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Cultural Materialism and Behavior Analysis: An Introduction to Harris

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The year 2007 marks the 80th anniversary of the birth of Marvin Harris (1927–2001). Although relations between Harris' cultural materialism and Skinner's radical behaviorism have been promulgated by several in the behavior-analytic community (e.g., Glenn, 1988; Malagodi & Jackson, 1989; Vargas, 1985), Harris himself never published an exclusive and comprehensive work on the relations between the two epistemologies. However, on May 23rd, 1986, he gave an invited address on this topic at the 12th annual conference of the Association for Behavior Analysis in Milwaukee, Wisconsin, entitled *Cultural Materialism and Behavior Analysis: Common Problems and Radical Solutions*. What follows is the publication of a transcribed audio recording of the invited address that Harris gave to Sigrid Glenn shortly after the conference. The identity of the scribe is unknown, but it has been printed as it was written, with the addendum of embedded references where appropriate. It is offered both as what should prove to be a useful asset for the students of behavior who are interested in the study of cultural contingencies, practices, and epistemologies, and in commemoration of this 80th anniversary.

Key words: cultural materialism, radical behaviorism, behavior analysis

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Cultural Materialism and Behavior Analysis: Common Problems and Radical Solutions

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Cultural materialism is a research paradigm which shares many epistemological and theoretical principles with radical behaviorism. Like radical behaviorism, it stresses environment over heredity, in opposition to biological reductionist paradigms. And like radical behaviorism, it stands in opposition to psychological paradigms such as cognitivism, which stress mind as the cause of behavior. It is not clear, however, to what extent cultural materialism and radical behaviorism have a comparable position vis-à-vis the anthropological analogue of cognitivism, which I call cultural idealism, for reasons that will become clear later on.

In fact, it is my contention that while cultural materialism and radical behaviorism have a common basis in rejection of mind as a cause of individual human behavior, radical behaviorism is not radically behaviorist enough for a confrontation with idealists' anthropological paradigm, in spite of the fact that cultural idealists identify mind as the locus of sociocultural reality and causality. The cause of this disparity lies in the radical behaviorist's neglect of the systemic properties of cultural phenomena and a consequent failure to identify the selective core of the sociocultural systems and how that selection takes place.

In the history of the development of paradigmatic attempts to solve the question of sociocultural causality, cultural materialism has confronted and continues to confront a set of long-established, common-sense but erroneous and unproductive beliefs about human culture that are similar to those which confronted and continue to confront the development of

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radical behaviorism. Behaviorists have had to struggle against the belief that organisms, especially humans, possess faculties called mind and will whose exercise makes their behavior largely unpredictable. While cultural idealists generally also have recourse to will, intention, goals, and other mentalist notions about the causes of behavior, it must have been recognized that at least in the short run, human behavior is largely predictable. This follows from their commitment to the study of a cultural level of phenomena. For example, most cultural idealists would have no trouble with the idea of predicting that children born in a certain category of South India households will grow up to speak Malayalam, eat with their fingers, and take their meals seated cross-legged on the floor, just as they would have no difficulty with the prediction that children in U.S. households would grow up to speak English, eat with metal or plastic utensils, and take their meals while seated on a chair. Indeed, it is the predictable replication of such behavior through the practice known as enculturation which has given rise to the cultural field of inquiry. But cultural idealists have typical psychological, cognitivist views concerning how enculturation takes place—that is, they have attributed enculturation to intentional, willful instruction or instinctual imitation of one person or one generation by another.

The fulcrum of cultural idealists' resistance to the development of a science of culture lies elsewhere. Specifically, it lies in the problem of why the acculturated behavioral repertoires of different human groups are different in some respects and similar in others. Or more precisely, it lies in the problem of how to explain the divergent, convergent, and parallel evolution of sociocultural systems.

In order to specify the cultural selection principle that is analogous to differential reproductive success on the biological level, commonly known as natural selection, and to operant conditioning on the psychological level, one must first have a clear formulation of what culture is and how we know what it is. From a cultural materialist perspective, culture is the aggregate of classes, with classes underlined, of socially conditioned, operant responses, which are associated with a particular human group and which tend to be replicated within and across generations. The reason for laying stress on the word classes is twofold: On the one hand, many individuals may exhibit the same class of behavior, and the class itself often continues to exist even after many of the individuals who exhibit the characteristic behavior have died. Human cultures are a distinctive, emergent evolutionary phenomenon. However, there are many rudimentary examples of cultural inventory among primates and among primitive protohumans which enable us to reconstruct the pathway that led to the fully evolved cultural systems that have characterized human groups for at least the last 4,000 years.

Classes of culturally conditioned operants are conventionally identified by terms such as hunting, collecting, warfare, feuding, polygynous household, bride wealth, uxorilocality, reciprocal exchange, feasting, headhunting, cannibalism, chiefdoms, feudal states, capitalist firms, and multinational corporations—and so forth. These components, conventionally called traits, customs, traditions, institutions, and so forth, do not exist in isolation from each other. Rather, they present preconditions for each others' characteristic activities and consequences. For example, no feasting without hunting, no hunting without hunters, no hunters without spears, and so forth. Moreover, much empirical data indicate that most if not all of the classes of culturally conditioned operant re-

sponse chains are related to each other in the sense that changes in one are frequently followed by changes in others. Thus, intrinsic to the emergence of a cultural level of phenomena is the arrangement of cultural components in subsystems characteristic of particular societies, that is, sociocultural systems.

Let me emphasize that the necessity for dealing with these classes of individual responses and sociocultural systems as a level of phenomena with a distinct set of selection processes and lawful regularities arises not from any special emergent essences peculiar to human cultural life, such as mind, will, intention, consciousness, symbolic thought, or even verbal behavior, as the majority of my anthropological colleagues contend, but rather from the quantitative enormity of the numbers of individuals and responses that underwrite that abstraction and classification of sociocultural components and all systems. When we speak, for example, of the nuclear family as a component of U.S. culture, we are grouping together, averaging, or abstracting from behavioral repertoires of millions of specific individuals, dead as well as alive, who characteristically emit or emitted millions of specific responses concerned with nurturance of children, coresidence, sexual access, and division of labor.

In rejecting mentalist and essentialist definitions at the cultural level, cultural materialism is bound inextricably to the radical behaviorist program, for despite the enormous quantitative escalation and complexity, Skinner [1984] is absolutely correct when he states that no new behavioral principles are needed to deal with phenomena on the cultural level. But this merely takes us to the threshold of the problem, the problem being how to account for the behavior, not of individuals alone, but of the behavior of the cultural system. As Skinner has suggested, sociocultural evolution is an instance of selection by consequences. In the most general terms, new behavioral repertoires arise as operants in the behavior of individuals. Some of these get propagated within and transmitted across generations, and they are selected *for*. Other operants do not get propagated, or transmitted. They are extinguished or selected against.

Note that the existence of selection for or against particular classes of operants implies that not all reinforcing contingencies are equally determinative of cultural repertoires. In other words, the issue is not simply between an operant and unconditioned behavior, but between one operant and another operant, each of which is controlled by reinforcing contingencies. The only way the selection of one operant over another can be accounted for in cultural evolution without invoking mentalist and teleological hypotheses is if their relative efficacy in achieving a particular effect is different. Thus we are led, step by step, to the depiction of cultural selection as a process that selects alternative operants with respect to particular effects or functions.

What kind of function? An infinite number of functions can be fulfilled by operants. Therefore, further progress for specifying principles of cultural selection requires delimitation and classification of functions that are served by cultural repertoires.

Several behavior analysts have suggested recently that the principal function governing cultural selection is cultural survival. And they have specified three derivatives: (1) group cohesion, (2) effective action vis-à-vis the physical environment, and (3) effective action vis-à-vis other groups. I believe that this formulation is inadequate. It is inadequate because the vast majority of cultural innovations have been selected for by consequences that did not evidence any greater or lesser degree of promoting survival of the culture at the

time they were selected for. The test of whether it is the survival-promoting effect of an innovation that has been selected for cannot be the survival of the culture—for then all the components of any surviving culture would by definition have this characteristic, and the proposition would be unacceptable. This is exactly the same tautology which plagued earlier generations of Darwinists with regard to the principle called survival of the fittest. Moreover, while capitalization and political-military strategy might be selected for their immediate group survival effects, it is hard to see how to relate the same consequences to innovation in such matters as religion, the arts, and ideology.

Finally, innovations of all sorts could go on accumulating for thousands of years before their effects on group survival would be subject to selection. In the meantime, it would require a prescience to track the effective consequences for survival, a prescience which no culture has at the present and has never possessed.

If we are to specify sociocultural functions as the measure of the differential effectiveness to the group that are fulfilled by particular cultural innovations, we must first insist that human beings are organisms which have certain physical, chemical, biological, sociological, and psychological needs. Regardless of what else cultures may do, they must service these needs. Indeed, the selection of the human capacity for the elaboration of cultural repertoires by natural selection is explicable only as selection consequent on the greater efficiency of cultural over noncultural means of satisfying the requirements of individuals, not cultural survival and reproduction.

The importance of needs for explaining sociocultural selection by consequences is suggested by Skinner's [1966] reference to the acquisition of behavior because of innate susceptibilities to reinforcement for that behavior. To conform to the pattern of scientific parsimony, the number of such innate susceptibilities should be restricted to susceptibilities or needs that have been operationally defined through their power to condition responses. Hunger, sex, body contact, including protection from disease—may not constitute an exhaustive list, but it is sufficient to define an array of basic functions whose fulfillment by operants are subject to cultural selection on the basis of relative effectiveness.

Admittedly, the identification, classification, and measurement of innate human needs is a weak link in the logical and empirical scaffolding of a behavioristically consistent science of culture. I ask my radical behaviorist friends present here, however, to reflect on why this is the case. Hopefully, as the interest in a consistent radical behavior approach to cultural phenomena increases, new experimental data concerning Skinner's innate susceptibilities to reinforcement will fill the gaps in our current knowledge. It is a set of basic, natural susceptibilities or needs that underwrites the selection of all the components and subcomponents of a particular culture. But this does not mean that for each need, there is a discrete component or subsystem that is exclusively conditioned by the contingencies corresponding to that need. During the enculturation of, say, the Hindu aversion to the slaughter of cattle and the consumption of beef, appropriate behaviors are not shaped exclusively by reinforcement with food, nor during the enculturation of polygynous marital customs are the appropriate behaviors shaped exclusively by sexual reinforcement. This lack of direct relationship between needs and contingencies of reinforcement is compensated for by the interacting and interdependent relationship of the major components of sociocultural systems and subsistence.

Before I describe these components, the problem of defining behavior in a manner suitable for sociocultural analysis and distinct from behavior analysis must be broached. Needless to say, it has been of considerable importance in the history of behavior analysis to establish the point that verbal behavior is conditioned by the same processes that condition other operants. And I've also been informed to emphasize the fact that the operational definition of thought is silent verbal behavior, and that therefore thought is also subject to the same behavior analysis as are other forms of behavior.

From a cultural materialist perspective, however, the most important characteristic of thought is not that it is verbal behavior but that it is behavior which has no measurable effectivity apart from the external behavior that it may or may not accompany or initiate. On the other hand, external verbal behavior, producing mands and tacts, as well as most nonverbal behavior, move with, embody, and move or transform aspects of the environment and therefore have measurable effectivity in the form of costs and benefits independent of internal behavior.

If the task of sociocultural analysis involves the identification of the cost–benefit consequences of alternative behavioral repertoires, it makes little sense to treat the internal verbal behavior, which has no independent environmental consequences, as if it were as significant for cultural selection as environmentally consequential forms of behavior. To do so, as I shall emphasize later on, is to slip inadvertently toward the form of mentalism which is characteristic of cultural idealism.

Classes of mands and tacts, on the other hand, are present throughout all major components and subsystems of sociocultural systems. They have an instrumental status in initiating and organizing effective behavior. I agree with Sigrid Glenn that human speech functions to establish and maintain relations between the receptors of some members and the effectors of other members of the verbal community, thereby increasing the range of effective action for all members. But we must not lose sight of the considerable literature in psychology, sociology, and anthropology, which I cite here, which shows that mands more often than not are followed by noncompliant responses, and that tacts more often than not present an inaccurate picture of what they purport to describe.

Contra prevailing opinion, the role of verbal behavior in the evolution of human cultures can easily be overemphasized. Indeed, such overestimation is an intrinsic defect of both psychological, cognitive, and cultural idealism, for whom (the cultural idealists) quite literally, in the beginning there was the word—whereas, quite literally, for cultural materialists, in the beginning, there was the foot—a proposition empirically confirmed by the last fifty years of human paleontology and the archaeology of the lower Paleolithic.

Let me mention one more item before I link the components of sociocultural systems with the inventory of the naturally determined human needs. The challenge before us is to measure the costs and benefits of alternative ways of satisfying such needs. To do this we can employ various currencies, such as protein, time, morbidity, or the failure rate, life expectancy, sexual events, and in some instances dollars and cents. There are many methodological problems associated with these measurements—what is especially baffling is how to combine different currencies in arriving at a final balance. An equally baffling methodological problem is whether one should rank or weight the cost–benefits balances that pertain to different needs. Too clearly, this is another area in which progress must

wait upon experimental evidence that radical behaviorists might well consider proper to their own expertise.

Returning now to the task of specifying the major metacomponents of sociocultural systems, from a cultural materialist perspective, it is clear that if basic naturally determined needs of human beings are to be served, it will be a set of cultural components concerned with the production of indispensable material goods and services, such as food, shelter, clothing, medicine, and medical care, in brief, a subsistence economy. For example, hunting, collecting, pastoralism, irrigation agriculture, manufacturing, etc.

The quantities and qualities of goods produced by these classes of behavior, however, will always be a function of a set of technological components that are available for the extraction, transformation, and transportation of natural resources—that is, a culture's technology—which in turn is a function of the particular resources and other conditions of the specific environment available for exploitation by that culture.

And finally, human sexual and economic needs almost predispose sociocultural systems to encourage the production of children … [gap between Side 1 and Side 2 of the audio recording] … power that are socially available.

Two great classes of institutions satisfy this function—domestic economy and political economy. Domestic economic behavior centers on domiciles where feeding, nurturing, and reproduction take place. Political economic behavior takes place outside of domiciles and regulates relations between domiciles, and between nondomestic groups, and between one population and another. Together domestic and political economy constitute what the cultural materialists call the *structure* of sociocultural systems.

There is a third subsystem, the *superstructure*, involving the production of painting, sculpture, literature, and of course religion, scientific and educational edifices and apparatus, together with the associated behavioral performances. The characteristic which superstructural products and activities share in common is that they are more remotely related to the satisfaction of basic naturally determined needs than the structural components, and still more remotely related to them than the infrastructural components.

Now it is time to return to the internal, verbal behavior which accompanies most human responses. In each of the external behavioral subsystems are components that are sets of elicitable instructions, rules, grammars, guides, maps, goals, intentions, explanations, rationalizations, values, philosophies, and other internal verbal classes of responses.

Thus there is a cognitive infrastructure, a cognitive structure, and a cognitive superstructure. For example, rules for constructing harpoons, for planting maize, or programming a computer are examples of cognitive infrastructural components. The rules for divorcing your wife in Saudi Arabia or protocol for kow-towing before a Chinese emperor, or the philosophical justification for free enterprise are cognitive structural components, while the religious justification for building the Gothic cathedral, or, for a Hopi priest, rules for praying for rain, are examples of superstructural components.

The sum of all these cognitive components constitutes a sociocultural system's ideology. Bear in mind that all of the behaviors and subsystems inside as well as outside the skin are viewed here as classes of operants. If you can accept, provisionally at least, the taxonomic decisions that I've been making here, I can now state the issue in cultural anthropology that is analogous to the opposition between behaviorism and cognitivism on the psychological level. (I'm sorry to have put you

through all that taxonomy, but it's the only way I know of to be clear concerning the fact that what we're talking about here are not homologous oppositions but analogous ones.)

The issue is not the operant status of mental behavior or thought—rather, it is the relative importance of behavioral versus ideological innovations in cultural evolution, and that is why the analogue of psychological cognitivism is best described as cultural idealism, and not as cultural cognitivism. The cultural idealist position is that sociocultural evolution is directed by ideological innovation—I refrain from saying "determined" for reasons to be given in a moment.

Cultural idealists posit new attractive thoughts arising for some reason within the minds of certain individuals, which are propagated and transmitted. These thoughts become so-called templates for behavior, which is therefore allegedly modified to correspond with the revised ideology.

Indeed, so strong is this commitment to the priority of thought over behavior that culture itself, in the prevailing idealists' paradigm associated with anthropological eminences such as Levi-Strauss, Marshall Sahlins, and Edward Sapir, is regarded as nothing but what I am here calling ideology. But I only scratch the surface of mentalism as it now reigns in contemporary anthropology. Not content with spontaneous ideas as directives of cultural evolution, cultural idealists subscribe to the further complication of extreme relativism, of which I do not think there is a parallel for among psychological cognitivists. This converts external behavior itself to nothing but what a culture's participants think it to be, thereby canceling Western civilization's 3,000-year-old quest for objective knowledge about human behavior and sociocultural systems.

I've attempted to deal with the problem of participant versus observer viewpoints and its relativist entailment by using the linguistically based concepts of emic and etic as modifiers of mental and behavioral events, but I shall not burden you with the details of the tribal wars now being fought over this distinction.

Suffice it to say that cultural materialists posit objective knowledge as a totally approachable form of behavior potentially available to human beings regardless of cultural differences. But to come to the most relevant point for behavior analysts, cultural materialism holds that the direction of sociocultural evolution is probabilistically determined by the consequences of behavioral innovations with a cost–benefit for production and reproduction—the probability that an innovation which arises from the infrastructure or the structure or superstructure or ideological subsystem will be propagated or transmitted is determined by whether or not it results in a more favorable or less favorable balance of productive and reproductive costs as measured by the varying currencies previously mentioned.

Inventions which have adverse infrastructural cost–benefit consequences will be selected against regardless of where they arise in the system. A corollary of this principle is that changes in the external behavioral infrastructure probabilistically determine both the internal and external components of structure and superstructure.

Let me make it clear that the cost–benefits which determine selection for or against a particular innovation need not have the same balance for all the participants in a given sociocultural system. Where sexual, age, class, caste, and ethnic hierarchies exist, innovations may be *selected for* on the grounds of their favorable cost–benefit consequences for the superordinate individual regardless of the consequences for subordinate individuals. This does not mean, as some dialectical materialists insist,

that every innovation selected for in class-stratified society necessarily has adverse consequences for the subordinate. Optimization does not mean optimal, even for ruling classes.

I should also hasten to assure you that the principle of infrastructural determinism allows for, indeed demands, the recognition of causally powerful but not dominant feedback between the other components of sociocultural systems and infrastructure.

All aspects of sociocultural systems are causally linked to each other, but the links are not symmetrical. This qualification emerges from the distinctive comparative and natural historical evolutionary perspective of cultural anthropology and anthropological archaeology, and it stands opposed to paradigms within anthropology and in other disciplines which ignore the long view. When sociocultural differences and similarities are examined synchronically (single time span), causal relationships rapidly dissolve into an incoherent corpus of middle-range eclectic correlations linking infrastructural, structural, superstructural, and ideologic components in infinite arrays. It then appears empirically demonstrable that there are no overall asymmetries in the causal nexus. This error cannot be resolved simply by adding short-term time depth—indeed, dependence on short time frames compounds the problem and leads to the impression that at certain historical moments of society structure or superstructure or ideology dominate infrastructure. For example, in the shortest term, it often appears that politics is in command—to use the phrase "applied" for the ill-fated attempt to change China from the top to the bottom during the epoch of the Great Leap Forward.

Expansion of time frame also exposes the fallacy of religion in command, as in the case of contemporary Iran. While Shiite fundamentalism has profoundly changed the reproductive and productive activities of the Iranian people, the infrastructural conditions for the overthrow of the Shah were created during the prior period of Colonialist struggle over control for Iran's oil resources.

If politics and religion were really in command in evolutionary perspective, we should never be able to explain why band organizations persisted for hundreds of thousands of years, why villages were a rarity until 8000 B.C., and why the first states did not make their appearance until a mere 6,000 years ago. One might argue that these dates correspond to the amount of time needed for the maturation of the ideas which were appropriate for the transformations in question, but the fact is that the transformations did not occur everywhere; bands, villages, and agrarian states linger on in some locales till this very day; and it is both their presence and their absence in specific places as well as specific times that needs to be explained. This cannot be done nomothetically without specifying recurrent conditions that are external to structure and superstructure, conditions that lie nowhere else but along the constants and variables of infrastructure, for reasons that I shall expand on in a moment.

This present occasion is too brief to allow me a full-scale defense of the principles of infrastructural determinism. Such a defense would rest on logical and empirical grounds and on the corpus of testable theories produced under the auspices of cultural materialism as compared with idealists and other alternative paradigms. The first point to be noted with respect to the idealists' paradigm is that it is essentially indeterminate, since it lacks any selection principle to account for why certain ideas rather than others are materialized and incorporated into a particular cultural repertoire at a particular time. There is an exception, and that is Hegelian, which asserts that there is

selection for ideas which increase the sway of reason and freedom, a principle, however, that clearly results in counterfactual theories when applied to the contrasts between cultural primitives and civilized society.

Implicit in most idealist approaches is the conviction that cultural evolution is dominated by stochastic processes, such as the random appearance of great leaders or the arbitrary appeal to certain symbols, rules, and rituals. At best, idealist theories are historical particularist, that is, ideographic theories which account for the selection and extinction of cultural innovations by appealing to specific sequences of changes in infinite regress. Historical narratives, however, cannot account for why particular components are present or absent in other sociocultural systems except by providing a separate narrative for each instance, thus, no predictions or retrodictions can be made, because there are no principles for making such predictions or retrodictions.

The hopelessness of this fact is of course multiplied many times over when idealists reject the possibility of achieving objective knowledge about what actually happens in other cultures, according to the testimony of a community of trained observers.

Also, idealists' explanations of cultural phenomena frequently take a form that is analogous to the explanation of operant behavior, by appeals to preexisting mind-sets. Why do Amazonian villages make war? Because their males are aggressive. Why are blacks discriminated against? Because whites are prejudiced. Why do Africans have a high fertility rate? Because they like children—or sex. Why do Americans spurn insects as food? Because insects are disgusting.

For each such case, cultural materialist explanations reverse the causal arrow and raise additional questions which open the way to nomothetic solutions. Males are aggressive *because* they make war. They make war because of population pressure and resource depletion. Whites are prejudiced against blacks *because* blacks are discriminated against. The reason why they are discriminated against has to do with the economic role of unemployed blacks as buffers against white unemployment. Africans like children *because* they have a high fertility rate. They have a high fertility rate because of the cost–benefits of rearing children. Americans find insects disgusting *because* they don't eat them. The reason they don't eat them is because relative to domesticated ruminants and swine, insects are a highly inefficient source of animal flesh.

One might very well wonder how cultural idealism, which is devoid of retrodictive or predictive principles, has been selected for and become dominant in anthropology and other social sciences. The answer may be quite simple: The majority of American social scientists are paid to prove that human behavior at both the psychological and cultural level is primarily a result of will or chance. Convinced that there are no nomothetic principles to be found, they don't bother to look for them—and hence are never in any great danger of finding any.

This behavior—to continue to speculate—has been selected for because in our own particular form of hierarchical state society, the hungry, unemployed, and otherwise frustrated and unfulfilled majority are expected to blame their losses on wrong attitudes, bad values, weak wills, and lousy luck, rather than on the Alice-in-Wonderland design of the sociocultural system which governs their lives.

Indeed, has not the President of the Republic, this very week, confirmed the importance of cultural idealism as a national paradigm by proposing that hunger and homelessness in the world's richest country results from nothing but a failure of knowledge

about the rules which provide access to food and shelter? I hasten to add that similar obfuscations are as rampant or even more so in the rest of the world's civilized society.

Regardless of their social functions, the intellectual claims of idealist paradigms rest on whether or not it is possible to render testable and parsimonious retrodictions or predictive explanations of sociocultural differences and similarities under the auspices of nomothetic principles, such as the principles of empirical determinism.

The fact is that many cultural materialist theories have been advanced with respect to a broad variety of infrastructural, structural, superstructural, and ideological components, ranging from the origins of agriculture and the evolution of the state, to the Hindu reverence for cows and the American rejection of dog meat. These theories have been contested by every known form of trickery, deceit, distortion, and misrepresentation in the social science journals, and I personally have been charged with being everything from a rabid Marxist, vulgar simplistic mechanical materialist, and teller of just-so stories, to cryptic idealist and CIA agent. The one thing that cultural materialism has not elicited so far are alternative theories that are more parsimonious, of wider scope, and constitute a broader and better integrated corpus.

Since I am not here able to review the expanse of evidence for and against the corpus of theory generated by the principles of infrastructural determinism, let me invoke a more abstract form of argument. One expects a priori that infrastructural subsystems will exercise a greater determinative influence over the other subsystems simply on the grounds that the infrastructure is the interface between culture and nature, in the sense that it is through the infrastructure that the constraints of the laws of physics, chemistry, biology, and psychology get imposed upon human behavior in the most direct and powerful fashion. If the behavior of infrastructural subsystems is not subject to these lawful restraints, then there would be no reason to suppose that cultural evolution is subjected to selection by consequences. Any operant would then have an equal probability of being selected for. And the evolutionary trajectories of particular cultures would simultaneously exhibit every combination of components that human beings are capable of reinforcing in themselves and in others. But such is not the case empirically.

On the contrary, cultural evolution is demonstrably more orderly than biological evolution. The incidence of convergent and parallel evolution produced under the lawful constraints of the cultural realm are greater per unit of time and unit of culture than that which has been produced by natural selection.

It is now my painful duty to point out that when radical behaviorists turn their attention to the analysis of sociocultural phenomena, there is no guarantee that they will support cultural materialism over the reigning cultural idealist paradigm, other than the extreme relativism of phenomenologists. The problem is that by failing to identify the causal priorities that are inherent in sociocultural subsystems, they are as prone as cultural idealists to accept the common-sense notion that fundamental changes in a sociocultural system can be induced with equal probability of success by controlling reinforcement schedules in *any* subsystem or any component of any subsystem. But behavior modification is not the same as cultural modification. In behavior modification, the behavior analyst controls the resources and the reinforcement schedule. In cultural modification, the problem is that *others* control the resources which need to be controlled if the culture is to be changed.

Since verbal behavior is cheap, the path of least resistance seems to lie in the control over the contingencies of verbal behavior as stated by Skinner [1976], "what is needed is not a new kind of government, but further knowledge about human behavior and new ways of applying that knowledge to the design of cultural practices" [p. xvi].

I for one need to be reassured that this means something different from the proposal that the word was in the beginning, and that it will make us free. The point is not that knowledge—that is, external and internal verbal behavior—is irrelevant to sociocultural change, but that infrastructural–structural conditions severely restrict the effectiveness of attempts to change social behavior simply by controlling educational contingencies. We are not free to teach everything we would like to teach, nor are we free to learn everything that would benefit social life. At least not on a scale that would be adequate for fundamental change.

The priority task, therefore, for behavior analysts who wish to modify culture is to find ways to contribute to the modification of the existing systems of political-economic control and its infrastructural base.

But I do not wish to end on a contentious note. I hope I have made it clear that cultural materialism and radical behaviorism are natural allies, and that both strategies rest upon a common epistemological foundation. It was my good fortune to have been exposed to the world of operant psychology while still in college, and I have long awaited an opportunity such as this to express my thanks. If you get anything out of this, it's only because you and your mentors have put so much into this.

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