiar benefits of metered poetry will be lost if the line is too long, too short, or too irregular in length. And since every example of verse studied by us has metrical features—rhyme, assonance, syllable count, stress pattern, tone pattern, even syntax—repeated from line to line, even free verse in three-second lines would not retain the qualities created by strict adherence to

the deep syntax of poetic meter.

Perhaps we can see the same phenomenon at work in the remarkable similarity of mythic story elements from all over the world. Joseph Campbell's magisterial new atlas of human mythology extends his earlier important work on "the hero with a thousand faces" to many other mythic ingredients than the hero (1983). James Frazer (1911), Claude Lévi-Strauss (1969), and David Bynum (1978) have explored in depth yet other themes. Perhaps the instinct of some of the greater modernists—Yeats, Joyce, Eliot, Lawrence, Mann—to seek in ancient myth the coherence that the modern world did not seem to offer, was a wise one. However, it seems to me that the kind of grasping for a mythic lifebelt that we find, say, in "Sweeney Among the Nightingales" is not entirely healthy. The ebullient mythopoeia, the easy and cavalier luxuriance of mythic invention, that is characteristic of the better contemporary science fiction, such as Lindsay's *Voyage to Arcturus* (1920), Herbert's *Dune* (1965), Wolfe's *New Sun* tetralogy (1980-81), and Le Guin's *Left Hand of Darkness* (1969) is to my mind the sign of a much-healed culture. Like the classical Greeks, late medieval Florentines, and Renaissance Elizabethans, such writers naturally and confidently adapt the old mythic grammar and lexicon to new uses. Science-fiction has its own vocabulary of critical terms, one of which is "time-binding." The phrase is almost untranslatable into ordinary critical language, but it is unmistakably referring to the mapping of left-brain temporal modes of understanding onto right-brain spatial gestalt modes, and vice versa.

But we need not even go out into ancient or foreign cultures to find rich sources of insight into the "deep language" of human word art. The oral tradition continues in our own culture in at least two realms: liturgy and theater. Liturgy and theater can serve the same function for our new ontological theory of criticism that the practices of domestication and selective breeding served for Darwin's theory of evolution. They are, as it were, a vast experiment lying close at hand, familiar to all, and even a warrant in advance of the practical applications of the theory. And when we consider in these contexts the practice of rehearsal, the relationship between script (whether a text or a verbal tradition) and performance, the structure and articulation of a performance, the relationship between actor and audience, priest and congregation, the special uses of dramatic and liturgical language,

the nature of dramatic and liturgical suspense, the relationship between actor and role, the changes in mental state during performance, the relationship between actuality and possibility in church or theater, and between theme and variation, we may see many elements which have remained unchanged since prehistoric times and which can serve as a framework and animating principle for a truly ontological criticism.

The crucial idea here is *performance*. It was pointed out earlier that it is performance that drives the reflexive, innovative, and evolutionary tendency of human ritual and art. And now that we are privileged to have had a half-century of subtle research into the nature of performance, by such figures as Stanislavsky (1936), Jerzy Grotowski (1968), Richard Schechner (1977, 1981), and Victor Turner (1974, 1981), we possess the materials for a new integration of literary criticism based on the very definite structures, effects, and requirements of successful performance.

Perhaps the most prosaic requirement for effective performance is the fundamental triadic structure, described by Aristotle as beginning, middle, and end, and by Victor Turner as the ritual sequence of separation–liminal period–re-aggregation. Simple as this structure seems, it has profound implications. One is that if an audience, or even a single reader, is not introduced into a work by a proper beginning, conducted out of it by a satisfactory ending, or given a space in between and matter to play with in that space, the grammar of human art is being violated, the carrier-wave of significant communication is swamped with noise, and the endorphin reward is aborted.

More interesting still, the sequence implies motion into, through, and out of a concentric entity, a passing through, a trial, a risk. The Latin *periculum*, from which we get “peril,” is related to “experience,” and “experiment”; the word is cognate with the Germanic “fear.” The beginning and the end are the gates into and out of a realm which, by definition, cannot be of this world, and may be dangerous, but which is essential to our sentient life. We find the threefold structure elaborated in the five acts of a Shakespearean play, and in the sevenfold divisions of Greek tragedy; and the concentric pattern is repeated in the architecture of the arenas, stupas, temple-plots, shrines, and theaters where the performance event takes place. The Globe Theater is paradigmatic. We find it also in the mandala, a visual instrument of meditation analogous to chanting, which is the corresponding acoustic

instrument. Walt Disney's Magic Kingdoms in California, Florida, and Tokyo have the same concentric labyrinthine shape. The deep meaning of this shape is, I believe, reflexivity: the beginning and the end are like mathematical parentheses, or better, quotation marks, that distinguish the unreflexive "use" of a word from the reflexive "mention" of it, as the philosophers would say. One of the earliest strategies of living matter was to envelop itself with a membrane of lipids which were hydrophobic at one end and hydrophilic at the other, and which attracted each other at the sides, thus constituting a cell. The cell is a sort of parenthetical comment on the rest of physical reality, containing a controlled environment isolated from the world by a semipermeable skin. The "three-act" structure is a full experience of what life is, a passing through from the outside to an inside and thence back to the outside; or it might even be more accurate to say that the beginning and the end of an imaginative performance are where we pass out of the common world and return into it. To the extent that we are not our environment, each person is a little piece of not-world, of counterfactuality guarded by a membrane, a seven-gated city with armed warriors—teeth or antibodies or critical reason—on guard at the gates. Art can be a passport, or the branch of golden leaves, that allows us to enter and to leave.

But to stand outside the wall and consider it as we are doing now is to constitute ourselves as another outer wall, surrounding the inner wall. What does this new outer wall look like from the outside? If we back up to see, we make yet another wall beyond; the "I" that contemplates the "myself" is in turn reduced to a "myself" that is contemplated by a new "I." Thus concentric structures tend to multiply themselves, as two mirrors will when confronted with each other. If one mirror is square and one is round, the shape one sees when one is in between is the shape of the mandala, which possesses hypnotic qualities: the city is surrounded by many walls, the living organism by a richer and richer integument of membranes, which include senses, limbs, and nervous system. Or perhaps the elaboration of skins takes place in an inward direction, and the neocortex is the innermost skin of all. Consciousness is the moment-by-moment accumulation of memory of one's previous self, a continuous growing of new rings; and subjective time is simply the experience of that growth. From the point of view of the hearing system, each "ring" is three seconds thick, the length of a moment, of an iambic pentameter.

These last two paragraphs might be taken as a kind of gloss on the statement “all the world’s a stage.” There is a deep paradox in this statement which points us to another universal element of performance, another rule of human artistic language. Simply put, we cannot detach the sense of “act” as “pretend, counterfeit” from the sense of “act” as “do.” To really do something is by definition not to merely counterfeit something; and yet there is a terrifying wisdom in the stubborn resistance of the word “act” to being claimed, as it were, by either of its two senses and thus losing its strange logical tension. To do, says the word “act,” always involves a pretense, just as to win a kingdom is first to be a pretender to the throne. Any true act we do is a pushing out into the realm of the unaccustomed (otherwise it would not be an act but merely part of our regular being); it is to step out of our previous identity and into another. The same ambiguity is found in the word “perform”: “I pay you for performance, not to put on a performance.” So also a plot, a story, is also always a deceptive conspiracy. The free play of a system, when it is doing what naturally is proper to it, is after all only “play.” Every real stage we go through is only a stage. The person is a mask; the character is only what is scratched or engraved onto a surface to make it mean something it did not mean before. The *agon* is an agony; *agere* means both to drive and to do; an agent is not necessarily the real doer of a legal deed. To make something is to make it up; its makeup or constitution is perhaps only makeup or cosmetics. “Art” itself implies artifice, even wiles and charms.

What we learn from this relentless pattern of lexical paradoxes is that to pretend to be something is to go a long way toward becoming it. St. Paul uses the normal word for dressing-up when he says “Put ye on Christ”; by putting Him on the Christian becomes his Christ, a becoming garment indeed. And all action involves a risk of deception, or even a perilous loss of self. The “passing through” of experience is perhaps a proper cause for fear. For the literary artist or critic one consequence is plain: a completely honest literary art cannot exist, if honesty implies no fiction, no “making up,” no departure from the self as it is up to now. Literature is not a record of experience, but an experience, if literature is true to its roots in performance. To take us into it, a literary work must deceive us, take us in. The lyric poem which honestly and accurately sets down the poet’s sensations or feelings without artifice is not in this sense art, or

poetry (which means, literally, “making up”), at all. And “real life” is the same: the only way one attains a real autonomous self, if these linguistic paradoxes are accurate, is to assume one, to play or act or play-act oneself so convincingly that like the First Player in *Hamlet* one forces one’s soul to one’s own conceit (Greenblatt 1980).

In this way the old Romantic problem, the conflict between spontaneity and self-consciousness, is exploded. Consciousness, or reflexivity, if it is actively affecting the very person that is generating it, always immediately loses itself and becomes spontaneous in the amplifying reverberations of its own feedback system. It is the attempt to cling to an unreflexive “natural” self that is paralyzing; and this, not excessive consciousness, is the real source of the malaise that Wordsworth, Coleridge, and Keats complain of. The highest kind of “flow,” to adopt the language of Mihaly Csikszentmihalyi (1975), who contrasts the spontaneity of “flow” with the reflexiveness of “frame,” occurs when reflexiveness itself has reached its specific “speed of light” and is so total that it has lost the awkwardness of ordinary self-consciousness. Stage actors describe this experience as being like flying, and insist that it occurs only and essentially in performance (O’Brien 1985). Yet readers too report the same near-breathlessness, the slight rising of the hair and gooseflesh, the pricking of incipient tears, the mixture of total control with total freedom as the limits of one’s consciousness-system are reached, transcended, and re-created. Is reading, at its best, a kind of performance, then? If so, our critical theory must be largely overhauled.

Theatrical or ritual performance usually involves the cooperation of a relatively more active priest or artist, and a relatively less active congregation or audience (though both are necessary). What kind of a performance, then, is reading?

Literature is not usually referred to as a “performing” or “lively” art at all. But the perspective we have developed here would deny that distinction. If literary art is truly descended from the oral tradition, then indeed it is performed. The performer in this case is two persons: the writer and the reader; the critic is the virtuoso performer, whose criticism is a sort of master-class.

Given the conception of reader as performer, another central element of performance becomes crucially important. What Stanislavsky showed was that an actor must have a clear, single objective (even if it is a very profound one) in order to perform

convincingly. Modern literary criticism, with its love of ambiguity, multiple meanings, dialectical hermeneutics, and deconstructive unraveling of contradictory significance, has provided every work of literature, *as a text*, with a divine plenum of viable interpretations. The text is an infinite and eternal set of possibilities. Like an electron before it is detected, which can only be described as a finite (if usually infinitesimal) likelihood of an electron-type event spread throughout the entire universe from its beginning to its end, with a strong peak of probability in a particular region, the text for a modern critic is essentially indeterminate, unactualized, and perhaps unactualizable.

But a reading—like a reading on an instrument designed to make an electron declare itself—if it is a true performance, must choose an objective and must sacrifice the divine indeterminacy and infinitude of possibility for the tragic and concrete finitude of actuality. It is simply impossible to perform a reading and keep the text of the modern critic. The text dies into its reading as the divine incarnate victim dies into the eucharistic sacrament. The honor, the sadness, and the glory of true theatrical performance lies partly in the consciousness of all the participants that the work of art is dying with each reverberation into the air at the very moment that it is actualized.

What are the implications for the critic? Perhaps if he or she is a virtuoso performer, it is to give so lucid, so definite a reading that the work is actualized and made concrete before us, and reincarnated into the deepest idiom and costume and dialect of our own time.

Perhaps ambiguity is less of a virtue than we thought it was. The universe began as a soup of chance, and its evolution into the exquisite forms of life and intelligence was a cumulative process of greater and greater lawfulness, definiteness, and certainty, carrying with it, of course, greater and greater gradients of possible fall-back into the ambiguous chaos of its origins (Eigen and Winkler 1981). Anything ordered, beautiful, actual, and concrete stands tragically high above the precipice of undifferentiated “hermeneutic richness.” Great literature is the achievement of an unmistakable clarity and intelligibility in the teeth of the proclivity of every word, every sentence, to collapse entropically into divine indeterminacy. The only legitimate use of ambiguity in literature is perhaps as part of a finesse toward greater actuality of coherent meaning: as sandcastle makers may, to achieve greater compactness,

wet the sand they use with the very element that will destroy their creation when the tide comes in. In a performance multiple meanings only work if they redundantly resonate the carrier wave of its lawfulness; the proper contradictions of literary language, like the ones implicit in Shakespeare's use of the word "act," are like the facing mirrors in a laser that organize the plenum of wavelengths and phases in a light beam into a coherent pulse of energy. Only with such an instrument can truly three-dimensional images be wrung like ghosts from the plot, rhythm, symbolism, and argument of a literary work, as a laser beam can actualize the image implicit in the grooves of a hologram.

Recent developments in the philosophy of language lend unexpected confirmation to the theory of criticism that is implied here. Modernist philosophy was based on the brilliant skepticism of the seventeenth century: Bacon's, which resulted in empiricism, and Descartes', which resulted in rationalism. It is beginning to look now as if even that skepticism itself was a presumptuous and implicitly metaphysical act of faith. The kind of certainty which that skepticism found so disappointingly absent in the traditional view of reality now appears meaningless and nonsensical, for instead of a world of objects and a world of knowledge about them (which should correspond) we now confront a world in which knowledge is another kind of object, and objects are made up of the knowledge other objects have of them.³ Descartes' and Hume's powerful critiques of empirical knowledge have been seconded by Karl Popper, who defines empirical knowledge, as such, as knowledge which is falsifiable (1959). We deal regularly in physics with events which would have been quite different had we come to know them in a different way (Heisenberg 1958). The neurological description of the brain as a damped, driven feedback system whose capacity for enormous variation resulting from miniscule differences in initial conditions, and whose active role in the construction of reality makes impartial objective observation impossible, is profoundly subversive to the requirements of empirical knowledge. The very complexity of the brain, with its ten to the billionth power possible brain states (Fraser 1980:153), exceeds the theoretical computing capacity of the rest of the physical universe; thus no objective check on the legitimacy of its activities could be carried out.

This is not to say that empirical knowledge, knowledge by experience and the evidence of the senses, is invalid. But its

validity cannot be sought within itself: if we know something empirically, we cannot empirically know that we know it. Strangely enough, the same kind of problem arises even for rational knowledge, that inner sanctum of certainty to which Descartes retreated. I oversimplify, but I shall here take rational knowledge to be the same thing as logical truth, truth by definition, or analytic truth. An example is that a plane triangle contains 180 degrees in its interior angles. Another is that bachelors are unmarried. But the problem with rational knowledge is, as Gödel (1962) showed, that there is no system of axioms which is capable of proving the truth of its own axioms. Every system of logic rich enough to make meaningful propositions will contain a proposition of this form: “This statement is not provable”: a statement which is true but not provable, and which therefore distinguishes truth from provability within the system. One must leave the system in order to be able to assert the proposition’s truth. In doing philosophy in language, for instance, where do we stand when asked to give a definition of the word “definition”?—or of the word “refer”?

Thus the twin foundations of modern knowledge seem to be no longer foundations at all, but perhaps, like the seeming-solid planet earth itself, in free fall. What kind of knowledge can we believe in for sure? Is the “knowledge” model of language-use the most accurate one anyway? Suppose language-use were conceived less as a collection of cognitive propositions, and more as a set of actions?

The philosopher J. L. Austin (1962) identified an interesting group of utterances which he characterized as “performative” statements, which are closely related to speech acts, in which the speaker performs an action by what he or she says, rather than states a belief or a piece of knowledge. Performative utterances rely neither on an unreliable correspondence with empirical fact, nor on the unreliable truth of a set of unprovable axioms. My own favorite example is the dealer in a poker game who stipulates that in the game she is dealing, red threes will be wild. Once she makes this statement, red threes are indeed wild; yet they are in no sense wild by definition (another dealer could choose one-eyed Jacks instead), nor would her statement yield to empirical falsification. No player could check his hand and complain that he had a red three that happened not to be wild. A poker chip could conceivably fall upward, as a result of some extraordinary

cosmological freak of gravity or quantum-statistical freak of probability; or a whole group of poker players might hallucinate it falling upwards. But the red three is wild.

In other words, performative truth can be more reliable than empirical or logical truth in certain situations. Those situations are often very important: though the stipulation of game-rules may be the purest example, promising and contract-making are also performative, as are marrying, legislating, religious invocations and sacraments, and perhaps even the scientific decision to base a system of measurement upon a particular type of question asked of the physical universe. An instance here is the stipulation of radioactive cesium decay as the basis of time measurement, replacing astronomical measures.

In what circumstances can a performative statement legitimately be made? First of all, there must be what I shall call a “performative community”: a universe of beings *for* whom a performative utterance shall be true. Performative truth pays for its certainty by giving up its claim to apply to entities outside its community. Secondly, the utterer must be empowered by that community to make the performative stipulation. Third, the performative utterance can stipulate reality only where previous legislation within the performative community and still in force is not declared to be in contradiction with it. These limitations introduce an intriguing feature of performative truths: they are always certain, but they can vary in strength and effectiveness, depending on the size of their performative community. To win and keep a large community, a performative must be in a relation with the past constitution of its universe that is parsimonious, consistent, coherent, powerful, predictive, and elegant—in a word, beautiful. Beauty is the fourth requirement of performative truth.

At this point we may see how empirical truth and logical truth find a place within a broader framework of performatives which restores to them much of the legitimacy they have lost to rigorous twentieth-century analysis. (Ironic that Reason, inductive and deductive, must be rescued by an appeal to the fundamental principle underlying the medieval ideas of faith, authority, and revelation!) Empirical observation and experiment can now be seen not as an independent source of truth value, but as a way of enlarging the performative community so as to include not only persons but also non-personal and non-living organisms; and of establishing what kind of utterance can be true for them.

Newton's inverse square law of gravitation relied on the establishment of a performative community including the moon, the planets, apples, and dropping cannonballs, which had a language in common. In a sense it did not matter how the law itself was proposed: in any case it would have constituted a definition of space. Newton wished to keep space flat and Euclidean: so he made the gravitational attraction proportional to the inverse square of the distance. Einstein, on the other hand, preferred to make the gravitational attraction constant and vary the curvature of space. Which explanation we choose depends finally on how beautiful—as already defined—the resulting universe game is.

Rational or logical truth also finds a place within the performative universe. When we state an axiom we are in fact making a performative utterance. "A straight line is the shortest distance between two points" cannot be tested for logical consistency with its axioms: it *is* an axiom. If we are in the performative community of the geometer, we accept his dictum here; and what persuades us to join and remain in that community is partly the beauty of the universe generated by that axiom. By their fruits, not their grounds, we shall judge them: for there are no grounds. The universe, our cosmologists tell us, began in chaos and nonexistence, so the final ground of any appeal is utterly unreliable (Guth and Steinhardt 1984:128); and the world won its way to such consistency as it has through a long and bitter process of selection by consequences. In this light the American pragmatist tradition of philosophy is quite consistent with the performative view of truth: we make, or even make up, the truth and keep it if it works. William James' conception of the "will to believe" (James 1979; see also Thayer 1983), in which he defends ungrounded faith by arguing that it can bring about the reality it stipulates, is essentially a performative one.

Perhaps those quantum measurements of electrons, which force them to declare their position or energy, and the use of polarizing filters to make photons "make up their mind" which orientation they are vibrating in, are performative communications with nature. Indeed, there is an element in any coherent scientific experiment which consists of a declaration of ground-rules, a delimitation of the region of significant events. Though science is a process of questioning, it is scientists who decide what questions to ask (Kuhn 1962).

It should already be clear that there is a close relationship

between performative utterance and performance in literature, in the oral tradition, and in ritual, human and even animal. Mating rituals among animals stipulate not previously existent beings (the “enemy” in the triumph ceremony) and bring into being a real entity, the pair bond, as well as a new individual of the species. At a Catholic mass, the bread and wine performatively *are* the body and blood of Christ (for the faithful, that is one of the things that the word “Christ” means, and they after all have a right to decide what a word means for them). When a storyteller says “Once upon a time” or “I sing of that man skilled in all ways of contending,” the subjunctive world is welded to this one and becomes part of it, yielding up its divine infantile indeterminacy as an electron does when it is measured. When a poet writes and an actor speaks the line, he “gives to airy nothing/A local habitation and a name” (*A Midsummer Night’s Dream*, V.i.16-17)—he performs new being into existence.

Toward the end of *The Origin of Species* Darwin permitted himself a metaphor—that of the branching tree of life, whose every twig was a species and whose branches represented ancient genera, families, classes, and kingdoms (1962:121). Freud, too, illustrated his theory of the psyche in society with a myth: that of the primal horde (1961:46-48). Socrates began the practice, perhaps, and it is originally on his authority that a sort of *Gedankenexperiment* or myth is offered here.

The function of the myth is to bring together the various perspectives explored in this essay: human evolution’s role in the development of the linguistic arts; ritual as the root of the oral tradition and ultimately of literature; the adaptation of brain chemistry, structure, and function to the forms and substance of those arts; their cultural universality; their essential nature as types of performance; and their philosophically performative validity. The myth is also intended to dispel any suspicion that the theory proposed here is a reductionist one—that is, behaviorally or biologically determinist. At the same time the myth rejects the opposite view, which has in fact cooperated with the reductionist view in preserving a sterile dualism: that is, the conception of literary art as *sui generis*, without connection with the vital history of our species. The myth also takes up anew the fertile Renaissance debate about the relationship between nature and art which was aborted in the seventeenth century by the rise of Reason, rational and empirical, and in the nineteenth by the

romantic idea of Nature as innocent and unreflexive; but the debate is now enriched by the greater effectiveness of our technology, by the collapse of epistemology and ontology in quantum theory, and by the full elaboration of the theory of evolution.

Once upon a time, then, there was a clever race of apes. Like many other species of higher animals, they possessed a sophisticated though instinctual system of vocal communication; they engaged in play activity when unoccupied; they possessed elaborate instinctual rituals, especially surrounding the functions of reproduction; their ranking system promoted wide variations in reproductive success; and like other higher primates they used rudimentary tools and passed their use down to the next generation by instruction as well as by genetic inheritance.

It took only one individual to combine these capacities in such a way that the Word became incarnate as a seed of culture and began to mold its host species into a suitable soil for it to flourish in. The competition for mates was intense, a competition which in other species had evolved structures as impractical as the antlers of the giant elk and the feathers of the peacock, and behaviors as contrary to survival as the mating dance of March hares or the courtship of the blue satin bowerbird. At the same time the border between play behavior and mating behavior was paper-thin. One individual, then, discovered that the desired mate responded favorably to playlike variation in the instinctual mating ritual: it was an improved lovesong that began the human race, for their mating ritual already involved a prominent vocal element.

This first pair was imitated by others, and those which did so achieved greater reproductive success. They were in turn imitated by their young, which had inherited a slightly improved capacity to override the genetic hardwiring of their ritual inheritance by playlike variation on it. (This contrast between inherited norm and playlike variation will be preserved later in the general information processing system of human beings, where a regular carrier wave is systematically distorted to carry meaning; and specifically where a regular poetic meter is tensed against the rhythm of the spoken sentence, or musical meter is stretched or compacted by rubato, or even where visual symmetry is partly broken by the pleasing proportions of the golden section.)

Thus was born what we might call the Freedom and Dignity Game; for as it became elaborated, it developed vocal forms which,

like the phantom opponent of the triumphal geese, had at the time no referents: Honor, Soul, Purpose, Good, Love, the Future, Freedom, Dignity, the Gods, and so on. But those vocal forms were performative utterances, and so for the performative community of the tribe those mysterious entities actually came into existence, in the fashion that the knight's move in chess came into being by fiat. As if they were real all along, those abstract entities became independent sources of active determination, even though the medium of their being and of their continuity was no more than a communal convention. But after all, our bodily structures are maintained as realities not by themselves but by a mere arrangement of genes.

The ritual game indeed rapidly evolved. It developed cells of active reflexivity and self-criticism. Each generation altered it competitively, introducing new complexities: kinship classification, decorative art, food taboos, hygiene, household conventions, law, storytelling, and all the rest. And in turn these complexities exerted irresistible selective pressure upon those wise apes. They developed an adolescence, with special hormones to promote rebellion against the traditional ritual. Infancy was protracted, to help develop and program the huge brain that was required to handle the complexities of the ritual, and lifespan was prolonged to accommodate the extra programming-time. A massive sexualization took place in the species, so that male and female were continuously in heat, females experienced orgasm like males, and they copulated face to face, thus transforming sex into a form of communication. The reward system of the brain was recalibrated to respond most powerfully to beauty, which is the quality which characterizes the ritual's dynamic relationship of stability and increasing coherent complexity. Body decoration and clothing banished body hair. The hands turned into expressive instruments. The otolaryngeal system was elaborated into an exquisitely sensitive medium of communication and expression. The two sides of the brain became specialized, one for recognizing and holding an existing context in place, the other for acting upon it and transforming it in time. The indeterminacy of the world was lumped together into a new concept, the Future, which was carried by the dissonance between right brain pattern and left brain sequence. The Present was born, as the realm of the Act.

At a certain point in the Neolithic, the performative began to expand beyond the limits of the genus—which we may already recognize as Homo. Certain plants and animals—emmer,

dogs—had joined the performative community in subordinate roles, their gene structures changing in response to the human ritual game. It was, in comparison with the five million years the ritual had existed, but a moment before large regions of physics, chemistry, and biology had joined the human game and had been taught by scientific experimentation and instrumentation to speak the same language as we. Contemporary technology is the concrete continuation of the performative fiat with which we began.

But the moment that other, non-human entities began to join the game, the selective pressure it had exerted upon its performative community ceased, for the bookkeeping function which the game had relegated to the genes could now be taken up by our servants the plants, the animals, and the minerals. Reproductive success no longer depended on proficiency in the game, and eventually there arose a celibate priesthood which entrusted its entire informational inheritance not to its genes but to the prosthetic seeds—semen, semantics—of music, writing, and the visual arts.

Our genetic inheritance, then, was frozen at the point it had reached in the Neolithic, and thus its fundamental grammar must be ours. For us to use the marvelous instrument of our brains properly we must find that grammar out. And when we have done so we may be able to reinvigorate that pallid, decadent, and degenerate—but most direct—descendant of the Great Ritual, literature, with an infusion of the wild stock. We may do so partly by the mediation of the oral tradition, a healthy strain even in advanced technological culture, partly by breeding from our own performance and performative genres, and partly by hybridization with the ritual play of other cultures all over the world.

Nor will this work be only a recuperation, an attempt to recover in part what has been lost. Rather, it will represent a new phase of evolution in the Great Game, the phase in which it contemplates itself as a whole with the most meticulous scholarship, and directly guides its own development using what it has learned. In so doing it will have taken to itself the powers once allocated in hope and terror to uncontrolled deities which were neither kind nor humane, and will have begun to fulfill the promise of many religions, of the incarnation of the Word as reality rather than just as a seed. Nor need we fear that the process of the spirit will become tame and commonplace, for the more we know ourselves, the more radically the knower is thrust

into the unfathomable mystery surrounding the cosmos, in the attempt to step back to get a better view. There is no conflict between consciousness and spontaneity; it is only the consciousness which holds back from full commitment that is impotent.

What are the immediate consequences for literary criticism of the new theory of the word arts as it emerges?

First, perhaps, a dethroning of the text as the central locus of the act of literary art. Thus hermeneutics loses its specific relationship to literary studies and becomes a branch of the general process of analysis as it is used in the sciences, the social sciences, engineering, linguistics, and so on. Hermeneutics remains a useful but unprivileged technique among others in the study and appreciation of literature. But the emphasis will shift to literary performance; in non-oral literature, that performance is curiously divided between the writer and the reader, and the text that connects them floats in a limbo of potentiality. The interest that the text may possess as a complex structure in itself may be great, but it is of no different kind than the interest that a living cell, a complex polymer, or an atomic nucleus possesses. The interesting involution of structure may in fact have little to do with its actual value as a work of literary art: *Finnegan's Wake* is surely more complicated, and a lesser work of art, than the *Iliad*; *The Faerie Queene* than *King Lear*. Instead of the text we shall be most interested, as literary folk, in the instantiation of the work in performance. One good sign that a person truly possesses a work of literature is that he remembers, without having consciously memorized them, large passages of the work, and that those passages occur to him at those moments in his life when they can make it more lucid and meaningful. The capacity to go through the work and do a hermeneutic or structural analysis of it may have nothing to do with this real possession of it.

An aspect of literary study which has been largely ignored by the theorists becomes important here: oral performance. One activity which really fastens a work of literature to a human life is reading it aloud, and learning to do that well may be more important than the technique of critical analysis (though good recitation will surely involve, as a subordinate activity, some analysis). Literary activity takes place largely in the classroom: there is no harm in this, but given our altered view of literature, the classroom situation appears in a new light. The classroom is to the literary ritual as the temple or shrine is to religious ritual,

or as the theater is to drama. The place should ideally be festively and solemnly prepared, even if only by the respect shown to it that a member of a martial arts school will show to the practice-ground. The teacher should recognize that something of the probity of a priest and the charisma of the actor is required of him. The class should enter into the spirit of comedy when a comedy is the subject, and there should be in the classroom that slight touch of danger, of the possibility of personal transformation that one finds in real performances and ritual action. When Paulina in Shakespeare's *The Winter's Tale*, about to bring the statue to life, says "Those that think it is unlawful business I am about, let them depart," the full force of that statement should be felt in the classroom as it should be in the theater. It ought to be dangerous to bring the dead to life; and the real drama is doing precisely that, by performative fiat, just as in the eucharist the bread performatively becomes the flesh of Christ.

More, the reading of literature in the classroom ought to be explicitly related to the life values of the individuals present, and of the community as a whole. The performances of Aristophanes and Sophocles at the feast of Dionysus in Athens, which implicitly joined the debate about the Peloponnesian War, are models in this sense.

This is not to say that the other half of the performance—the writer's own strange quiet frenzy over the page—should be ignored. A large part of literary study should be reconstructive, that is, it should most carefully enter the imaginative world of the author and reconstruct, with him, the work of literature as he composes it, just as a priest at a Mass will reenact the movements and words of Jesus as he broke the bread, or as the priest/actor in an Indonesian ritual drama will take on the role and actions of Hanuman the Monkey-God, or even as the Dalai Lama is all previous Dalai Lamas reincarnated. Standing where Shakespeare stands in the original composing and performing of *The Tempest* or where Woolf stands delivering *A Room of One's Own* will do more to help us comprehend them than any amount of hermeneutics, though hermeneutics may be one way of helping us get to that place. But even the word "comprehend" is not entirely right. One does not necessarily "comprehend" one's own eye or one's own hand, and a great work of art can be as valuable, as intimate, an organ.

Another consequence of the new view of literature applies

especially to us who are the heirs of modernism. Great literary art calls us back to the work of making ourselves human and remaking the world so that it more richly expresses itself. Religion, literature, legislation, science, and technological choice are all parts of the same world-constructing activity. We modernists, like angry, indolent, rebellious adolescents, have neglected that work for many decades, and have gone after anything which did not seem as if it might be of enduring human value. The result has been a systematic deprivation of the inner pleasures, those brain rewards that are associated with cosmogenesis. Perhaps, on a mythological level, we have turned to narcotics and to nuclear weapons for exactly the same reason: to provide by artificial means the sense of crucial value, value worth sacrificing for, that we gave up when we rejected the human ritual and the oral tradition. It is indeed part of our heritage that we should rebel, that we should alter the ritual, generation by generation. But the illumination occurs when both sides of the brain, so to speak—the innovative and the pattern-holding—are mutually translated, when the new material of the world is grafted so cunningly with the old that the seam cannot be detected.⁴

We are on the verge of a new classicism, what I shall call “natural classicism,” based upon the deep lexicon and syntax of human artistic nature as we are now coming to understand it. That new classicism, unlike the old, will not conceive of standards as an eternal and ideal perfection which can only asymptotically be approached, but rather as an aura, a mysterious and ghostly scaffold that precedes the growing edge, the condescence of the world as it is performed into actual being. But there will be standards; and they will not be either relative or pluralist in their fundamental character, though they will be so richly generative that they will perhaps appear to exemplify pluralism and relativism. Consider the myriad musics, poetries, and paintings of the world’s cultures: how wholesome they are in the main; how recognizable they are, as human, to an anthropologically educated person; how they obey the deep laws of proportion, color, meter, and tone; and how they embody those essential human interests, in kinship, cookery, and the soul, yet how diverse they are. The new classicism will be a single house, but a house of many mansions. And it will be also a house which is growing, to which wings are continually being added; it will be hierarchical, but the hierarchy of its values and genres will not signify a static Chain of Being but a

dynamic evolutionary tree of life.

One of the unifying principles in natural classicism will be the use of poetic meter as a way of breaking the monopoly of the left temporal lobe in literature. The new investigation and use of the integrative relationship between biological and mental life will involve a re-innervation of the limbic system, and even of the body as a whole, by the conscious cortex, and a re-innervation of left with right sides of the brain. We shall reach back to ancient technologies such as meter, as well as forward to the science of neurology and the technology of prosthesis, to accomplish this act of enlightenment. But we must recognize that like an athlete or an adept at meditation, a skilled reader of verse requires training and discipline: training and discipline of which our children have been increasingly deprived.

We shall, perhaps, reconcile ourselves to the fact that there is no substitute for plot and story in literary art. If our valuation of character, symbolism, imagery, theme, and imitative form replace our concern for the fundamental value of plot—if we dismiss story as having been exhausted—then we have taken a step toward relinquishing that mastery over time which makes us peculiarly human. We know how to go on being a conscious person, how to construct a moral existence, how to win meaning from the fact of change, because we have stories that we can use as control-tests to sift out significant variation in experience, and, even more important, to resonate with significant constancies. Some writers, notably Deleuze and Guattari (1972), suggest that freedom consists in abandoning the coherence of self and of cosmos, and destroying the future as a significant conception. Perhaps when we are no longer in danger of destroying the entire species by such attitudes we can try them out. Voluntary prefrontal lobotomy would be a good start, for it would abort our natural tendency to make sense of the world. Meanwhile, we need stories to keep us alive, as David Bynum (1978:27) puts it:

I know the chief use or function of fabulous narrative traditions everywhere is to make men adaptable in their minds, to enlarge the scope of their mental lives beyond the confines of their actual experience socially, psychically, and in every other way. I am so far persuaded of this that I have come to think of fabulous story-telling, and even of the stories so told in tradition, as proper aspects of human biology. . . .

We shall rediscover the value of the genres, as embodying anciently-tested constellations of rules, whole syntaxes in themselves, tuned to the human nervous system. We will no longer dismiss as technological coincidence the independent rediscovery of epic, for instance, by the authors of *Gilgamesh*, the *Iliad*, the *Mahabharata*, the *Heike*; or of tragic drama by the Japanese, the Chinese, the Indonesians, the Greeks, and Aztecs. We shall perhaps, as literary folk, take up once again the responsibility for singing the world into being; and now our capacity to do this has been immensely strengthened by the scientific and technological enlargement of our performative community to include large areas of nature. An ontological criticism implies an ontological literary art: our stories will be histories, our metaphors will be concrete realities, our acting will be action.

University of Texas, Dallas

Notes

¹I refer, of course, to Darwin's study of the flora and fauna of the Galapagos Islands, especially the finches, which he undertook during the voyage of the *Beagle* and which demonstrated to him the effects of adaptation within a closed system.

²For instance, depending on whether we confine the term "human culture" to *Homo erectus* and beyond, or include the pitheciines, Lancaster (1975:53) would date the "overlap" from either one or five million years ago to about 12,000 years ago when the agricultural revolution began. Eccles (1979:94) estimates that the period extended from one million to 100,000 years ago. Hallowell (1961) proposes a protocultural stage of evolution, in which some but not all the cultural features of modern humanity were in place, well before the major expansion of the brain, among the early hominids. This could, according to some estimates, be as much as 25-50 million years ago. Sapir (1921) and De Laguna (1963) believe that language and thus, *a fortiori*, culture were co-original with tool use, which would give us a period of up to 15 million years. But Foster (1978) disagrees, placing the origin of language only 50,000 years ago. But she does not rule out the possibility of prelinguistic culture. Debetz (1961), the Soviet anthropologist, dates the origin of human culture to the origin of tool-making, rather than tool use, which might give us three million years. Wilson (1980) also argues that tool-making implies genuine human culture, and regards *Homo habilis* (1.9-3 million years ago) as fully human in this sense. Perhaps the clearest and most unambiguous description of the origin of distinctively human culture is Howell (1972). He asserts that the genus *Homo* is coterminous with human culture, which would give about 3-5 million years of overlap between the final phases of human biological evolution and the early ages of cultural evolution.

³The history of this change is nicely charted in the evolution from Wittgenstein 1933 to 1953.

⁴See Shakespeare's *The Winter's Tale*, IV.4.72-103.

References

- Austin 1962
J. L. Austin. *How to Do Things with Words*. Cambridge, MA: Harvard University Press.
- Bynum 1978
David E. Bynum. *The Daemon in the Wood: A Study of Oral Narrative Patterns*. Cambridge, MA: Center for Oral Literature (dist. Harvard University Press).
- Campbell 1983
Joseph Campbell. *The Historical Atlas of World Mythology*. New York: van der Merck (dist. Harper and Row).
- Csikszentmihalyi 1975
Mihaly Csikszentmihalyi. *The Experience of Play in Work and Games*. San Francisco and London: Jamey-Bass.
- d'Aguili et al. 1979
E. G. d'Aguili et al., eds. *The Spectrum of Ritual: A Biogenetic Structural Analysis*. York: Columbia University Press.
- Darwin 1962
Charles Darwin. *The Origin of Species by Means of Natural Selection*. New York: Collier.
- Debetz 1961
G. F. Debetz. "The Social Life of Early Paleolithic Man as Seen through the Work of the Soviet Anthropologists." In *Social Life of Early Man*, ed. Sherwood L. Washburn. Chicago: Aldine. pp. 137-49.
- De Laguna 1963
Grace Andrus De Laguna. *Speech: Its Function and Development*. Bloomington: Indiana University Press.
- Deleuze and Guattari 1972
Gilles Deleuze and Felix Guattari. *L'Anti-Oedipe*. Paris: Editions de Minuit.
- Eccles 1979
John C. Eccles. *The Human Mystery*. Berlin and New York: Springer.
- Eibl-Eibesfeldt 1975
I. Eibl-Eibesfeldt. *Ethology: The Biology of Behavior*. New York: Holt, Rinehart, and Winston.
- Eigen and Winkler 1981
Manfred Eigen and Ruthild Winkler. *Laws of the Game: How the Principles of Nature Govern Chance*. New York: Knopf.
- Finkelstein 1982
David Finkelstein. "Coherence and Possibility: The Logic of the Innermost Universe." *Kenyon Review*, n.s. 4,ii:95-112.
- Foster 1978
Mary LeCron Foster. "The Symbolic Structure of Primordial Language." In *Human Evolution: Biosocial Perspectives*. Ed. by Sherwood L. Washburn and Elizabeth McCown. Vol. 4 of Perspectives on Human Evolution. Menlo Park, CA: Benjamin/Cummings. pp. 76-121.
- Fraser 1975
J. T. Fraser. *Of Time Passion, and Knowledge: Reflections on the Strategy of Existence*. New York: George Braziller.
- Fraser 1980
_____. "Out of Plato's Cave: The Natural History of Time." *Kenyon Review*, n.s. 2, i:143-62.

- Frazer 1911
James G. Frazer. *The Magic Art and the Evolution of Kings*. London: Macmillan.
- Freud 1961
Sigmund Freud. *Civilization and its Discontents*. New York: Norton.
- Frisch 1959
John E. Frisch. "Research on Primate Behavior in Japan." *American Anthropologist*, 61:584-96.
- Glenn and Cunningham 1983
S. M. Glenn and C. C. Cunningham. "What Do Babies Listen To Most?" *Developmental Psychology*, 19:332-37.
- Gödel 1962
Kurt Gödel. *On Formally Undecidable Propositions of Principia Mathematica and Related Systems*. Trans. by B. Meltzer. New York: Basic Books.
- Greenblatt 1980
Stephen Greenblatt. *Renaissance Self-Fashioning: From More to Shakespeare*. Chicago: University of Chicago Press.
- Grotowski 1968
Jerzy Grotowski. *Towards a Poor Theatre*. Holstebro: Odin Teatrets Forlag.
- Guillemin 1978
Roger Guillemin. "Peptides in the Brain: The New Endocrinology of the Neuron." *Science*, 202 (27 Oct.):390-402.
- Guth and Steinhardt 1984
Alan H. Guth and Paul J. Steinhardt. "The Inflationary Universe." *Scientific American*, n.s. 250:v (May):116-28.
- Hallowell 1961
A. Irving Hallowell. "The Protocultural Foundations of Human Evolution." In *Social Life of Early Man*. Ed. by Sherwood L. Washburn. Chicago: Aldine. pp. 236-55.
- Heisenberg 1958
Werner Heisenberg. *Physics and Philosophy*. New York: Harper.
- Herbert 1965
Frank Herbert. *Dune*. Philadelphia: Chilton.
- Howell 1972
F. Clark Howell. "Recent Advances in Human Evolutionary Studies." In *Perspectives on Human Evolution*. Ed. by Sherwood L. Washburn and Phyllis Dolhinow. New York: Holt, Rinehart and Winston. Vol. 2:51-128; rpt. from *The Quarterly Review of Biology*, 42 (1967):471-513.
- Huxley 1966
J. S. Huxley. "A Discussion on Ritualization of Behavior in Animals and Man." *Philosophical Transactions of the Royal Society*, Series B, no. 772, vol. 251:247-526.
- Imarishi 1957
Kinji Imarishi. "Social Behavior in Japanese Monkeys, *Macaca fuscata*." *Psychologia*, 1:47-54.
- Itani 1958
J. Itani. "On the Acquisition and Propagation of a New Food Habit in the Troop of Japanese Monkeys at Takasaluyama." *Primates*, 1:84-98.
- James 1979
William James. *The Will to Believe and Other Essays in Popular Philosophy*. In *The Works of William James*. Cambridge, MA: Harvard University Press.
- Kawai 1965
M. Kawai. "Newly Acquired Pre-cultural Behavior of the National Troop of Japanese Monkeys on Koshima Island." *Primates*, 6:1-30.

- Konner 1962
Melvin Konner. "Joy." In his *The Tangled Wing: Biological Constraints on the Human Spirit*. New York: Holt, Rinehart, and Winston. pp. 236-60.
- Kuhn 1962
Thomas Kuhn. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lancaster 1975
Jane B. Lancaster. *Primate Behavior and the Emergence of Human Culture*. New York: Holt, Rinehart, and Winston.
- Le Guin 1969
Ursula K. Le Guin. *The Left Hand of Darkness*. New York: Harper and Row.
- Lévi-Strauss 1969
Claude Lévi-Strauss. *The Raw and the Cooked*. New York: Harper and Row.
- Levy 1974
Jerre Levy. "Psychobiological Implications of Bilateral Asymmetry." In *Hemisphere Function in the Human Brain*. Ed. by Stuart Dimond and J. Graham. New York: Wiley. pp. 166-67.
- Levy 1984
_____. "Interhemispheric Collaboration: Single-Mindedness in the Asymmetric Brain." In *Developmental Neuropsychology and Education: Hemispheric Specialization and Integration*. Ed. by C. T. Best. New York: Academic Press. In press.
- Levy forthcoming
_____. "Cerebral Asymmetry and Aesthetic Experience." To be publ. in *Biological Aspects of Aesthetics*. Ed. by D. Epstein et al. Forthcoming. First given as a paper at the Biology and Esthetics Research Group meeting in January 1983, Werner Reimers Stiftung, Bad Hamburg, West Germany.
- Lindsay 1920
David Lindsay. *A Voyage to Arcturus*. London: Methuen; rpt. New York: Ballantine, 1963.
- Lord 1960
Albert B. Lord. *The Singer of Tales*. Cambridge, MA: Harvard University Press; rpt. New York: Atheneum, 1968 et seq.
- Lorenz 1952
K. Lorenz. *King Solomon's Ring: New Light on Animal Ways*. Trans. by M. K. Wilson. London: Methuen.
- Murdock 1968
George Peter Murdock. "The Common Denominator of Cultures." In *Perspectives on Human Evolution*. Ed. by Sherwood L. Washburn and Phyllis Dolhinow. Vol. 1. New York: Holt, Rinehart, and Winston. p. 231.
- O'Brien 1985
Ellen O'Brien. "Actors' Perspectives on Trudy." To be publ. in *Shakespeare in Performance*. Ed. by B. Beckerman et al. London: Methuen. In press.
- Olds 1976
James Olds. "Behavioral Studies of Hypothalamic Functions: Drives and Reinforcements." In *Biological Foundations of Psychiatry*. Vol. 1. Ed. by R. G. Grenell and S. Babay. New York: Raven. pp. 321-447.
- Parry 1971
Adam Parry, ed. *The Making of Homeric Verse: The Collected Papers of Milman Parry*. Oxford: Clarendon Press.
- Pöppel and F. Turner 1983

- Ernst Pöppel and Frederick Turner. "The Neural Lyre: Poetic Meter, the Brain, and Time." *Poetry*, 142 (August):277-309.
- Popper 1959
Karl Popper. *The Logic of Scientific Discovery*. New York: Basic Books.
- Routtenberg 1980
A. Routtenberg. *Biology of Reinforcement: Facets of Brain Stimulation Reward*. New York: Academic Press.
- Sapir 1921
Edward Sapir. *Language: An Introduction to the Study of Speech*. New York: Harcourt, Brace, Jovanovich.
- Schechner 1977
Richard Schechner. *Essays on Performance Theory, 1970-76*. New York: Drama Book Specialists.
- Schechner 1981
_____. "Performers and Spectators Transported and Transformed." *Kenyon Review*, n.s. 3,iv:83-113.
- Snyder 1977
Solomon H. Snyder. "Opiate Receptors and Internal Opiates." *Scientific American*, n.s. 236:iii (March):44-57.
- Stanislavsky 1936
Konstantin Stanislavsky. *An Actor Prepares*. Trans. by Elizabeth Reynolds. New York: Theatre Arts Books.
- Thayer 1983
H. S. Thayer. "The Right to Believe: William Jones' Reinterpretation of the Function of Religious Belief." *Kenyon Review*, n.s. 5,i:89-105.
- Tiger 1979
Lionel Tiger. *Optimism: The Biology of Hope*. New York: Simon and Schuster.
- V. Turner 1967
Victor W. Turner. *The Forest of Symbols*. Ithaca: Cornell University Press.
- V. Turner 1968
_____. *The Drums of Affliction*. Oxford: Clarendon Press.
- V. Turner 1969
_____. *The Ritual Process*. Chicago: Aldine.
- V. Turner 1974
_____. *Drama, Fields, and Metaphors*. Ithaca: Cornell University Press.
- V. Turner 1981
_____. *From Ritual to Theatre*. New York: Performing Arts Journal Publications.
- Valenstein 1974
E. S. Valenstein. *Brain Control*. New York: Wiley.
- von Uexkull 1909
Jakob von Uexkull. *Umwelt and Innenwelt der Tiers*. Berlin: Springer, rpt. 1921.
- Wheeler 1977
J. A. Wheeler. *Genesis and Observership*. University of Western Ontario Series in the Philosophy of Science. Ed. by R. Butts and J. Hintikka. Dordrecht: Reidel.
- Willer et al. 1981
Jean Claude Willer et al. "Stress-Induced Analgesia in Human & Endogenous Opioids and Naxolone-Reversible Depression of Pain Reflexes." *Science*, 212 (8 May):689-91.
- Wilson 1980
Peter J. Wilson. *Man, the Promising Primate*. New Haven: Yale University Press.

Wittgenstein 1933

Ludwig Wittgenstein. *Tractatus Logico-Philosophicus*. Trans. by C. K. Odgen. London: Routledge and Kegan Paul.

Wittgenstein 1953

_____. *Philosophical Investigations*. Trans. by G. E. M. Anscombe. New York: Macmillan.

Wolfe 1980-81

Gene Wolfe. *The Book of the New Sun*. New York: Simon and Schuster.

Woolf 1957

Virginia Woolf. *A Room of One's Own*. New York: Harcourt, Brace, Jovanovich.

Yates 1969

Frances Yates. *The Theatre of the World*. Chicago: University of Chicago Press.