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On Radicalizing Behaviorism: A Call for Cultural Analysis

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Our culture at large continues many practices that work against the well-being of its members and its chances for survival. Our discipline has failed to realize its potential for contributing to the understanding of these practices and to the generation of solutions. This failure of realization is in part a consequence of the general failure of behavior analysts to view social and cultural analysis as a fundamental component of radical behaviorism. This omission is related to three prevailing practices of our discipline. First, radical behaviorism is characteristically defined as a "philosophy of science," and its concerns are ordinarily restricted to certain epistemological issues. Second, theoretical extensions to social and cultural phenomena too often depend solely upon principles derived from the analysis of behavior. Third, little attention has been directed at examining the relationships that do, or that should, exist between our discipline and related sciences. These practices themselves are attributed to certain features of the history of our field. Two general remedies for this situation are suggested: first, that radical behaviorism be treated as a comprehensive world view in which epistemological, psychological, and cultural analyses constitute interdependent components; second, that principles derived from compatible social-science disciplines be incorporated into radical behaviorism.

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way.... (Charles Dickens, 1859)

These opening lines from *A Tale of Two Cities* serve to introduce the underlying concern of the present paper—that while our culture at large has experienced good times, wisdom, belief, Light and hope, it continues to see a large share of bad times, foolishness, incredulity, Darkness and despair. There is cause for apprehension that current directions of certain cultural practices suggest that the culture's destination lies "the other way." The discipline of behavior analysis has considerable potential for serving our culture in ways that, at best, may increase the culture's chances for survival and that, at least, may make more understandable the processes and variables determining its current directions. That potential, however, has been but little realized. It is the present thesis that this failure of realization is in no small measure a consequence of the general failure of behavior analysts to follow B. F. Skinner's practice of including social and cultural analysis as a fundamental component of radical behaviorism.

Many of Skinner's major theoretical works (Skinner, 1948, 1953, 1957, 1968b, 1969, 1971, 1972, 1974, 1978), taken together, may be conceptualized as comprising a "world view" (cf. Michael, 1980) that integrates scientific philosophy and behavior principles into an epistemologically consistent general theory of human behavior. A major component of this world view has focused on extending behavior principles to the analysis of social and cultural processes and phenomena. In *Walden Two* (1948), *Beyond Freedom and Dignity* (1971), and the last three sections of *Science and Human Behavior* (1953), and in many of the papers contained in *Cumulative Record* (1972), *Contingencies of Reinforcement* (1969), and *Reflections on Behaviorism and Society* (1978), Skinner has extensively discussed a wide range of issues concerning

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This article is dedicated to B. F. Skinner, whose concern for his culture has been equalled by his contributions to its survival. I wish to express my appreciation to the following for their helpful comments on an earlier version of the manuscript and/or for provocative and illuminating discussions about the topics discussed therein: Marc Branch, Aaron Brownstein, Charles Catania, Marvin Harris, Kevin Jackson, Marjorie Malagodi, Ed Morris, Hank Pennypacker, Kim Sawrey, and Dick Swanson. Reprints may be obtained from the author, Department of Psychology, University of Florida, Gainesville, FL 32611.

the nature, evolution, survival, values, and design of cultures.

A central theme running through these books and papers is that our culture is not dealing effectively with its problems of educational inadequacies, individually and societally troublesome by-products of aversive contingencies, depletion of natural resources, environmental pollution, its dark journey into nuclear winter, and so forth. Skinner argued early (1948, 1953, 1955a, 1955b; Skinner & Rogers, 1956) and has reiterated frequently (1961, 1964, 1968a, 1969, 1971, 1972, 1978) that preoccupation with "inner man"—autonomous or mediational—has interfered with the development of a functionally analytic approach that would specify the laws according to which environmental contingencies select, modulate, and maintain behavior. The development of a functionally analytic science would in turn lead to the emergence of behavioral technologies that could be applied to the solution of these and other social problems.

Simply put, this aspect of Skinner's world view has often implied that a behavioral science will provide the "rules" which describe reliable controlling relationships between environmental contingencies and behavior, that significant members of society will come into contact with those rules and follow them, and that problem-solving repertoires will be selected and maintained by the "natural" contingencies of reinforcement existent in the culture at large. Although this theme has been of some comfort to those of us who have been concerned about the survival of certain cultural practices (including the practice of behavior analysis), it appears that little headway has been made during the past twenty years. Radical behaviorism and its allied science and technology have been applied, when at all, mostly to bind a few of the minor wounds inflicted upon individual victims of a badly designed culture.

During this period, various cultural practices have remained in strength or have evolved even further along ethnocidal and genocidal pathways. "Growth industries" in major cities include handgun sales, security-system installations, cocaine distribution, and foreclosures of small businesses, corporate enterprises, and banking institutions. An increasing number of Johnnies and Janies can't read, and many of those who can—don't; many of those who do, study and agree with texts which promise eternal salvation contingent upon donations to televised messiahs. Double-think and newspeak have reached new levels of obfuscation among politicians who name missiles "Peacekeepers" and argue that building up of nuclear stockpiles constitutes arms reduction. The concept of nuclear winter is treated by government officials and laymen alike as being irrelevant to arms-control policies. Economic systems cling to a fossil fuel base as though the supplies were truly inexhaustible. The fall of acid rain dampens not the ambitions of the smokestack industries, nor do the stories of Love Canal, Times Beach, and Pompton River inspire comprehensive preventive measures. The incredible shrinking dollar, recycling recessions, and planned obsolescence have become accepted as the natural order of things. The rich are getting richer and the poor are getting poorer. The mass movement of women into the marketplace, not so long ago viewed as a heavensent liberation, has become a matter of sheer economic survival for millions of middle-class marrieds. Children increasingly are being reared in absentia, and parents must now cope with the possibilities that their day-care centers may in fact be chambers of horror. Prejudicial treatments of racial and ethnic minorities remain imbedded in political and economic practices. Population increases occur in those groups least able to afford children.

A significant growth has also occurred in the populations of radical behaviorists, experimental and applied behavior analysts, and behavior modifiers during this period. Clearly, this increase has had little corrective influence on the cultural practices briefly noted above. In fact, it can be argued that our populations have contributed little to the understanding of these problems beyond that which Skin-

ner has himself provided. Why have we failed in this regard?

WHY WE HAVE FAILED

I suggest that there are at least three immediate sources of the failure of our discipline to add significantly to B. F. Skinner's contributions to the understanding of cultural processes and activities. First, the prevailing tendency to define radical behaviorism simply as a "philosophy of science" supports an overly conservative view of both the form of, and the proper subject matter for, behavioristic analysis. Second, radical behaviorists in general have depended almost exclusively upon principles derived from the experimental analysis of behavior in interpreting social and cultural phenomena. Third, we have not often been concerned about examining the relationships that do or that should exist between our discipline and related sciences.

What is Radical Behaviorism?

Radical behaviorism is most often described as a philosophy of science, and—if not in principle at least in practice—its domain of inquiry is usually restricted to epistemological issues concerning the status of private events, concepts of causation, the nature of scientific explanations, and the like. There is no doubt that these and other epistemological issues are of fundamental importance to our science and our technologies, nor is there any question that philosophy of science is a major arena for behavioristic discourse. There is concern here, however, that the practice of *defining* radical behaviorism as a philosophy of science obscures the relationships that exist between the epistemological and substantive dimensions of Skinner's general theory of behavior. The implication of this practice is that the substantive aspects of the theory are subject to the criteria derived from epistemological analysis. Although this indeed is the case, what is left unemphasized is that the epistemological aspects themselves are derived from the substantive aspects of the behavioral theory and not from some external philosophy. Accordingly, there appear to be advantages of taking a more liberal approach of viewing radical behaviorism as a comprehensive psychological theory that includes epistemology as but one part of its subject matter. A convenient framework for discussing this issue is to examine usages of the term "radical."

Skinner first publicly affixed the term "radical" to the term "behaviorism" at the 1945 symposium on operationism, when he offered four propositions that established the foundation upon which radical behaviorism has subsequently developed. First, he argued eloquently that his public-private distinction was fundamentally different from the physical-mental distinction of methological behaviorism. Second, he proposed that the "arid philosophy of 'truth by agreement' " was a nonessential part of operationism. Third, he advocated utilitarian criteria for theoretical interpretations. Fourth, and perhaps most importantly and most radically, he emphasized that the solution to subjectivism (the behavior of talking about "mental" events) must be *psychological* rather than *logical* (Skinner, 1945, emphasis mine). It is not clear whether Skinner intended that "radical" be applied to one or all of these issues since he did not address that aspect directly, nor is the matter necessarily resolved by his reply to Scriven's question during the Rice symposium that "I am a radical behaviorist simply in the sense that I find no place in the formulation for anything which is mental" (Wann, 1964, p. 106). Of course, it is not of paramount importance to wonder about Skinner's reasons for using the term "radical" in the first place (that is, to try to guess about the variables which then directed its selection). What *is* important is how the term currently is used by members of the verbal community of behavior analysts (determined by studying the contexts in which it occurs), and how the term "should" be used (argued by examining the disparate consequences of different usages).

It is sometimes helpful when confronted with problems of this kind to consult

a dictionary. The first definition of "radical" cited by *The Random House College Dictionary* (1982) is "of or pertaining to roots or origins; fundamental" (p. 1089). The most basic aspect of Skinner's behaviorism is captured by this meaning of "radical": The strategy for treating *both* public and private events is to trace them to their environmental origins, and to interpret them in terms of the fundamental processes of natural selection and conditioning. This strategy distinguishes radical behaviorism from other psychological theories that treat inner events (thoughts and feelings) as initiators of behavior. The radically behavioristic argument is *not* that inner events do not exist or that they are inherently outside the domain of scientific analysis. The argument is that thoughts and feelings themselves have their origins in ontogenic and phylogenic environmental contingencies of selection, and that they may be most effectively treated as behavioral and physiological products of those contingencies rather than as causes of public behaviors. Further, thoughts and feelings are endowed with no explanatory power. Skinner (1984b, p. 721) has recently summarized this aspect of radical behaviorism as follows, "Radical behaviorism . . . attacks and rejects traditional explanations of behavior in terms of internal initiating causes. It is anti-creationist. It turns instead, as Darwin did, to the selection of presumably random variations by contingencies of survival (ethology) and contingencies of reinforcement (the experimental analysis of behavior)."

The second definition of "radical" provided by *The Random House College Dictionary* is "thoroughgoing or extreme" (p. 1089). Three aspects of Skinner's behaviorism enter into its being thoroughgoing: (1) As briefly noted above, it includes analysis of private as well as public events; (2) it includes a comprehensive theoretical treatment of verbal behavior and addresses epistemological issues within that framework; (3) it attempts to interpret *all* dimensions of human behavior, including those traditionally assigned to the fields of economics, political science, education, social philosophy, and so forth; it attempts to understand these aspects of behavior-environmental interactions because economic, legal, governmental, educational, etc. contingencies constitute the sources of culturally important human behaviors.

The third definition of "radical" provided by *The Random House College Dictionary* is "favoring drastic political, economic, or social reforms" (p. 1089). Skinner's behaviorism is *necessarily* radical in this sense by insisting without equivocation that in order to effect important and enduring changes in human behavior, we must change important contingencies in the social environment. If a given culture is plagued with problems of resource depletion, then the connection between plundering and profiting must be broken up; if not enough members of the culture work to promote its survival, then powerful reinforcers must be made contingent upon socially constructive behaviors; if a given agency of social control becomes too dependent upon usage of aversive techniques, then a countercontrolling agency must be strengthened; if excessive economic disparities contribute to crimes against property and persons, then those disparities must be reduced. The argument is consistent—social problems originate in social environments, not in the minds of individuals, and solutions to them can be forthcoming only by radically changing environmental contingencies. *There is no other way.*

When we define radical behaviorism simply as a philosophy of science whose concerns lie predominantly in the area of epistemology, we diminish the impact of the ways in which the term "radical" legitimately applies to Skinner's brand of behaviorism. Further, this practice suggests that philosophy of science is one thing, that a theory of individual behavior is another, and that interpretation of cultural practices is yet another. In contrast, when we define radical behaviorism as a comprehensive theory of behavior, we emphasize that epistemological,

psychological, and cultural analyses are interdependent substantive components of an integrated world view.

This world-view conceptualization of radical behaviorism emphasizes the "thoroughgoing" meaning of "radical," and suggests that analysis and interpretation within any of the substantive areas should be comprehensive. For example, analysis of epistemological treatments of the causal status of private events should: (1) Get to the phylogenic and ontogenic roots of "perceptions of causality" (e.g., Michotte, 1946; Skinner, 1974); (2) determine the verbal community's reinforcing practices that support descriptions of public actions as being products of private stimuli; (3) examine the contingencies of cultural selection responsible for the development and continuation of those verbal conventions; and (4) call for cultural reform—for example—by pointing out the disparate consequences of implicating contingencies of positive reinforcement or aversive stimulation rather than feelings of love or fear as determinants of approach or avoidance behaviors, respectively.

Similarly, a thoroughgoing analysis of social problems—such as the apparently inexorable march to global nuclear warfare—requires getting to the historical origins of warfare, demands examination of the political, economic, and military variables controlling the development and deployment of nuclear arms, and calls for cultural reform by pointing out the disparate consequences of implicating ecological, historical, economic, and governmental contingencies rather than national archetypes or "personifications of evil" as the sources of global conflict (cf. Ehrlich & Ehrlich, 1974; Kennan, 1982; Schell, 1982; Sheer, 1982; Tuchman, 1984).

Radical Behaviorism and the Analysis of Behavior

The second practice of our discipline that has contributed to our general failure to add significantly to Skinner's accomplishments in cultural analysis has been our tendency to depend almost exclusively upon the experimental and applied analyses of behavior as solitary vehicles for those theoretical extensions. This is not to suggest that either the experimental analysis of behavior (as a particular set of research methods and tactics or as a body of empirical data collected via those methods) or applied behavior analysis (as the application of the strategies and tactics of experimental analysis to in vivo "socially relevant" human behaviors) is inherently and fundamentally at fault. Rather, the issue in question is the often implicit notion that a thorough knowledge of our experimental facts and principles rather *automatically* enables us to "see the similarities" between what has been isolated under controlled conditions in the laboratory or the applied setting and what occurs in the culture at large.

There is little doubt that the empirical and conceptual dimensions of the analysis of behavior are necessary for effective and reliable theoretical extensions to the world around us; there are serious doubts, however, about their sufficiency. For those of us who, along with Skinner, consistently "see" or at least "look for" instances of extinction, ratio strain, matching, blocking, generalization, adaptation, shaping, schedule-induced aggression, etc., in the world around us, there is little difficulty in accepting the utility of the general strategy. Unfortunately, we all have had the sobering experiences of personal failures in this regard, and of interacting with other behavior analysts whose work in the laboratory or in the applied setting has failed to enhance their effectiveness in describing the contingencies and processes operating in their immediate daily lives, let alone the larger social context.

There appear to be at least three reasons for our failures to apply behavior principles effectively to the culture at large. First, some experimental and applied behavior analysts simply subscribe to methodological behaviorism, and others do not even go that far (cf. Branch & Malagodi, 1980; Michael, 1980). Second, some behavior analysts appear to have

come so strongly under control of the rules of our methods that they frequently act as though neither personal observations of the world around them nor the data collected by other behavioral and social sciences have any meaningful status whatsoever. Third, the conditions necessary for effective interpretation are too rarely existent in our personal histories and in our professional environments. Because the deficiencies of methodological behaviorism (Day, 1983; Moore, 1975, 1981; Skinner, 1945, 1950, 1974) and the nature of our methods (Ferster & Skinner, 1957; Johnston & Pennypacker, 1980; Sidman, 1960; Skinner, 1938, 1956, 1966c) both have been discussed extensively elsewhere, I shall focus on the third source of this problem—the conditions necessary for effective interpretation.

This issue may be addressed by examining several principles of verbal behavior as they relate to the problem of applying behavior principles to social and cultural phenomena. Much of the verbal behavior exemplified by such theoretical exercises may be conceptualized as generic and metaphorical extensions (e.g., Schnaitter, 1978; Skinner, 1957). In order for these extensions to take place, certain conditions must be met. First, the discriminative skills of the behavior analytic repertoire must be shaped in the context of the experimental (and applied) analysis of behavior, where previously unknown variables are discovered, fine-grain details isolated, functional relationships established, and generality determined. Second, the new evoking condition (the case to be interpreted) must be presented to the potential interpreter. Third, the new condition must share enough features in common with the old to make an extended tact likely. Fourth, the professional verbal community must have approved of similar extensions in the past and, in order for the new extension to be maintained, must approve of it. Although not a necessary condition, the process is greatly aided when the rule "look for the common properties" is an active part of the interpreter's verbal repertoire (cf. Skinner, 1966a). This rule will be effective in controlling the appropriate behaviors only if the interpreter's "looking" has been successful in "seeing" and if the descriptions of the things seen have been useful either personally or professionally.

In sum, effective extension of behavior principles to the culture at large is neither a simple nor an "automatic" process. Of the conditions necessary for effective extensions, the second of those listed above is the most relevant for the present discussion: Typically, behavior analysts have experienced too few occasions for emitting *formal* analyses of social and cultural phenomena, either during their training or as part of current professional demands. Most seriously, even fewer such occasions currently occur in the training of our graduate students. Although this unfortunate state of affairs is deeply ingrained in our discipline, it largely appears to be due to certain historical accidents that have inhibited the allocation of much time to these matters, rather than a consequence of any deliberate design on our part. Nonetheless, because as many roads to hell have been paved by accident as by intention, it might well behoove us to examine in some detail the historical context of the course we have been following.

Historical Accidents and Time Allocation[1]

The first historical accident involved the conditions prevailing in the physical, biological, and social sciences at the time of our birth and infancy—the 1930's. The physical and biological sciences, as represented by the works of Bridgman, Mach, Sherrington, Loeb, Pavlov, Crozier, and others, operated through the locus of B. F. Skinner to generate the foundations of the epistemological and methodological strategies that have become hallmarks of our natural-science approach to the study of behavior. Operationism, experimental analysis and synthesis, and control over the individual organism as a whole soon

[1] The term "historical accident" is used here in the sense of meaning unplanned, not uncaused.

became formalized into sets of rules designed to facilitate our search for the independent variables governing "voluntary" activities. Further, these standards soon formed the bases for our critiques of other approaches to the study of behavior. From this perspective, it was difficult to entertain serious consideration of much of the social sciences, whose theories then were heavily mentalistic and structuralistic, and whose methods lacked the rigor of the laboratory sciences.

During the 1940's and 1950's, we were preoccupied with developing and refining basic motor skills and verbal repertoires, as is characteristic of the childhood years. Laboratory technologies became increasingly coordinated and organized, as evidenced in *Schedules of Reinforcement* (Ferster & Skinner, 1957), and our language evolved to increasing levels of sophistication in "The operational analysis of psychological terms" (Skinner, 1945), *Science and Human Behavior* (Skinner, 1953), and *Verbal Behavior* (Skinner, 1957). Accidental features of the structure of our adoptive family—the department of psychology—exerted then, as they do now, a constraining influence on our social interactions with our peers. Departments which contained any behavior analysts at all included at most one or two in their extended families, and the major portion of the graduate student's academic requirements remained in the conventional areas of psychology. Interactions with our cousins in the biological sciences were usually mediated by the ubiquitous physiological psychologist or animal behaviorist and, largely on the basis of several methodological compatibilities and mutual concern for animal experimentation, some behavior analysts found sufficient grounds of common interests to develop working relationships. Interactions with our cousins in the social sciences, however, were not as readily facilitated, largely because the presumably appropriate mediating individual—the social psychologist—characteristically spoke in a tongue foreign to us and had adopted methods that often were neither biological nor sociological; the social psychologist himself had little appreciation for the importance of the social order in determining individual behavior (see Sarason, 1981).[2]

These accidents of family structure, which largely continue unchanged today, have had unfortunate consequences on the development of the social and intellectual relations we have with allied disciplines. While we continue to interact with the biological sciences—those disciplines that primarily focus upon the study of phylogenic contingencies and their effects upon current organic structure and function—we tend to ignore the social sciences—those disciplines that primarily focus upon ontogenic contingencies in the past and present social environments and their effects upon current social structure and function. The Generalized Matching Law appears to apply here: The intense demands during our infancy and childhood to develop our methods, epistemologies, and empirical base—in context of a family structure that facilitated interactions with the biological sciences, but not with the social sciences—left little time and provided little impetus for us to develop functional kinship relations with cultural anthropology, sociology, economics, history, and so forth.

The Generalized Matching Law similarly applies to the ways in which the contingencies of our adolescence—the past twenty-five years—have kept us away from keying in on the social sciences. Adolescence is often characterized as a period of rapid and uneven development, a time of conflicting and contradictory demands, a time to which the opening quotation from *A Tale of Two Cities* directly applies. During the past twenty-five years, our discipline has developed much along these lines. As Michael (1980) has nicely reviewed in greater detail, the 1960's included the continued outpouring of Skinner's theoretical works, the births and rapid growths of the *Journal*

[2] Sarason, in fact, indicts equally *all* sub-sets of psychologists with inventing the "self-contained" individual.

of the Experimental Analysis of Behavior and then the *Journal of Applied Behavior Analysis,* the classic books of Sidman, Bijou and Baer, Ullman and Krasner, Honig, Millenson, etc., and the formation of Division 25 of APA; the 1970's brought the remarkable continuation of Skinner's writings, the establishment of ABA, the beginnings of *Behaviorism* and *The Behavior Analyst,* and the generation of hundreds of textbooks. This impressive expansion of our activities and our products has necessitated a narrowing of focus on the part of educators and students alike as the contingencies for mastering the subject matter in general, and of specialized sub-sets of the field in particular, have become increasingly demanding. There should be small wonder that little time has been allocated to examining the relative merits of different kinship relations.

EVOLVING TOWARD SOLUTIONS

The question before us now is the course we shall follow as we move through the 1980's into the last decade of this century. To continue the developmental metaphor, it is time to move on from adolescence into young adulthood. In so doing, we might be wise to adopt what often proves to be an effective strategy at this critical developmental juncture—to examine routes previously followed by parents and other elders who have succeeded in achieving their goals. The appropriate parent for us to examine in this context is biological evolutionary theory.

Radical Behaviorism and Biological Evolutionary Theory

Skinner (1966b, 1981, 1984a) has compared radical behavioristic theory with biological evolutionary theory in analyzing the concept of causation by selection. The two world views also may be compared along the dimensions of relationships among component parts of each discipline and along historical lines of development in order to illustrate further sources of some of the problems thus far discussed, and to outline some suggestions for solving them.

The relationships that exist between the analysis of behavior and radical behaviorism, and those that *should* link both of these components of our field to social-science disciplines, may be likened to the relationships that exist between genetics and biological evolutionary theory, and that *do* exist between these two components of biology and other natural-science disciplines. The analysis of behavior and genetics are both experimental sciences which focus on the study of mechanisms of selection—ontogenic in the one case and phylogenic in the other. Analysis within each field may occur at different levels—the Matching Law and differential reinforcement of interresponse times, Mendelian Laws and the workings of the double helix. The theory of biological evolution and radical behaviorism both are world views which relate the significance of laws of selection to the world at large. Both world views function as connective tissue that ties together a number of related disciplines. While the theory of biological evolution must remain consistent with principles derived from experimental genetics, it is also tested by, and is significant for, the disciplines of paleontology, physical anthropology, ecology, climatology, natural history, etc. While radical behaviorism must remain consistent with the principles derived from the analysis of behavior, it is also tested by, and is significant for, the disciplines of cultural anthropology, human ecology, economics, sociology, history, etc.

Biologists, both experimental and theoretical, have profited greatly from recognizing the interconnectedness and interdependencies of their varied spheres of interest. In contrast, many behavior analysts, in largely ignoring the social sciences, have acted as though our discipline were essentially self-contained. Certain differences in the growths of the two disciplines may be implicated as historical determinants of these current differences in perspective. Darwin's theory of biological selection emerged out of natural history and paleontology at a time when there was little serious competition within biology in the form of widely and

strongly held alternative theories of the origin of species. As has been widely noted, evolutionary thought was rapidly unleashed by T. H. Huxley and others. Both enlightened and heated discussion occurred within the scientific community, and incendiary debates occurred between members of the scientific community and the clerics, philosophers, politicians and others whose interests were vested in the survival of pre-scientific views of the origin of species and *Homo sapiens*' phylogenetic place in the universe (e.g., Mayr, 1982; Riddle, 1954; Smith, 1952). One hundred and twenty-five subsequent years of research, discussion, and debate have continued to strengthen the position of evolutionary theory as a focal point for integrating various biological disciplines and as a world view for the educated person. Much of this history of the origin, sharpening, and strengthening of the universal scope and significance of evolutionary theory occurred prior to the development of major discoveries in genetics, thus establishing the preeminence of the theory in directing, evaluating, and integrating scientific inquiry, and of relating emerging concepts to important issues of the world view.

Skinner's radical behaviorism has followed a much different historical course. His theory of behavioral selection emerged out of the experimental analysis of behavior at a time when competition within psychology in the form of widely and strongly held alternative theories of the origins of behavior numbered in the generic dozens. Darwin had his "bulldog" in Huxley. Who among us will be so characterized? Incendiary charges have been exchanged among fellow behavior analysts and between members of this community and fellow psychologists, but who among us (or among psychologists in general) have correctly identified the important foe as the clerics, philosophers, politicians, and others whose interests are vested in pre-scientific views of the ontogenic determinants of human behavior? We have seen but a few decades of discussion and debate about radical behaviorism (much of which has been but narrowly directed toward critiques of methological behaviorism and mentalism), and it cannot be comfortably concluded that radical behaviorism is now emerging as the focal point for integrating various behavioral and social-science disciplines and as a world view for the educated person. Radical behaviorism has evolved concurrently with the emergence of major developments in the analysis of behavior. The absence of a lengthy history of preeminence of the theory has lessened its influence upon direction, evaluation, and integration of experimental inquiry. Perhaps most significantly, this simultaneous growth has seen the generation of a large enough number of local issues which have captured our attention such that contact with the more global issues of the world view has been minimized.

What can we conclude from this comparison of histories of parent and offspring, other than the usual complaint that "things were better in the old days"? Although there indeed may be powerful short-term reinforcing consequences to be derived from invoking allusions to being born in a world not of one's own design (apparently an eternally recurring philosophical realization), the young adult eventually must move onward to the challenge of coming to terms with current realities. The current realities are these. First, a paraphrase of Oscar Riddle's alarum about dilutions and distortions of evolutionary theory in this country during the early 1950's applies quite properly to the current status of radical behaviorism: The pale ghost of radical behaviorism now paraded grudgingly on the American scene serves as a gaunt reminder that Skinner is not being followed here.[3] Second, biological evolutionary theory teaches us that a judicious appreciation of diverse disciplines, each with its effective methods and indigenous research areas, is essential for cooperative and systematic theoretical integration.

[3] ". . . the pale ghost of evolution now paraded grudgingly on the American scene serves as a gaunt reminder that a Huxley was not born here" (Riddle, 1954, p. xvii).

Behavior analysts must also accept this strategy and face the challenge of serving as a focal point for integrating social-science disciplines. Third, biological evolutionary theory has risen to its eminent position as a world view only after a significant period of development during which the fundamental issues pertaining to the origin of species were dealt with head-on both within the scientific community and between scientists and members of the lay community. For radical behaviorism to emerge out of its own primordial past and reach a similarly distinguished position, it must accept the responsibility of drawing the battle lines that separate it from the pre-scientific views held by the vested interests in the culture at large who are our real opponents of consequence. Fourth, while biological evolutionary theory perhaps has the historical advantage of having developed along a more favorable chronological sequence, radical behaviorism has the advantage of containing within itself the principles necessary for understanding its own problems and for discovering its solutions.

Radical Behaviorism and Cultural Evolutionary Theory

We indeed have benefited greatly from our linkages to biology and we stand to gain more by further emulating certain of its characteristics, as briefly discussed above. Our world view would fall short of being thoroughgoing, however, if we were to be satisfied simply with adding principles of natural selection to our principles of individual behavior. In order to complete our world view, which I believe is a prerequisite for better serving both our culture and ourselves, we need to direct more of our attention toward cultural—not biological—evolution. It is in our current social environment that lethal mutations in cultural practices continue to occur at an alarming rate, and it is in our social environment that contingencies of selection too often favor the greedy over the generous, the aggressive over the conciliatory, the polluters over the environmentalists, the warlords over the peaceseekers, prejudice over reason, and religion over science. It will be through cultural—not genetic—engineering that solutions to these problems will be forthcoming, if they are to come at all.

To argue for this redirection of focus is not to suggest that the primary aim of behavior analysis has been misguided, nor is it to imply that our principles of individual behavior are in need of any drastic overhaul. The argument simply is that we need to extend those principles more thoroughly into the domain traditionally assigned to the social sciences, and to incorporate into radical behaviorism those anthropological and sociological principles and concepts that may be compatible with, and complementary to, our own. Both of these assignments are complex and potentially perilous ones, and a general strategy is needed in order to guide our efforts along productive paths and to help us avoid some of the pitfalls and dead ends that might stand in our way. We can begin to develop such a strategy by asking how our principles of individual behavior might benefit from supplementation from cultural evolutionary theory. There are at least three problems in cultural analysis the treatment of which can benefit from this supplementation: (1) the problem of accounting for the contingencies that in fact exist in any given culture; (2) the problem of accounting for changes in the social environment across time; and (3) the problem of characterizing and accounting for cultural structure. Although these three problems are intrinsically intertwined, I shall treat them separately for the sake of simplicity.

Skinner addressed the first of these problems in *Science and Human Behavior,* as follows: "The contingencies to be observed in the social environment easily explain the behavior of the conforming individual. *The problem is to explain the contingencies*" (Skinner, 1953, p. 416, emphasis mine). In short, principles of reinforcement, stimulus control, punishment, etc., enable us to give a reasonable interpretation of why, for example, a given Chief Executive Officer (CEO) might elect to continue a factory's spewing forth of toxic wastes rather than allocate mil-

lions of corporate dollars toward installing environmentally protective equipment. The behavior of the CEO may be reasonably interpreted as conforming to the contingencies specified by the bottom line of the corporate ledger.

When we next ask why the corporate profit contingencies exist as they do, or why their predictable consequences are not modulated by governmental contingencies of punishment for polluting or differential reinforcement for environmental protection, we are—as traditional behavior analysts—faced with a strategic dilemma. We could, of course, stay at the individual level of analysis and turn to the contingencies under which, for example, a relevant governmental employee—such as an official of the Environmental Protection Agency (EPA)—makes or administers policy; we might find that the official's professional advancement depends upon perhaps speaking loudly but most certainly carrying a very small stick. We would then understand more of the CEO's behavior in the sense of knowing why threats of governmental punishment are ineffective in curbing polluting industrial practices. Eventually, however, we would undoubtedly grow weary of attempting to account for one person's contingencies by looking for those under which relevant others arrange them, and grow wearier still when confronted with the problem of accounting for the contingencies controlling the relevant others, individual by individual, ad infinitum. At some point we must acknowledge that a comprehensive understanding of the existence or non-existence of a particular set of social contingencies in a culture, or the pattern of distribution of different contingencies within a culture, requires something other than an infinite search for all contingencies to which each of its members is exposed: It requires a molar conceptualization of the culture itself—a nomothetic complement to our traditional ideographic strategy.

Also in *Science and Human Behavior,* and in many of his subsequent writings (e.g., Skinner 1969, 1971, 1974), Skinner has discussed the second major problem involved in analyzing cultural practices: Social environments change—often extensively within the lifetime of an individual. Today's factory executives are not quite as free to ravage the physical environment as they were a few decades ago and, hopefully (but not necessarily), they may be freer to do so today than they might be in the future, should important changes continue to occur in their social environment. Of the many different classes of change that can occur in our CEO's social environment, two contrasting sorts are especially germane to the present discussion: (1) behavior-dependent changes—those that occur as a consequence of the emission (or non-emission) of some aspect of the CEO's behavior; and (2) behavior-independent changes—those that occur irrespective of the CEO's behaving or not behaving. Behavior-dependent changes, of course, are the sort of thing we are practiced at dealing with, and the effective treatment of them might appear to require little, if any, support from anthropological or sociological principles or concepts. For example, the failure of our CEO to install *any* environmentally protective devices at all, or to install them too slowly, might eventually bring that individual into contact with aversive consequences dispensed by the EPA official. This change in the CEO's social environment is of the kind that is readily interpretable in terms of a temporally defined avoidance arrangement. Even in this situation, however, a thoroughgoing analysis would require an account of the variables controlling the EPA's establishing and acting upon its rules for punishing malfeasants—which again raises the spectre of an infinite search for individual contingencies. Should our CEO's social environment change independently of that individual's behavior, we are immediately directed toward an analysis of the environment itself—which again brings us to the point of needing a molar conceptualization of it.

The third problem involved in cultural analysis—one not often discussed in the behavior analysis literature—is that cultures are structured. Again in *Science and*

Human Behavior, and elsewhere (Skinner, 1948, 1961, 1971), Skinner has examined some aspects of this problem. Among his most important contributions to cultural analysis are his general conceptualization of the workings and functions of various "controlling agencies" such as government and law, religion, psychotherapy, economic institutions, and education, and his notion of countercontrolling relationships among these agencies. The contingencies managed by these agencies, and their various subagencies, are especially significant in bringing the behavior of the individual under control of the group. The provenances of social control assigned to these agencies and the pattern in which the agencies are distributed throughout a culture constitute what is usually meant by the general concept of cultural structure. Returning again to the example of our factory CEO, a thoroughgoing analysis of the CEO's failures or successes in protecting the physical environment requires some understanding of how these agencies individually function and how they interact. Of particular interest would be analyses of how decisions are made in the corporate setting, the current local and national economic context, both formal rules and practical exigencies operating within the EPA, Congress, and the White House, the strengths of local or national citizens groups, and the state of the surrounding physical environment. Examination of educational and religious agencies might also be required, insofar as they are involved in transmitting information about the environment and ethical and moral rules for social conduct.

Clearly, the task is enormously difficult—especially if it is approached in the absence of strategic guidelines. It is at this juncture that certain principles and concepts from cultural anthropology can be most helpful. Now, there are many theories in cultural anthropology, as many as there are in psychology, and—as in psychology—most are either inconsistent with or antagonistic toward the epistemological, strategic, and theoretical principles of radical behaviorism. One school of thought, however, stands out far above the others in being both highly compatible with, and complementary to, radical behaviorism: That school of thought is Cultural Materialism, the most eminent spokesman for which is Marvin Harris (Harris, 1964, 1974, 1977, 1980, 1981, 1983). Because several of his major books (Harris, 1977, 1980) have been reviewed recently in the *Journal of the Experimental Analysis of Behavior* (Lloyd, 1985; Vargas, 1985), I will provide here but a brief synopsis of some of the most important points of contact between radical behaviorism and Cultural Materialism.

Cultural Materialism as a world view is highly *compatible* with radical behaviorism in the following ways: (1) It views selection by consequences as the principal causal mechanism for social organization and change; (2) it emphasizes contingencies of unconditioned reinforcement ("infrastructural" contingencies) as primary determinants of human behavior, other contingencies being effective to the extent that they are conditionally related to the primary ones; (3) although it does not dismiss the possibility of group selection, it treats the individual as the fundamental locus of selective action; (4) its principles of selection are avowedly parsimonious and are readily translatable into the Law of Effect and its corollary principles; (5) it treats consciousness as a product, not as a cause, of social processes; (6) similarly, it focuses upon environmental contingencies giving rise to rule derivation rather than treating rule governance as cognitively (and spontaneously) causal; (7) it attempts to trace similarities among individuals or groups to ubiquitous natural contingencies, and differences among individuals or groups to differences in those contingencies or to idiosyncratic sequences of exposure to them; (8) it is sharply critical of alternative theories and strategies, including sociobiology, structuralism, eclecticism, cognitive idealism, and obscurantism; (9) its epistemological stance is strongly operationistic and positivistic; and (10) last, but far from least, its implications for important issues of

ethics and cultural survival are continually interwoven throughout Harris's presentations of scientific principles and applications. For the behavior analyst who has long searched far and wide in psychology for friendly faces, finally finding Cultural Materialism in anthropology calls forth the lyric, "looking for love in all the wrong places." And, there is more.[4]

Cultural Materialism *complements* radical behaviorism most importantly by providing a set of theoretical principles and concepts, and an impressive data base upon which those principles and concepts rest, which relate directly to the three problems in cultural analysis addressed above. Cultural Materialism's contributions to the effective treatment of these problems can be most readily summarized by focusing on its conceptualization of cultural structure.

The problem of understanding the relationships among the parts of sociocultural systems, and of the evolution of such relationships, parts, and systems, is approached by assigning specific sociocultural phenomena to a hierarchically arranged set of structures: *Infrastructure*—technologies and practices for expanding or limiting basic subsistence production, and technologies and practices for expanding, limiting, or maintaining population size; *Structure*—domestic and political economies, including family structure, education, and political organizations; and *Superstructure*—art, rituals, games, and science, etc. The primary organizing principle of Cultural Materialism is the *Principle of Infrastructural Determinism,* which ranks the importance of different sociocultural contingencies of selection within a causal chain that begins with the infrastructural components and ends with the superstructure. This strategic priority assigned to the infrastructure is based upon its position as the principal interface between ecological, physical, and chemical variables on the one hand, and sociocultural practices, on the other. The ordering of priorities from infrastructure to superstructure reflects the increasing remoteness of these components from the interface between nature and culture.

The interrelationships among the three structural levels are conceptualized in terms of system-maintaining and system-destroying interdependencies. It is argued that any innovation, regardless of level of introduction, has as its most likely outcome system-maintaining negative feedback—the dampening of deviation resulting either in the extinction of the innovation or in slight compensatory changes in the other sectors that preserve the fundamental characteristics of the whole system. Certain kinds of changes that occur in the infrastructure are likely to be propagated and amplified, resulting in positive feedback through the structural and superstructural levels, changing the fundamental characteristics of the system as a whole. The effects of variables located in the structural and superstructural sectors are best predicted on the basis of the degree to which they are in harmony or conflict with existing contingencies in modes of reproduction and production.

In sum, these structural and causal conceptualizations of Cultural Materialism are significant in emphasizing that various agencies of social control differ markedly in their provenances, in the kinds of contingencies managed by them, in their interactions with each other, and, ultimately, in their relationships to the primary causal variables in the physical environment. Most importantly, the application of these principles to a wide range of sociocultural systems, both past and present, reveals the kind of generality of process and consistency of outcome that behavior analysts have long accepted as being the hallmarks of sound theoretical analysis (see Harris, 1977, 1980, 1981 and the reviews by Lloyd and Vargas for examples). The message is clear: In order to predict, and to control when

[4] Lest the reader conclude that radical behaviorism and Cultural Materialism are totally isomorphic, it should be noted that they differ markedly in that Cultural Materialism's current treatment of verbal behavior is conventionally psycholinguistic—a difference that calls for additional behavioristic infusion into Cultural Materialism's general theoretical structure.

possible, the behavior of aggregates of individuals that comprise a culture, we must direct our attention first to the natural contingencies specified by the structure of the physical environment, next to the manner in which those contingencies act upon the operant classes defined by the consequences of reproduction and subsistence production, and then to the institutionalized agencies of social control.

This viewpoint suggests that our representative factory CEO will continue to disperse pollutants to the extent to which: (1) The damage to the physical environment is of insufficient immediate magnitude or range to impact either important or numerous members of the community; (2) the factory is engaged in the manufacturing of goods important to the basic subsistence of the culture; (3) governmental countercontrolling agencies are themselves controlled too strongly by immediate economic and political contingencies; (4) putative solutions are proposed within the context of "supply side" or "trickle down" economic policies which rest upon blind faith in a presumed altruistic constitution of the species or an equally questionable national social conscience, rather than on analysis of the contingencies of economic survival in the market place; (5) our democratic form of government continues to reward by popular acclaim, election, and reelection both policies and propaganda that address only a limited range of immediate problems, while leaving the future to take care of itself; (6) our educational institutions fail to instill in the general population functioning problem-solving repertoires based on an understanding of, and appreciation for, scientific description, discovery, and design as promotors of effective action with respect to both the physical and social environments; (7) organized religious agencies continue to nurture and propagate false views of the nature of the universe and dogmatic, deistic, and draconian "solutions" to the problems of population regulation and the global struggle for economic dominance. And so forth.

Most behavior analysts can examine any of these sets of behavior-environment contingencies in greater detail and readily sketch outlines for both corrective and preventive behavioral-engineering programs. The design of contingency-management programs is, after all, one of our major areas of interest and expertise. My final comments on the benefits to be derived from strengthening the relationships between radical behaviorism and the social sciences are on the issue of the variables that influence our selection of the target problems we address.

To select a target for a contingency-management program and to design that program is to participate in the "calling for social reform" aspects of radical behaviorism. The first strategic priority in such an undertaking should be given to asking "why this target?", *not* "why this program?" In short, applied behavior analysts would better serve the culture, the discipline, and themselves by *first* approaching the task as a cultural engineer. Behavioral engineering is the *second* step. The issue, of course, is whether we should be comfortable in the role of "hired guns" at the disposal of whichever land barons can offer the greatest enticements for helping them with problems of *their* selection, or whether we should take a more thoughtful and directive role in selecting the problems for which we propose specific solutions. To take the first option is to submit passively to whatever cultural contingencies may currently be in vogue. Given the minimal attention paid to important issues about the directions and survival of our culture and our species by many of the usual contractors for our wares, that option promises little in the way of reversing the trends that are the underlying concern of this paper. To take the second option requires the sort of thoroughgoing, comprehensive world view advocated here: It requires a fundamental conceptualization of the structure of our society and the evolutionary processes that direct its course. It requires the making of "value judgments," in the sense in which Skinner has thoroughly discussed that term, based on the ultimate criterion of survival (Skinner,

1971). To take this option will not guarantee our—or our culture's—success, but it may very well be our greatest hope.

CONCLUSION

The underlying concern of this paper has been with certain of those practices of our culture which either continue to evolve along ethnocidal and genocidal pathways or which simply diminish the quality of life for the majority. The principal focus has been on the general failure of our discipline to build fully upon B. F. Skinner's contributions to the understanding of these problems. The organizing theme has centered around the term "radical." I have argued that "radical" properly qualifies Skinner's brand of behaviorism in three senses: (1) *of or pertaining to roots or origins; fundamental*; (2) *thoroughgoing or extreme*; and (3) *favoring drastic political, economic, or social reforms.* Following these three meanings of "radical," I have attempted to: (a) suggest that immediate sources of our failure include an overly conservative common treatment of radical behaviorism simply as a philosophy of science, and an essentially exclusive reliance upon principles derived from the analysis of behavior in our interpretations of cultural practices; (b) trace these immediate sources to some of their historical roots; (c) contrast relevant aspects of the history of behavior analysis and the perspectives of some behavior analysts with those of evolutionary biology and most biologists; and (d) call for social reform by arguing for a conceptualization of radical behaviorism as a thoroughgoing world view that should include cultural analysis as a major component, and that should incorporate more fully certain principles and concepts from cultural evolutionary theory.[5]

Calls for social reform, while often perversely entertaining to make, and even to hear, are perhaps even more often ignored—for various reasons. I do not know whether the present call will be followed or ignored, but I can think of several reasons why rejection might be a likely outcome. Foremost among these is the structure of the academic setting within which a majority of us work. That setting has fostered a view that emphasizes boundaries which are commonly said to demarcate the biological, behavioral, and social sciences. Perhaps a prerequisite for the sort of interdisciplinary integration advocated here is the recognition that these boundaries are not necessarily inherent in the intellectual interests of the disciplines themselves: Many of them are instead artificial barriers constructed by territorial gatekeepers of academe who, unfortunately, often have been more successful in fracturing the lines of nature than in identifying natural lines of fracture. The radicalizing of behaviorism will require the dismantling of these barriers.

Dismantling these barriers will necessitate our taking certain specific steps. We will have to read and publish in journals and other periodicals outside of our mainstream. We will have to develop functional alliances with those representatives of the social sciences with whom we share compatible views on the most important aspects of method, epistemology, and theory. We will have to be prepared to dispense some reinforcers by way of offering our specialized skills in the service of the special interests of others, as well as to receive the reinforcers obtainable from them. We will have to develop educational programs for our students that will facilitate their developing along more radical lines than have many of us who perhaps have become longer in tooth than of vision. To take these steps we will have to arrange our immediate environments—mostly within departments of psychology—in such a manner as to promote the offering of courses not often considered to be "fundamental" in either psychology or behavior analysis, and arrange for the re-

[5] I have used the term "cultural evolutionary theory" quite generically here, and intend that it refer also to views other than Cultural Materialism and disciplines other than cultural anthropology. For example, it should be taken to include the Veblen/Ayres theory of institutional economics, as recently and provocatively analyzed by Glenn (1985).

ceipt of at least occasional professional rewards as a consequence of these actions. After these steps have been taken, or concurrently with them, we can plan to develop centers, institutes, or departments outside of psychology (but not necessarily divorced from it) which would be based upon a common acceptance of causation by selection as the fundamental organizing principle.

These steps, which are far from being all encompassing, are just the first we can take as we move into our young adulthood. We must accelerate our efforts to insert ourselves and/or our students into the economic infrastructure and the political, educational, legal, and economic structures of our society if we are to maintain an environment in which radical behaviorism, biological evolutionary theory, and cultural evolutionary theory can come together and transform their shared knowledge about, and concern for, *the way things are* into realizable programs for *the way things could be.* Young adulthood has always been this way: It is a time of challenges, of realization that the comfortable world of our childhood was possible only because of the struggles and hard won campaigns of those who preceded us; it is a time for firmly gripping the torch passed on from one generation to another, for maintaining the gains inherited, and for working to ensure the existence of the next generation; it is indeed both the best and worst of times, but it is—above all else—a time to take the responsibilities for designing the future.

As I began this paper by quoting the opening lines from *A Tale of Two Cities,* I cannot resist the temptation to finish by paraphrasing its ending—even though the conclusion thus stated may be more strongly worded than it otherwise might be: It would be a far, far better thing that we do than we have ever done; it would be a far, far better place that we go to than we have ever known.

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