EDITORIAL

CONCEIVABLE BOOK REVIEWS

A person produces a poem and a woman produces a baby, and we call the person a poet and the woman a mother. Both are essential as loci in which vestiges of the past come together in certain combinations. The process is creative in the sense that the products are new.

From *A lecture on "having" a poem*
(Skinner, 1972, pp. 354-355)

A previous editorial in this journal (Catania, 1976) extended the generative metaphor to the "having" of book reviews. It discussed some books about which reviews never came to be written. In at least one case, the topic if not the book itself has since been treated here (Costall, 1984, on Gibson); perhaps reviews of others may yet be delivered. Of the many books deserving of review that were published later, only a few will reach readers whose own verbal behavior is so impregnated by them that they will leave JEAB book reviews as descendants. This editorial is about some likely candidates. Its point is to illustrate the range of reviews for which JEAB may provide a nurturing environment.

As in the past, the primary functions of JEAB book reviews are not to alert readers to current works or to evaluate textbooks, but rather to allow reviewers to discuss major issues in the analysis of behavior or to explore ways in which it is related to other orientations both within and outside of psychology. One criterion for judging a review is whether it is an effective archival contribution and not of merely passing interest. For this reason, reviews have not been limited to current books (e.g., Thompson, 1984, on Bernard).

Some published reviews have been concerned specifically with problems within the analysis of behavior (e.g., Ferster, 1978, on Honig & Staddon). Books with similar concerns will undoubtedly continue to be reviewed from time to time (e.g., Harzem & Zeiler, 1981; Zeiler & Harzem, 1979); such reviews may be of special interest if a book approaches this field from a dif-

ferent perspective (e.g., historical, as in Boakes, 1984; or biological, as in Staddon, 1983, or Zeiler & Harzem, 1983).

Other published reviews have dealt with behavioral issues as they have arisen in related areas, such as the philosophy of science (Zuriff, 1979, on Mackenzie), data analysis (Church, 1979, on Tukey), or the language of psychology (Moore, 1984, on Harré and Lamb's dictionary of psychology; Baum, 1974, on Wolman's similar work). Reviews of books on such topics as these may bear fruit within the analysis of behavior. For example, the current methods of time-series analysis (e.g., Gottman, 1981; Gregson, 1983) may be relevant to our treatments of steady-state data.

Other areas yet to be treated in JEAB may also provide novel opportunities for penetrating book reviews. For example, readers who are concerned with the functions of language may find relevant the debunking of extrasensory perception and related phenomena (e.g., Randi, 1982), because it demonstrates how strongly control by verbal stimuli enters into the success of the practitioners of the paranormal. The range of possibilities is substantial, and this editorial can sample only a few of them.

In *The Origin of Consciousness in the Breakdown of the Bicameral Mind*, Jaynes (1977) argues that consciousness is a relatively recent phenomenon, perhaps only a few thousand years old. His account is based in part upon research attributing different functions to the two hemispheres of the brain. According to this account, the activities of one hemisphere were at one time controlled by auditory hallucinations generated in the other (as when, in the Homeric epics, Greek warriors obeyed the voices of the gods); consciousness arose in recent times from the breakdown of this bicamerality. Although the account may seem far-fetched, it is a seductive one that is consistent

Thomas A. Brigham and Eliot Shimoff may properly claim credit for some of the word play that has been embedded in this editorial. For reproductions of this editorial, write the Review Editor at the Department of Psychology—UMBC, 5401 Wilkens Avenue, Catonsville, Maryland 21228.

at many points with a reading of human history that assigns a predominant role to the instructional functions of verbal behavior. From this viewpoint, verbal behavior originated primarily as a powerful means of instructional control. Other functions of verbal behavior came later, and consciousness emerged with the development of discriminations among the various sources of one's own behavior (such as a remembered as opposed to a current voice). Acting upon an auditory hallucination, following the commands of a hypnotist, or simply doing what one has been told to do are all instances of rule-governed behavior; it may therefore be of interest to review Jaynes (1977) as an attempt to reconstruct the prehistory of rule-governed behavior.

Accounts of the origins and evolution of verbal behavior suffer from the serious disadvantage that behavior leaves no fossils. One possibility is to study the behavior of contemporary species, on the assumption that their current behavior still includes components that were precursors of human verbal behavior; we may learn useful lessons from observations of the social interactions of primates (e.g., Snowdon, Brown, & Petersen, 1983) or from experimental analyses of the genesis of bird song (e.g., Kroodsma & Miller, 1982a, 1982b). Another possibility is to examine how new human languages are created. In *Roots of Language*, Bickerton (1981) explores creole languages, which arise at the meeting of two populations that do not share a common language. According to Bickerton, creoles from various parts of the world have developmental similarities and other properties that cannot be attributed to their parent languages. The challenge, then, is to show how these properties might arise from the constraints common either to varied human environments or to shared human evolutionary histories.

Verbal behavior has undoubtedly contributed to the evolution of human cultures, but a critical role has also been played by contingencies on nonverbal behavior that have operated in diverse human environments. For example, in a fertile but heavily populated river area such as the Nile delta during the Egyptian Middle Kingdom, the seasonal demands for coordinated agricultural labor for large-scale planting, irrigating, harvesting, and so on make a centralized and hierarchical political structure more likely to survive than a loosely organized and decentralized one. In *Cannibals and Kings*, Harris (1977) ex-

amines these and other contingencies, showing how they have produced such varied cultural practices as Aztec cannibalism, the sacred-cow tradition of India, European feudalism, the food taboos of Judaism and Islam, and female infanticide in diverse cultures throughout the world (cf. Schmookler, 1984, on contingencies leading to political and military conflict). A more technical work, *Cultural Materialism* (Harris, 1979), defines this approach and contrasts it with structuralism and other types of anthropological accounts. In rejecting appeals to such hypothetical explanatory entities as the character or spirit or beliefs of a culture, it has much in common with behavior-analytic accounts of complex human behavior. Cultural materialism demonstrates that we have intellectual allies in fields other than psychology, and we may do well to seek them elsewhere also (e.g., might we find them in archaeology, as in Binford, 1983, or in biology, as in Pulliam & Dunford, 1980?).

The histories of human cultures offer many opportunities for behavioral interpretation. Although we are likely to give special attention to Western civilization, we may overlook pervasive but commonplace details simply because they are so much taken for granted. *The Civilizing Process* (Elias, 1978) describes the evolution of European manners. It includes such mundane matters as behavior at table (as influenced by the advent of various items of silverware), blowing one's nose (as affected by such articles as sleeve and handkerchief), and spitting (not to mention modesty and the habits of bed, bath, and toilet). Although the treatment of the changing criteria for polite and impolite behavior is not behavioral, the changes in acceptable social behavior are documented in sufficient detail that they may feasibly be interpreted in such terms; the shaping of new forms of social behavior throughout European history was a consequence of the changing contingencies produced by exploration, evolving technologies, and so on.

Psychology itself has a history, and we can learn from it (e.g., as it is represented by the benchmark papers in Henderson, 1982). But it may be equally important to consider the histories of other fields. Physics has often been identified as a model for psychology as a science and yet our genealogy is more readily traced to biology. For this reason, our understanding of the roles of current and evolutionary environments might benefit from an examination of the refinement of the concepts of ontogeny and

phylogeny in the history of biology, as presented in *Ontogeny and Phylogeny* (Gould, 1977); and the evolution of behavioral analyses might profitably be compared with the evolution of biological thinking, as presented in *The Growth of Biological Thought* (Mayr, 1982). Given the status of the experimental analysis of behavior in contemporary psychology, it is reassuring to discover that the secure position of evolutionary thinking in contemporary biology is a relatively recent development. In addition to challenges from the creationist opposition, the Darwinian revolution faced serious challenges from within biology itself in the decades around the turn of the century. To the extent that this history parallels events in the history of behavior analysis, an account of those times, as in *The Eclipse of Darwinism* (Bowler, 1983), is worthy of our attention.

Contemporary biology also has much to offer. In *The Selfish Gene*, Dawkins (1976) examines the implications of treating organisms as the survival machines of genes. In his descriptions of evolutionarily stable strategies in aggression, altruism, mate selection, kin selection, parent-offspring conflict, and other forms of competition and selection, he illustrates the difficulties yet to be surmounted by sociobiological accounts (Wilson, 1975). The behavioral relevance of the analysis is illustrated by the point that a "great number of survival-machine actions promote their genes' welfare indirectly by influencing the behaviour of other survival machines" (Dawkins, 1976, p. 67).

In *The Extended Phenotype*, Dawkins (1982) provides a more technical exposition. His strictures on assuming the adaptiveness of inherited traits and on treating genes as carriers of information are useful, and some of the parallels with behavioral concepts are striking (cf. Catania, 1978). For example, the problem of defining the boundaries of replicating units (not genes, but genetic fragments without fixed boundaries) is reminiscent of the problem of defining stimulus and response classes (Skinner, 1935); the discussion of progressive changes that occur in phylogeny when selection operates relative to the mean of a population (e.g., in favoring the fastest individuals in a group) parallels accounts of some characteristics of shaping in ontogeny; the constraints on self-recognition and self-inspection in assortive mating warrant comparison with those that affect imitation and other processes that may depend on the discrimination of one's own behavior; and the argument that selection operates not only on organisms themselves but

also on their effects on others and on their artifacts is another reminder that "(t)he skin is not that important as a boundary" (Skinner, 1963, p. 954). The last point is summarized as the "central theorem of the extended phenotype: An animal's behaviour tends to maximize the survival of the genes 'for' that behaviour, whether or not those genes happen to be in the body of the particular animal performing the behaviour" (Dawkins, 1982, p. 248). The individual as a locus in which many variables come together to produce a unique product, as in the opening quotation of this editorial, is implicit in the closing sentence of the book, which describes the organism as "a partially bounded local concentration, a shared knot of replicator power" (Dawkins, 1982, p. 264).

Many other books deserve mention, some for the seminal contributions they have made and others for primarily prophylactic reasons: For example, *What Computers Can't Do* (Dreyfus, 1979) thoroughly documents the discrepancies between the claims and the accomplishments of computer science; *Brainstorms* (Dennett, 1978) brings together several philosophical essays with behavioral implications, including one entitled "Skinner Skinned" and another entitled "Why the Law of Effect Will Not Go Away"; *The Organization of Action* (Gallistel, 1980) synthesizes experimental findings on coordinated motor behavior in terms of reflexes, oscillators, and servomechanisms as the elements of a taxonomy of behavioral processes; *Metaphors We Live By* (Lakoff & Johnson, 1980; cf. Esper, 1973) shows by example and argument the pervasiveness of metaphor, and implies that verbal behavior cannot exist independently of it; *From Folk Psychology to Cognitive Science* (Stich, 1983) examines relations between the colloquial vocabulary of mind and the concepts of cognitive psychology; *Philosophical Explanations* (Nozick, 1981), in its detailed treatment of classic problems in philosophy, invites a comparison of contemporary behavioral and philosophical analyses; *Ghosts in the Mind's Machine* (Kosslyn, 1983) once again announces the demise of behaviorism, in the context of discussions of imagery and other cognitive processes and on grounds now more than a quarter century old, still irrelevant, and either poorly informed or deliberately misleading; and *The Concept of Mind* (Ryle, 1949; cf. Malcolm, 1977) demonstrates a few techniques for exorcizing those "ghosts in the machine."

So much for one behavior analyst's recommended reading list. It may be taken by JEAB

readers as a solicitation to suggest other books that might be reviewed in JEAB. The names of potential reviewers (including self-nominations) are also welcome, particularly when mated with appropriate books or topics. Book reviews, like other JEAB manuscripts, are subject to editorial review, and some may end as abortive attempts at publication. For this reason, it is best for authors who feel themselves pregnant with a book review to inquire before undertaking the preparation of a manuscript. Although unsolicited reviews will be considered for publication, their custody can be uncertain even if their paternity is not in doubt; for example, one author's review of a book may already be in press at the time its title is suggested by another (but a premature book review is nevertheless preferable to one that is past due). In any case, these reviews clearly are not a sterile enterprise. We are expecting that the cross-fertilization generated by them will guarantee the proliferation of the scholarly intercourse fostered by JEAB and the hardiness of its intellectual progeny.

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REFERENCES

- Baum, W. M. (1974). Definition in behavioral science: A review of B. B. Wolman's *Dictionary of Behavioral Science*. *Journal of the Experimental Analysis of Behavior*, **22**, 445-451.
- Bickerton, D. (1981). *Roots of language*. Ann Arbor, MI: Karoma.
- Binford, L. R. (1983). *In pursuit of the past*. New York: Thames & Hudson.
- Boakes, R. (1984). *From Darwin to behaviourism: Psychology and the minds of animals*. New York: Cambridge University Press.
- Bowler, P. J. (1983). *The eclipse of Darwinism: Anti-Darwinian evolution theories in the decades around 1900*. Baltimore, MD: Johns Hopkins University Press.
- Catania, A. C. (1976). On attending at the "having" of reviews. *Journal of the Experimental Analysis of Behavior*, **26**, 317-320.
- Catania, A. C. (1978). The psychology of learning: Some lessons from the Darwinian revolution. *Annals of the New York Academy of Sciences*, **309**, 18-28.
- Church, R. M. (1979). How to look at data: A review of John W. Tukey's *Exploratory Data Analysis*. *Journal of the Experimental Analysis of Behavior*, **31**, 433-440.
- Costall, A. P. (1984). Are theories of perception necessary? A review of Gibson's *The Ecological Approach to Visual Perception*. *Journal of the Experimental Analysis of Behavior*, **41**, 109-115.
- Dawkins, R. (1976). *The selfish gene*. New York: Oxford.
- Dawkins, R. (1982). *The extended phenotype*. San Francisco: Freeman.
- Dennett, D. C. (1978). *Brainstorms*. Cambridge, MA: Bradford Books.
- Dreyfus, H. L. (1979). *What computers can't do* (rev. ed.). New York: Harper & Row.
- Elias, N. (1978). *The civilizing process*. (trans. by E. Jephcott from *Über den Prozess der Zivilisation*. Basel: Haus zum Falken, 1939). New York: Urizen Books.
- Esper, E. A. (1973). *Analogy and association in linguistics and psychology*. Athens: University of Georgia Press.
- Ferster, C. B. (1978). Is operant conditioning getting bored with behavior? A review of Honig and Staddon's *Handbook of Operant Behavior*. *Journal of the Experimental Analysis of Behavior*, **29**, 347-349.
- Gallistel, C. R. (1980). *The organization of action: A new synthesis*. Hillsdale, NJ: Erlbaum.
- Gottman, J. M. (1981). *Time-series analysis*. New York: Cambridge University Press.
- Gould, S. J. (1977). *Ontogeny and phylogeny*. Cambridge, MA: Harvard University Press.
- Gregson, R. A. M. (1983). *Time series in psychology*. Hillsdale, NJ: Erlbaum.
- Harris, M. (1977). *Cannibals and kings: The origins of cultures*. New York: Random House.
- Harris, M. (1979). *Cultural materialism: The struggle for a science of culture*. New York: Random House.
- Harzem, P., & Zeiler, M. D. (Eds.). (1981). *Advances in analysis of behaviour: Vol. 1. Predictability, correlation, and contiguity*. Chichester, England: Wiley.
- Henderson, R. W. (Ed.). (1982). *Learning in animals. Benchmark papers in behavior/14*. Stroudsburg, PA: Hutchinson Ross.
- Jaynes, J. (1977). *The origin of consciousness in the breakdown of the bicameral mind*. Boston: Houghton Mifflin.
- Kosslyn, S. M. (1983). *Ghosts in the mind's machine*. New York: Norton.
- Kroodsma, D. E., & Miller, E. H. (Eds.). (1982a). *Acoustic communication in birds: Vol. 1. Production, perception, and design features of sound*. New York: Academic Press.
- Kroodsma, D. E., & Miller, E. H. (Eds.). (1982b). *Acoustic communication in birds: Vol. 2. Song learning and its consequences*. New York: Academic Press.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Malcolm, N. (1977). *Memory and mind*. Ithaca, NY: Cornell University Press.
- Mayr, E. (1982). *The growth of biological thought*. Cambridge, MA: Harvard University Press.
- Moore, J. (1984). On the tacit specification of meaning: A review of Harré and Lamb's *The Encyclopedic Dictionary of Psychology*. *Journal of the Experimental Analysis of Behavior*, **41**, 387-395.
- Nozick, R. (1981). *Philosophical explanations*. Cambridge, MA: Harvard University Press.
- Pulliam, H. R., & Dunford, C. (1980). *Programmed to learn: An essay on the evolution of culture*. New York: Columbia University Press.
- Randi, J. (1982). *Flim-flam!* Buffalo, NY: Prometheus Books.
- Ryle, G. (1949). *The concept of mind*. London: Hutchinson.

- Schmookler, A. B. (1984). *The parable of the tribes: The problem of power in social evolution*. Berkeley: University of California Press.
- Skinner, B. F. (1935). The generic nature of the concepts of stimulus and response. *Journal of General Psychology*, **12**, 40-65.
- Skinner, B. F. (1963). Behaviorism at fifty. *Science*, **140**, 951-958.
- Skinner, B. F. (1972). A lecture on "having" a poem. In B. F. Skinner, *Cumulative record* (3rd ed., pp. 345-355). New York: Appleton-Century-Crofts.
- Snowdon, C. T., Brown, C. H., & Petersen, M. R. (Eds.). (1983). *Primate communication*. New York: Cambridge University Press.
- Staddon, J. E. R. (1983). *Adaptive behavior and learning*. Cambridge: Cambridge University Press.
- Stich, S. P. (1983). *From folk psychology to cognitive science*. Cambridge, MA: MIT Press.
- Thompson, T. (1984). The examining magistrate for nature: A retrospective review of Claude Bernard's *An Introduction to the Study of Experimental Medicine*. *Journal of the Experimental Analysis of Behavior*, **41**, 211-216.
- Wilson, E. O. (1975). *Sociobiology*. Cambridge, MA: Harvard University Press.
- Zeiler, M. D., & Harzem, P. (Eds.). (1979). *Advances in analysis of behaviour: Vol. 2. Reinforcement and the organization of behaviour*. Chichester, England: Wiley.
- Zeiler, M. D., & Harzem, P. (Eds.). (1983). *Advances in analysis of behaviour: Vol. 3. Biological factors in learning*. Chichester, England: Wiley.
- Zuriff, G. E. (1979). The demise of behaviorism—exaggerated rumor?: A review of Mackenzie's *Behaviourism and the Limits of Scientific Method*. *Journal of the Experimental Analysis of Behavior*, **32**, 129-136.