FUNCTIONAL MATERIALISM: A WORKING PAPER

DAVID R. FEENEY
HONORS THESIS
JEROME ULMAN - MENTOR
05/88
OUTLINE for

FUNCTIONAL MATERIALISM: A WORKING PAPER

1) Introduction to Functional Materialism
   
   A) Dimensions of Functional Materialism
      1) Selection By Consequences
      2) Materialistic Ontology
      3) Investigation of Functional Relations
      4) Levels of Interrelated Selection
      5) Commitment to Non-Reductionistic ("Conceptually Telescoping") Units of Analysis
      6) Functional Analysis ("Unification") of Scientific Behavior and It's Products

2) An Overview of the Levels of Complexity of the Life Sciences: Toward a Science of Culture

   A) Biology - "The Informative Gene"
      1) "Selfish Genes" and Assertions of Genetic Consciousness
      2) Sociobiology and Genetic Determinism
      3) The Problem of "the Metaphor of Storage"
      4) The Problem of Reductionism

   A) Psychology - "The Struggle for Science"
      1) Idealism:
         a) Dualism and Cognitivism
      2) Materialism: Two Orientations
         a) Mechanistic Materialists: cognitivist, structuralist, developmentalist, methodological behaviorist
         b) Selectionists: Radical Behaviorists
            1) The problem of Reductionism
3) **Anthropology and A Natural Science of Culture**

A) Idealism:
1) Harris' psycholinguistics within his Cultural Materialism as "cultural dualism"

B) Materialism: Two Orientations
1) Mechanistic Materialism: Harris' Cultural Materialism
2) Selectionism: Historical Materialism & Functional Materialism

**Conclusion:** Science of Culture as New Frontier of Science
ABSTRACT:

The methodological strategies and tactics of behavior analysis have met with great success toward establishing a natural science of behavior within modern psychology. The experimental analysis of behavior has established a rigorous factual base on which a resulting technology of behavior is founded. These technological successes, which shore up the conceptual and philosophical position called Radical Behaviorism, are functionally related to our insistence upon natural science research methods appropriate to our field, namely, the complex interaction between organism and environment under the causal mode of selection by consequences.

However, behavior does not occur in a vacuum, but in the material context of regional, national, and international cultural practices. In response, several behavior analysts are calling for the same natural science orientation with which to establish a natural science of culture.

It is widely agreed that cultural selection is not amenable to an "analysis by extrapolation" from the level of operant selection, just as behavior analysts balk at attempts to analyze and explain behavior by extrapolation from the level of natural selection. Concerned behavior analysts have entered into an interdisciplinary collusion with anthropologists whose methods are comparable to the natural science methodology inherent in a science of behavior.

Jerome Ulman, in a timely attempt at clarification and synthesis, has proposed a natural science framework within which a non-reductionistic science of culture may be, in time, achieved. This conceptual analysis, called Functional Materialism, is a wide-ranging theoretical and ontological position which, we feel, will be the milestone with which not only the rising science of culture will be guided, but also the student of disciplines concerned with sciences whose subject matter is amenable to selection by consequences.
1) An Introduction.

At this material point in history, a natural science of cultural selection is recognized by many scientists, within behavior analysis and without, as a necessary and possible discipline. Since my involvement with the science of behavior roughly a year and a half ago, debate and dialogue pertaining to advancements toward a science of culture based upon natural science methodology have been increasing, and with good reason.

While it is acknowledged within behavior analysis (Glenn, 1986; Skinner, 1981) that a science of culture is eminently possible, the form, scope, and methods of such a science are far from agreed upon.

Three broad positions within behavior analysis seem to be appearing in relation to the question of a science of culture.

Some behavior analysts, influenced by Skinner's landmark treatise *Selection By Consequences* (Skinner, 1981) agree that cultural selection is of a higher level of organizational complexity than operant selection. They seek an interdisciplinary collusion with anthropologists whose methodological research strategies are complementary to our own. Unfortunately, much of modern anthropological research is of the prevalent, "social science" tradition whose research methods can be termed vaganotic (Johnston & Pennypacker, ) or are frankly idealistic; at any rate uninterested in obtaining functional relations vis-a-vis precise measurement, prediction, and control of the variables
they study. Certain notable exceptions have prevailed to be recognized as "paradigms" by behavior analysts within which a natural science of culture may develop. These will be discussed in greater detail below.

These behavior analysts, guided for the most part by Selection By Consequences, rightly realize that the units of analysis appropriate to the level of operant selection (the contingency of reinforcement) or the level of natural selection (contingencies of survival) would be inappropriate for an analysis of cultural selection.

I say "for the most part" because there are behavior analysts (see Rakos, 1987) who have proposed that the facts obtained by a science of behavior may suffice as an explanation of cultural selection by simply applying an analysis of behavior "writ large".

This "other camp", while less well represented in the theoretical literature, may serve to illustrate the practical, "pragmatic" position of the applied behavior analyst in the field who, without the explicit findings of a science of culture, often finds the technology of behavior rendered less effective by interference of persistent, unforeseen and uncontrollable cultural variables.

In fact, the majority of previous attempts to explain cultural selection, such as sociobiology, (Wilson, 1978) are analogous to the above position in that they attempt to analyze and explain cultural selection strictly by employing units of analysis used in levels of lesser complexity. In the case of sociobiology, human behavior and culture is analyzed strictly in terms of contingencies of survival of the genetic material of the individual. In the case of much applied behavior analysis, cultural selection is regarded simply as the operant selection of
individual repertoires of persons in groups, seemingly controlled exhaustively by contingencies of reinforcement alone.

The scenario of large groups of organisms "behaving individually together" as the sole function of contingencies of survival or contingencies of reinforcement seems unlikely, but explanations of this type do have a precedent history.

Explanations of phenomena at the level of cultural selection (if indeed one does accept the basic tenets of an interrelated hierarchy of organizational complexity of organisms as pointed out in Selection By Consequences; some radical behaviorists do not) employing units of analysis used to investigate lower levels of complexity is broadly termed reductionism.

Normally eschewed by radical behaviorists who would balk at the notion of "explaining away" behavior strictly in terms of a lower level of complexity, (be it the level of natural selection, such as construing behavior as functions of genetic control, or the more irritating practice of reducing all events under selection by consequences to rudimentary physics (Capra, 1986)) reductionism or "extrapolationism" is a common theme in the attempt to explain cultural selection, even among some radical behaviorists.

It seems clear to the author that any "natural science of culture" worthy of the tact will be constructed from just those natural-science methods appropriate to the study of cultural phenomena in their own right, just as radical behaviorists continue in a theoretical (and cultural) struggle to analyze behavior in its own right. That a science of culture must be built be built upon an evolutionary and non-reductionistic framework would seem to be apparent to any radical behaviorist worthy of the tact as well.

The overall point of this introduction is that we, as radical
behaviorists, should have the conceptual apparatus to declare a science of culture a necessity. We should also have the ability to acknowledge that the dimensions of radical behaviorism as a science of behavior cannot subsume the dimensions of a science of culture.

What seems to be needed at this juncture is not only an interdisciplinary collusion with anthropology, but a natural-science framework with which to guide our methodological alliances toward a science of culture which can produce a technology of cultural selection applicable to any cultural context in the world. While the experimental analysis of behavior has provided behavior analysts with a solid empirical base on which to ground their technology and ensuing conceptual positions regarding the behavior of the individual organism, we have yet to meet the challenge of analyzing the material cultural contexts that hermetically envelops all of us, as scientists and as individuals. Without such a framework for continuing analysis, scientists cannot hope to investigate and control those powerful variables which control the culture of which they have become such an integral part.

I believe that Functional Materialism is just that comprehensive framework.

* 

Functional materialism is a conceptual and philosophical position resulting from a careful synthesis of successful natural-science research strategies involving events under the control of consequences, in order to ascertain the necessary conceptual and methodological dimensions toward a natural
science of cultural selection.

Far from an esoteric philosophy, functional materialism is a natural science platform whose dimensions includes the necessary and generic requirements for establishing not only a firm empirical base on which to build a science of culture, but also a comprehensive statement of what any research method dealing with events under the control of consequences should strive for.

In short, functional materialism is at once an analysis of those methods most successful in wresting knowledge from the levels of natural and operant selection, and a fertile application of that analysis toward evaluation of the multidisciplinary collusion necessary to establish a natural science of culture.

That a multidisciplinary research strategy is necessary for a science of cultural selection is highlighted by the calls for a multidisciplinary approach to the study of operant selection in the current literature of behavior analysis.

As Epstein (JABA vol. 10, no. 1, p.128) states:

"A true science of behavior must be multidisciplinary . . . because behavior is a complex subject matter that requires the joint efforts of individuals in many specialties, both to advance our understanding and to devise effective treatment. . . it is not folly to think that individuals of different specialties can be brought together to build a new science; it is folly to think that the handful of scientists who now study behavior in almost a dozen different disciplines can advance our understanding significantly."
While Epstein speaks not of a new science of cultural selection but of an expanded science of behavior, his remarks are timely. Considering the markedly increased complexity of cultural phenomena comparable to operant phenomena, a multidisciplinary approach would seem to be a foregone conclusion.

However, my own remarks asserting the need for a multidisciplinary research approach to cultural selection (and to operant selection as well) should not be construed as an affirmation of a separation of behavior analysis into a proposed "praxics" or "behaviorology". Any discipline which studies those events under control of consequences (natural, operant, and cultural selection) deals with complex phenomena which would profit from proper multidisciplinary research strategies, if not already applied (i.e. fields such as ecology within biology).

To the functional materialist, the "agony of our ineffectiveness" (Epstein, op.cit.) in applying the technology of behavior to the surrounding culture will not be appreciably relieved by a proposed disciplinary cleavage, but only by the rigorous examination and eventual control of those cultural variables of which the impotence of our applied science is a function.

While a multidisciplinary research strategy relating to cultural selection is certainly necessary, it would not be enough for the science of culture to be simply a "joint effort" between the myriad of existing sciences of selection. The ontological assumptions, research strategies and consequent techniques of many present-day disciplines of selection have proven uneventful in their attempt to analyze and control relevant
variables toward benificent, practical applications.

Many of these "sciences" are frankly uninterested in the control of their subject matter (much of modern anthropology) or in obtaining functional relations within their subject matter. Complex and often idealistic (and solipsistic) theoretical structures remain intact in lieu of their divorce from experimental testing and control and the validation/disconfirmation feedback so necessary to a natural science. If control is acknowledged, it is generally the case that control is extended to variables which exist in dimensions unknown or unknowable to science ("minds"). While "methodological idealism" is mostly the case with contemporary social science at the level of operant and cultural selection, it is by no means limited to these levels, as recent speculation concerning genetic "conciousness" attests. Many attempted sciences of selection, while proposing a materialistic ontology, neglects or refutes the causal mode of selection by consequences as relevant to their subject matter. This sort of "billiard ball" materialism hides many methodological problems while attempting a patina of "hard science".

Many of the disciplines of psychology and anthropology which espouse a materialistic ontology do so within the "paradigm" of classical mechanics, a causal mode which is awkward and essentially unfit to be used to investigate organisms. In fact, it has also proven to be of a limited value to scientists who study the abiotic world of physics, with the rise of quantum mechanics to explain essentially "counterintuitive", illogical phenomena within the physical universe, such as the dual nature of light.

Radical behaviorism could be construed as an application of the "quantum mechanics" of the life sciences -selection by
consequences-to the level of the behavior of organisms. The practical successes of the science of behavior, limited as they are comparable to evolutionary biology, are considered by functional materialists to be in direct functional relation to this essentially revolutionary application.

The fact that a necessary dimension of functional materialism toward a science of culture is the insistence on selectionist methodology is not "cheating the evidence"; selection by consequences has proven so successful as a research strategy in both the sciences of biology and behavior that it seems highly improbable that the collectivities of organisms will escape it. In fact, it is the insistence of the functional materialist on a selectionist materialism that will, hopefully, guide the behavior scientist toward allegiance with those anthropological aspects necessary for natural science of culture and a consequent technology.

There is more to be considered than multidisciplinary collusion in our initial attempts toward a science of culture. A great practical advantage of the synthesis of life-science methodology that is functional materialism is the prescriptive content of it's guidelines pertaining to assessment and evaluation of the disciplines with which the behavioral scientist is compelled to cooperate in order to proceed with a non-reductionistic, natural science of cultures. The generic dimensions of functional materialism have much to offer in terms of analyzing and categorizing the positions expressed by various disciplines already involved with the study of cultures. (or the study of any phenomenon under the control of consequences) The dimensions of functional materialism allow us to seek out that study of cultures which, united with extant sciences of biology and
behavior, may give us a comprehensive account of the variables that effect and control all spheres of the selection of organisms.

That the task of classification and critical evaluation of contemporary anthropology is a large one would seem to be another foregone conclusion.

To paraphrase Skinner in About Behaviorism, how much of what has been said, pertaining to culture, is worth saving?

The Dimensions of Functional Materialism

1) Selection By Consequences

For an emerging science of culture to be integral with behavior analysis and biological science, its basic assumptions and overt methodological strategies must approach cultural phenomena from the evolutionary framework of selection by consequences. Far from being a disciplinary afterthought, selection by consequences is viewed as a vital starting point in the construction of a science of culture. It is a necessity that those anthropological positions consulted by behavior analysts be firmly selectionist in their view of the phenomenon they study. It is the crucial notion of selectionism that separates the functional materialist conception of culture (and ensuing anthropological investigations) from other behavior analysts (Glenn, 1987, Malagodi, ) who favor Marvin Harris' treatment of the same phenomena, referred to as cultural materialism.

An implicit thesis within the presentation of functional materialist thought has been the assertion of the integral nature of historical materialism, or the Marxist science of history, with the overall tenets of behavior analysis. While many persons within our capitalist culture are taught to disdain Marxism or things connected with it, (we certainly aren't routinely rewarded
for such investigation) the assertions of those historical materialists who are indeed materialist tend toward explaining cultural phenomena not only in a material framework, but in a selectionist framework as well. Unfortunately, those historical materialist anthropologists who are both materialist and selectionist are few, as are those psychologists who are explicitly materialist and selectionist.

However, we feel that "good" historical materialism (where "historical" materialism is not construed as "laws governing history" but statements of generic functional relations, expressed as laws, that have governed the development of cultures in recorded history, as revealed by historical research) is much more expansive, integral and amenable to selectionist methodology than is Harris' cultural materialism, for reasons to be given later. It suffices to say that there are certain methodological problems with Harris' cultural materialism, of which radical behaviorists are familiar, which stems from a basically non-selectionist materialism applied to cultures, analogous to the non-selectionist treatment of human behavior characteristic of methodological behaviorism.

The functional materialist insistence on selection by consequences as the "paradigm of choice" for the biotic sciences allows a comprehensive evaluation of any life science who deals with a subject matter under the control of consequences, not only as a proscriptive measure in dealing with anthropology, but also to evaluate positions espoused by the biological community, although biology is almost universally selectionist.
2) Materialistic Ontology

Perhaps it is needless to say, but an integral dimension of functional materialism is the insistence on a materialist ontological basis for scientific investigation of confrontable or potentially confrontable objects in the world. The toleration of quasi-idealism (dualism) or unadulterated idealism within any level of selection is rejected by the functional materialist in no uncertain terms. Assumptions of non-material content as extant variables is explicitly negated by both classical mechanics in its investigation of the abiotic world, and by selection by consequences as applied to biotic organisms.

Obviously, at this stage in the science of behavior, idealism is explicitly rejected as both an untenable theoretical position and as a waste of methodological time. Classical and selectionist materialism seem to be the only extant causal modes, and selection is gaining more and more ground in explaining what was originally explained by appeal to essentially mystic forces. It seems another foregone conclusion that a natural science of culture should exploit these causal modes to the exclusion of idealistic accounts.

However, it is important to note that the abiotic and biotic world are not separate spheres, but a qualitatively and quantitatively interrelated whole consisting of extremely complex functional "webs" between the two.

A possibly more fertile strategy is to explore the essentially social nature of science and the verbal behavior produced by scientific cultures as variables affecting the way cultures "carve up" and classify the world. Skinner has remarked in his Notebooks that many intrinsic conflicts of science could be
resolved with an analysis of the verbal behavior of the scientist, which is admittedly a cultural phenomena to be addressed by a science of culture. (see Hackenberg, 1985 for an enlightening discussion of the verbal behavior of cultures and it's effect upon science). The biotic and abiotic worlds do not exist in separate vacuums but are delineated by natural fracture lines which may seem, at first or even second glance, as running counter to logic.

While selectionism and materialism are necessary for adequate research in the biotic sciences, an interesting question is raised as to whether some current debates at the level of subatomic physics (debates that tend to assert that the localized causality of Newtonian science fails because of an inferred "conscious content" on the part of individual particles—see Fritjof Capra's *The Tao of Physics*) could be resolved by exploring the possibility of resorting to selection by consequences to explain these abiotic cases, thus sparing materialism from reduction to "subatomic idealism"

At any rate, the conflicts that have arisen in subatomic mechanics should be able to be resolved by exploring either the cultural and selective variables at work on the scientist, or possibly the assertion that certain areas of the abiotic world are also amenable to control by consequences. No idealistic explanatory framework need be resorted to in either case.

3) **Investigation of Functional Relations**

A natural science of culture would be intrinsically interested in the search for functional relations between independent and dependent variables. The insistence upon appropriate research methods is not complete without utilizing these methods toward
prediction and control of the phenomena under investigation, namely cultural selection. No adequate technology can stem from just proper assumptions, but only from the careful study of cultures, past and present, and the observance of functional relations between gross environmental situations and culture, of cultures effects upon it's own development, and of the relations of cultures upon cultures.

The problems posed by the largeness of cultures, and their relatively slow rate of change, may present problems for the cultural scientist, similar to the problems dealt with by biologists and behavior analysts.

As noted by Ulman, (1987, in press) the gross nature of classes of cultural phenomena, literally surrounding the observer of that culture, presents a problem that is directly analagous to the problem of private events in a natural science of behavior. The problem is not essentialy that the events we wish to observe are private, but at the other end of the spectrum. The events we wish to observe are public, but they are much larger than public events; they are "megapublic" events which, like private events, do not avail to easy examination or observation.

As private events can be felt only by that person inside their own skin, they provide a problem for a natural science of behavior. Some classes of cultural events or trends are not easily observed because no one person in any culture may directly observe the megapublic events of any culture (including their own) without resorting to technological prostheses with which to disseminate both verbal behavior and the products of verbal behavior, such as print, electronic and video media.

Unaided verbal behavior (word-of-mouth) may suffice for the dissemination of cultural facts, as it did before the invention of
the above prostheses, but this awkward and slow method of observation would be as useful to a contemporary, global science of culture as whiskey would be to the contemporary science of anesthesiology.

It is interesting to note the essential similarity of these problems. Individuals observe their own private events, but come to know and control these events mostly as a function of their social and verbal communities. Individuals observe events inside of their own culture and possibly of other cultures, but mostly we have been able to extend our knowledge of our own culture and others through verbal behavior, mediated as it is through technological prostheses.

It is, of course, much easier for the community to instill self-control in individuals than for communities to extend to an individual(s) the ability to predict and control cultures. It has been done, and technological prostheses have played a large part in it, hence the term "Information Age" applied to the last century. However, it is not an "age" which manipulates "information", but cultures which use technological prostheses to disseminate relevant verbal behavior and it's products.

The functional materialist does not despair over the problems posed by megapublic events and their observation and assessment. Like the radical behaviorist treatment of private events, we need not declare the observation of megapublic events a methodological impossibility, but as a potentially observable phenomenon which may, with the utilization of proper technological prostheses, be made observable.

Just as blood circulation was once a private event, which has since been made public by technological prosthetics, we need neither treat megapublic events as inaccessible to analysis nor
explain them away with a popular explanatory fiction. As private
events will eventually yield to a rigorous analysis from the
neurophysiologist, so too will megapublic events yield to the
technological prostheses of a science of culture.

It is actually the case that megapublic events should be easier
to assail with conventional technology of media (satellites, video,
radio, telephone, telegraph, print) than private events in the
sciences of behavior and biology. All that is needed is the control
of these means of observation toward concise data with which to
construct functional relations which is, of course, problematic in
the context of our current culture.

While the above assumes that the main data of a science of
culture will come from analysis of cultures "in the field" both
contemporarily or historically, precisely controlled laboratory
studies with humans in groups may accentuate the science of
cultures, just as laboratory experimentation is the basis of
behavior analysis. However, I am not well versed in the
experimental analysis of behavior (yet!) and know nothing of the
parameters of such experimentation. However, such a strategy
seems plausible, and should not be abandoned a priori. In fact,
the current Walden Two experimental communities may serve as
controlled field experiments, as I think is the stated goal of
Communidad Los Horcones.

I would assume, however, that a natural science of culture
must derive its' data primarily from the phenomena it deals with
the material global cultural context as revealed both by historical
and current data.
4) Levels of Interrelated Selection

In *Selection By Consequences*, Skinner characterizes the organizational complexity of organismic functions as a criteria for delineating levels of selection. Skinner stressed in that article that these levels were not separate, but interrelated. This viewpoint is crucial to the functional material view of the development of a science of cultures in that it must exploit the conceptual clarity inherent in the selectionist view of the biotic world as consisting of integrated levels of selection. Not only will this view lead the cultural scientist toward exhaustive account of his phenomena including the standpoints of biology and behavior, but it can help scientists in any biotic discipline to avoid the extrapolationism which comes from neglecting the evidence of other levels of selection. Certainly, the view of biotic sciences being interrelated through selection could avail interdisciplinary communication throughout those sciences, leading to cooperative attempts at progressive research in all areas, including cultural selection.

It also goes to say that while the levels of natural, operant, and cultural selection are exhaustive, the insistence on their interrelatedness reminds us of two things; that there may be considerable overlap between the content areas (such as the study of those biological variables which affect behavior and culture) and that there may be subsets within each level. An example of such a subset is the particular selective process of cultures interacing with other cultures, within the broader arena of cultural selection itself.
5) **Commitment to Non-Reductionistic Units of Analysis**

Each science at each level of cultural selection has a vested interest in its own unit of analysis particularly suited for the arena it deals with. As was mentioned above, the strict and exclusionary application of the unit of analysis at one level of complexity to explain the phenomena at a higher level of complexity is termed *reductionism*. It is a general precept of functional materialism that reductionism is an unnecessary and unproductive research strategy for a natural science of selection, be it biology, behavior, or culture.

Few, if any, biologists would accept that biology could be as effectively explained by a reduction of complex cellular and organic activity to the level of chemistry or physics. As well, one of the basic tenets of behavior analysis is that the causes of behavior cannot be reduced to variables that lie intrinsically within the skin of the organism, be they idealistic (such as an appeal to mental agents and the "inner man") or mechanistic (such as reducing behavioral events to neurophysiology or genetic material *simpliciter*).

The functional materialist wishes to eschew reductionist explanations of culture with the same fervor. What is needed is a commitment to non-reductionistic, or "conceptually telescoping" (Ulman, 1987 in press) units of analysis akin to the functional unit of the contingency of reinforcement within behavior analysis.

In a major theoretical breakthrough, Sigrid Glenn has proposed a unit of analysis, the metacontingency of reinforcement, which extends the contingency of reinforcement to a cultural level and
should allow a functional analysis of cultures to proceed while positing no new behavioral processes.

As proposed in the article **Metacontingencies in Walden Two** (Behavior Analysts and Social Action Journal, 1986) and elaborated upon in the article **Verbal Behavior and Cultural Practices** (Glenn, 1987), the metacontingency of reinforcement is functionally defined as such;

". . .the metacontingency is the unit of analysis describing the functional relation between a class of operants having its own immediate, unique consequence, plus a long term consequence common to all of the operants in the metacontingency".

Ulman proposes the use of this new unit of analysis to begin the analysis of institutions, classes, and ultimately cultures from a functional materialist viewpoint.

With this new unit of analysis, we may now proceed with building a science of culture along the necessary lines listed above, by being able to take into account the long-term, cultural consequences that characterize cultural selection.

In her further expositions on the metacontingency of reinforcement and cultural selection (Glenn 1986, 1987), Glenn relates the importance of verbal and rule governed operants as "the link between between behavioral selection and cultural selection". (Glenn, **Verbal Behavior and Cultural Practices**, 1987)

Another focus of that same paper is the assertion that "the behavior analytic view (relating to verbal behavior and cultural practices-df) is consistent with the key Cultural Materialist principle of 'infrastructural determinism'".

The Cultural Materialist view of which Glenn speaks is the view held by Marvin Harris as mentioned above. While the functional materialist holds essentially a cultural materialist viewpoint, it is
not the Cultural Materialism espoused by Harris, for reasons to be discussed below.

Also, while functional materialism is in complete agreement as to the importance of verbal operant behavior in the analysis of cultures, we neither assert "infrastructural determinism", nor do we wish to become embroiled in the methodological-phonolinguistic problems presented by Harris' Cultural Materialism (for the remainder, Harris' Cultural Materialism will be referred to in capitals, while "cultural materialism" will stand for the generic stance of treating cultural phenomena in a materialistic manner).

Non-reductionistic units of analysis for each level of evolutionary complexity are a concrete research strategy which the functional materialist asserts is necessary to avoid the reduction of a qualitatively and quantitatively higher level of selection to a lower level of complexity and the ensuing problematic consequences. Reducing cultural events to operant events is tempting, since cultural events are "cashed out" as either behavioral events or their products. However, the functional materialist agrees with Glenn when she states:

...we might consider cultural processes as reducible to behavioral processes. As behavior analysts, though, we should be wary of such logic. We have long resisted the attempts of others to consider behavioral processes as nothing more than organismic processes simply because behavioral events are comprised of the activities of organisms. If we accept as a working hypothesis that cultural and behavioral evolution represent different levels of analysis, we may consider cultures as having their own contingencies of selection. (Glenn, 1986)
6) Functional Analysis of Scientific Behavior and It’s Products

Another implicit dimension of functional materialism is the necessity of a functional analysis of the essentially socially based behavior of the scientist, including special verbal behavior, and a consequent functional analysis of the products of scientific behavior (technology) and it's ensuing social ramifications.

Aside from providing a rigorous account of the cultural influences on the behavior of the scientist, a science of culture must investigate the controlling cultural relations which maintain such behavior, and cultural relations which control the use and applications of technology.

Any real alleviation of our "impotence" in using behavior technology toward benificent ends is hampered by our ignorance of controlling cultural relations which surround the research and development of the science of behavior.

While radical behaviorists acknowledge the effects of social and political variables in the development of science and the application of effective technology (See Malagodi, and Johnston and Pennypacker, 1980), it is no longer enough to assume that the benefits of effective technology will eventually persuade a culture to adopt and use that technology, or use it for appropriate ends. While it may have been the case that in previous ages, revolutionary scientific discoveries were met with sustained persecution until benificent technologies arose, a plausible argument can be made that the acceptance of those discoveries was proportional to the usefulness of the technologies to the controlling institutions within the culture of the time. Through
history, examples abound wherein scientific discoveries are put to use within cultures to fulfill punitive and socially questionable ends, most notably the nuclear proliferation of the last 40 years.

When scientists assert that the control of the products of their behavior (technology) should rest with themselves, they point up the need for an analysis of the material cultural context in which this (and other) productive behavior occurs, namely, in a cultural context where the products of productive behavior are often expropriated from those who produce them for the benefit, not of the culture as a whole, but to serve the interest of certain controlling institutions or classes within the culture.

It is interesting to note that the "cultural acceptance via technology" rationale has been mainly seen in terms of the abiotic sciences and of the technology of evolutionary biology.

It is also interesting to note that the sciences of the abiotic world such as physics and chemistry develop no real underlying assumptions or explicit rationale which could be said to threaten the assumptions used to justify current controlling cultural practices.

While evolutionary biology does challenge more explicitly the assumptions upon which controlling practices are based, they really have no practical negative ramifications upon controlling institutions because evolutionary biology does not deal with human behavior per se. At any rate, while the technology of evolutionary biology is exploited to the utmost (very possibly overexploited, hence the rise of "bioethics" in relation to patented life forms, genetic reengineering, surrogate motherhood for pay, etc.) the assumptions and conceptual positions of evolutionary biology (of evolution itself) are still legally contested for inclusion in school curricula in lieu of not giving
equal time to "creation science".

The assumptions and conceptual positions of an evolutionary science of behavior are much more threatening to those controlling institutions by virtue of the negation of the idealistic and prescientific notions upon which those institutions justify their continued controlling practices regarding human behavior. Little of the philosophy of radical behaviorism can be construed in such a way as to benefit these current controlling institutions, but control over basic research and applied science is by these institutions is possible, and in fact the norm. Our position seems directly analogous to that of evolutionary biology, except that neither the technology of behavior analysis nor its conceptual positions are widely prevalent within our culture.

By virtue of our intrinsically threatening position, we can be assured that if our technology is ever widely employed, it will be employed at the cost of a divorce from its theoretical and conceptual underpinnings. Not necessarily for the good of our culture, but for the good of the controlling institutions and classes within our culture, who can use the applied technology for their own benefit while eschewing the conceptual and philosophical positions (which have been mostly of an extrapolatory-interpretive form related to cultures such as Skinner's Walden Two, Beyond Freedom and Dignity, and even Selection By Consequences itself) which threaten its own controlling practices.

This is the backbone of the functional materialist fervor to see a correct, effective and exhaustive science of cultural selection come to pass. Without such a comprehensive study of the real cultural forces which support or suppress scientific
endeavor, the science of behavior may not be selected for survival by virtue of the destructive long-term practices of the culture which surrounds that science.

While it is still a guess if a science of cultural selection will propose an effective technology, it is a surety that if such an effective programme to control those cultural variables which control vast arenas of operant behavior would come to pass, it could hardly be tolerated by the current controlling institutions and classes of our culture. Such an effective programme would essentially render the cultural engineer as a radical revolutionary. We certainly cannot expect such a technology to be our saving grace. To paraphrase Harris, the accomplishment of a natural science of cultural selection will be a struggle, indeed.

2) A Functional Materialist Overview of the Levels of Complexity of the Life Sciences: Attempts to Explain Selection of Cultures

A) BIOLOGY - "The Informative Gene"

Evolutionary biology is the most successful and widely applied science of selection today. While the science of behavior and the rising science of culture can be construed as biological sciences, a better schema is to characterize biology as the first and most successful of the sciences of selection. While the general subject matter of biology, behavior and cultures are the same (organisms), what is studied and the methods employed by each are different owing to their respective level of complexity.
Behaviorists do not study cells, biologists rarely study contingencies of reinforcement, and neither have achieved a science of cultural selection.

Biology, however, has won a great share of cultural respect, owing certainly in part to its technological effectiveness upon the culture which supports it. The power of modern biology to alleviate pain and suffering has no doubt given an empirical justification to continued research utilizing selection by consequences as a causal mode with which to obtain functional relations.

One crucial area where biology has not consistently asserted a functional materialist stance is in respect for genetics and the relations of genetic content of the individual to behavioral and cultural phenomena. Two proposals in differing areas of genetic theory can be termed reductionistic, one of them idealistic. One concerns the possibility of genetic consciousness, the other concerns the control of individuals and cultures by genetic content.

1) "Selfish Genes" and Genetic Consciousness

Genetic material has been construed in recent biological literature as having an awareness or sense of self, proposed as a sort of motive force to explain, or at least analogize, human behavioral and cultural phenomena. Richard Dawkins' *The Selfish Gene* characterizes behavioral and cultural phenomena as functions of a self-aware genetic material upon which other cells amalgamate and survive through natural selection, yielding eventually to a behaving organism whose behavior is said to facilitate the workings of a "survival machine" in which the gene "resides". While the author gives a broad disclaimer about using
his thesis to interpret culture, he himself engages in cultural interpretation, characterizing a cultural gene called a "meme" which is the motive force for cultural change. Genes are construed as being "selfish", thus giving rise to an intrinsically invariant selfishness, again which the author disclaims as having any real control over behavioral and cultural phenomenon but may be a help in realizing why altruism is so unprevalent in human behavior.

This author as functional materialist disagrees with this analysis as an essentially mechanistic interpretation of behavior and culture which calls on idealism to explain events controlled by consequences. While Dawkins claims only an analogy to genetics, it is not strictly reductionism. However, the author dismisses organisms as simply survival machines built around the intrinsic controlling variables of their genes. This explanation relies on the neglect of selection at the levels of behavior and culture, essentially a genetic determinism which the behaviorist should reject in explaining behavior and the functional materialist rejects in explaining biological functions.

Assertions of genetic consciousness may have their roots in a precedent explanation of behavior as being controlled by contingencies of reinforcement which were said to be stored within the mind (or brain) in the form of memories. This "metaphor of storage" (Skinner, 1981) has effectively been extended to explain even the general functions of genes at the genetic level. Genes are said to be informational, that genes "encode" information which, when passed or "transmitted", will "instruct" cells in how to develop.

However, in both levels, the "information" that is said to be "stored", whether it is genetic or mental information, is an
unobserved inference used to explain complex functions at these differing levels, functions which our culture has no "new terminology" to express. These inferences, when challenged, are often shored up with idealistic metaphors or appeals to the mechanical nature of the subject matter.

2) **Sociobiology**

Sociobiology, as espoused by E.O. Wilson, is a classic example of reductionism. The behavior and gross cultural patterns of humans are said to be rigorously determined by our genetic makeup, with behavior changing in terms of the rate of development of our bodies through time.

While sociobiology is thoroughgoing in its materialism, it refuses to acknowledge the need for levels of selection, or that selection effects those levels directly. Thusly, it cannot give credit to other units of analysis beyond the contingencies of survival of genetic material of the individual.

This orientation shares with Dawkins genetic determinism and the assumption of almost complete intrinsic control. Without contingencies of reinforcement or metacontingencies, operant and cultural phenomena must be explained wholly in terms of genetic control, and our technology toward behavioral and cultural change becomes a long-range plan of eugenics. Once a child is conceived, the intrinsic control stored within the genes makes behavior modification or cultural control a practical impossibility within the lifespan of the subject or culture.
B) Psychology - The Struggle for Science

As most radical behaviorists know, the history of psychological science is actually the history of essentially introspective, philosophical orientations concerning "motives or underlying causes" of human actions giving up more and more ground to a latecoming scientific analysis of the subject matter at hand - the behavior of organisms.

While the scope of this paper precludes an indepth analysis of the history of psychology, it is not hard to see the history of psychology as a struggle for a science of behavior as opposed to a precededent and methodologically inept science of mental or intrinsic causes of behavior. These precededent strategies can be construed as vestiges of idealism or of mechanistic materialism applied to the level of behavioral selection.

1) Idealism: Dualism and Cognitivism

Dualistic explanations of human behavior definitionally resort to explanations of at least some of the relevant variables in terms of dimensions unknown to physical science. These are said to be spirits, minds, consciousnesses, etc. All of these entities share the common loci of inhabitance inside the human body, though in some dualistic schemes more than one inner agent may manifest, which is said to explain sudden, contradictory patterns of behavior. The inner agent may be said to be a whole comprised of interacting parts, such as Freuds' psychoanalysis, and conflict between the interaction of these parts is the underlying (internal) cause of behavioral problems.

Cognitivism is generally dualism which makes great use of
the metaphors of storage previously mentioned. Experiences (generally expressed as contingencies) are converted into memories which are stored within the organism, then are consulted (remembered) by the organism in dealing with the environment. Cognitivism seems to be the conceptual stance most amenable to material ontology, where dualism or mental agents can be replaced with the mechanistic metaphors of storage given below.

Both dualism and idealistic cognitivism share the fact that the complex internal processes they use to explain behavior are inferred from the behavior they observe. Needless to say, these sorts of psychology neglect selection, levels of selection, material ontology, and a commitment to functional relations.

2) Materialism: Mechanistic and Selectionist

Some contemporary psychologies besides radical behaviorism espouse a materialistic ontology. Those that do, however, espouse a mechanistic materialism which neglects selection by consequences, thereby simply "physicalizing" the variables observed while leaving unobserved variables either explained either in mechanistic terms, (such as computer analogues) or by asserting that unobserved variables (private events) cannot be comprehended by science.

a) Mechanistic Materialists

Structuralism, developmentalism, and materialistic cognitivism, while all asserting a materialistic ontology, are unaware of or refute selection by consequences.

Structuralism assigns behavior to be a function of the structure of the organism under study. While those functions are generally said to be governed by mental and therefore idealistic
structures inside the organism, a "structural materialism" along the lines of the computer-analog materialism of cognitivism is possible. While a structural materialism would be a step in the right direction, functional materialistic analysis would theoretically subsume the structure of the organism in its rigorous analysis of the various contingencies at work upon organisms at differing levels of selection.

Developmentalism such as Piaget's is, to paraphrase Skinner, simply structuralism with time as the independent variable. While mental entities may be said to develop with the body, materialist developmentalism is possible and seems akin to the thesis of sociobiology discussed above. Behavior is said to change as the body goes through a maturation process which, I presume, could be construed as being governed genetically.

Developmentalism not only neglects selection at the behavioral and cultural level, but functional relations simply cannot be compiled with behavior being a function of time. The person wishing to gain control over operant or cultural selection is at a loss to develop an effective technology, since the independent variable can never be manipulated and hence functional relations never ascertained.

Cognitive materialism ushers out idealistic explanatory fictions in favor of mechanistic fictions, most commonly the analogy of the brain as a computer which stores "data" which are retrieved and ejected when the organism responds.

While this is a materialistic ontology, little case can be made for conceiving the brain as a thinking machine. From the radical behaviorist standpoint, little is gained in ascribing intrinsic variability or control of behavior to private events, even the workings of the much-heralded brain. While the functions of the
brain and it's involvement in relation to behavior are admittedly complex, this is a question for the neurophysiologist working from a selectionist standpoint, such as a potential neurobehaviorist. Those private events that correspond to overt behavior are behavior to be explained not in mechanistic analogues, but in functional relations between and within levels of contingencies.

Methodological behaviorism is an example of how a materialist ontology mated with functional analysis can be conceptually and materially crippled by mechanistic explanatory modes. Watson's methodological behaviorism was rejected explicitly by Skinner because of it's impracticable, mechanistic view of behavior and it's impotence in regards to private events.

Essentially, the mechanization of the organism within Watson's schema could not account for those events which two observers could not directly observe. Like the logical positivism of the day, methodological behaviorism simply asserted that a science of behavior could not deal with such phenomenon, while leaving those phenomenon intact. The link from stimulus to response was no longer said to be mediated yet the status of the mental events weren't questioned, just considered an inactive link.

At this point, the successes of behaviorism prompted B.F. Skinner to try to expand on Watson's research. It was his landmark research that founded the second natural science of selection.

b) Behavioral Selectionists

Radical behaviorism is the revolutionary application of selection by consequences and material ontology toward
establishing functional relations between behavioral and environmental events. Again, the scope of this paper proclude a long discussion of the successes, practical and conceptual, of the experimental analysis of behavior, but it is not presumptuous to term the experimental, theoretical and applied analysis of behavior as the only rigorous science of behavior existing today.

Just as the application of selectionism to the field of biology was correlated with an explosion of research, explanatory elegance and technological progress, such has been the case with radical behaviorism, at least relative to other stripes of psychology. While I cannot lend my support to a disciplinary split between behaviorism and psychology at this time, I must agree that radical behaviorism is the only discipline at this level that would be at least conceptually justified in doing so.

Just as the dimensions and methods of evolutionary biology were the wellspring for the science of operant selection, just so are the dimensions and methods of radical behaviorism the wellspring for the science of culture. However, we do not want to fall into the precedented trap of ignoring selection on the cultural level as a phenomenon in it's own right with it's own necessary units of analysis.

While I think it is proven that the selection of cultures must be a multidisciplinary endeavor, we must evaluate the disciplines with which we cooperate by the same standards with which we would evaluate any science of selection. In the necessary interdisciplinary collusion with anthropology which is developing, I see a critical need for the employment of a functional materialist analysis of the disciplines considered. That analysis will guide us in our allegiances toward a functioning natural science of culture.
C) Anthropology and A Natural Science of Culture

Much contemporary anthropology, like much of the science at the level of operant selection, cannot be termed functional materialist. Like psychology, the majority of anthropology is rampant with assertions of idealistic motive forces, mechanistic explanations, little or no attempt at achieving functional relations, and only mere lip service to cultural selection.

My exposure to anthropology has been, for the most part, filtered through my exposure to radical behaviorism, and from the functional materialistic viewpoints I've been exposed to. I will deal with that part of anthropology which has been called relevant to an allegiance with behavior analysis as discussed in recent behavioral literature. These two viewpoints are Harris' Cultural Materialism, and historical materialism as proposed by Marx and expressed in contemporary literature as both selectionist and materialist.

1) Idealism

In a sense, Harris' Cultural Materialism may actually be termed a cultural dualism. Harris chooses to treat verbal behavior in an individual context as psycholinguistic (Glenn, 1987) which has caused problems in translation between Harris conception of culture and our conception of verbal behavior. The most important ramifications of Harris's view of the verbal behavior of the individual are the methodological problems of verbal behavior in his cultural analysis, a problem akin to methodological behaviorism's treatment of private events in a
natural science.

2) Mechanistic Materialism

The problems of viewing the verbal behavior of the individual in psycholinguistic terms further complicates Harris' analysis of verbal behavior and cultural events. Basically, Harris declines to analyse verbal behavior and its effect upon cultures precisely because he sees verbal behavior "apparently... as a function of (or intimately related to) cognitive processes, ideas, intentions, wills, hypotheses, etc". (Glenn, 1986) Thus, verbal behavior becomes an unanalyzable function of private events, which I have no doubt that Harris would consider unanalyzable as well.

While Cultural Materialism pays lip service to selection, the causal mode in which Harris construes his organisms is mechanistic. Analogous to the treatment of private events by methodological behaviorism, Cultural Materialism considers the social functions related to verbal behavior (construed as functions of private events) as essentially unanalyzable as well.

This is not unrelated to Harris' assertion of what Glenn calls infrastructural determinism. Glenn argues that the behavioristic conception of verbal behavior is consistent with Harris' assertion that the three parts of society (infrastructure, structure, and superstructure) are dominated by the essentially non-verbal behavior involved in production and reproduction practices.

It is not surprising to see behaviorists rally to support Harris in our search for analogous anthropological methodologies. However, I think it is a mistake to bend our rules too much to fit a mechanistic theory of cultures.
While behaviorists openly criticize Harris' view of verbal behavior, we should also reject his emphasis on infrastructural determinism as well.

As Harris characterizes it, the infrastructure of society are non-verbal behaviors involved in production and reproduction practices. However, it seems obvious that verbal behavior plays an incredibly important role in everyday practices of both production (see Ulman, 1985 for an analysis of verbal behavior related to production practices) and reproduction. The "determinism" of the infrastructure would have to depend on the other events in structure and superstructure never changing or effecting these practices.

To the functional materialist, this seems to be nonsense. While overall behavior patterns within a culture will tend toward conforming to the material relations of production, verbal operants and cultural contingencies certainly can wreak long-lasting effects upon productive and reproductive practices; this is the backbone of the functional materialist insistence that a cultural technology can be achieved and employed. It seems to be another vestige of a mechanical, non-selectionist interpretation of cultural selection which permeates Harris' views of both individual and cultural phenomena.

2) Selectionism: Historical Materialism

Throughout the course of this paper I have assumed a degree of knowledge on the reader's part concerning radical behaviorism. It may also be the case that the reader may have a working grasp of the most popular tenets of historical materialism. I can guarantee that few if any readers will have been exposed to the proper contingencies to conclude that the
basic assumptions and methodological strategies of radical behaviorism and historical materialism are eminently amenable for integration toward a science of culture.

Of the three orientations toward the arising science of culture discussed in this paper (reductionists, behavioral-cultural materialists, and functional materialists), few if any behavior analysts are aware of the integral nature of historical materialism with respect to radical behaviorism. Concomitantly, few if any historical materialist anthropologists have been exposed to the possibility of an integration with behavior analysis toward a science of culture which could give new justification, growth, and direction to revolutionary struggles.

It is as if two persons were using similar tactics, in relation to respective levels of selection, on two different hemispheres of a world made too small for mutual ignorance.

While I have hardly had ample time for thorough research of historical materialism, even a cursory investigation leads one to assert that the Marxian science of cultures is a paradigm that is plausible toward a functional materialist science.

First, a growing number of historical materialists are investigating selection as a causal mode with which to do research into the material course and development of cultures. The best of those espouse a rigorous materialism, and the classificatory scheme used by historical materialism stating functional relations between independent variables (material production relations) and various forms of society is much more understandable than the terminology proposed by Harris. (such as "emic", "etic", "permaclone", etc.)

In fact, modern historical materialists such as Maurice Cornforth openly acknowledge selection by consequences and it's
ability to further a science of culture, along with dedication to functional analysis and non-reductionism.

Another plus for historical materialism is that it postulates an operational, functionally definable mechanism of selection, along with a comprehensive and elegant theoretical structure to explain the development of society throughout written history. That selection mechanism is class struggle, which Ulman functionally defines as:

"...agonistic behavior (countercontrolling cultural practices) occurring among people organized by metacontingencies into conflicting institutions which have been selected by antagonistic relations of production existing within a particular social environment".

By utilizing Glenn's metacontingency of reinforcement along the basic dimensions of functional materialism, we may begin a critical analysis of historical materialism in an effort toward utilizing its accumulated facts toward a natural science of culture.

It bears mentioning that functional materialism thus far is not historical materialism. Like other anthropological disciplines, some or most of the authors who represent historical materialism favor a sort of philosophical-idealist interpretation of their science of cultures, possibly rejecting anything put a personal, existential knowledge of culture.

Still others present research that assumes any science of culture, including their own, is to be deduced from universal principles laid down in the classic historical materialist writings of the founders of Marxism and of Marx himself. This generally
engenders adherence to "Party dicta" of a certain time, divorcing the conceptual structure from potentially corrective empirical facts until the deductive structure is defended only on the persuasive (or punitive) consequences of an appeal to authority.

Many Marxist theorists, adhered to the concept of quantification, natural science and cultural evolution, fail to acknowledge a selective causation of cultures. In its place stands a mechanistic-determinist view of set "stages" which are said to be inherent in the process of history or "inside" of things themselves (an "internal contradiction"). Committed to a view of cultures as the dominant force in history, other levels of selection are hastily dismissed as trivial, or completely disavowed. Marxists of the structuralist school often reject their science of culture as anything more than intellectual research, abandoning any search for functional relations or a practicable technology of cultural change.

My main point is that functional materialism suggests historical materialism as the most fertile research method in the collusion between behavior science and anthropology (and ultimately biology) acknowledged as necessary for the start of a science of cultures. Historical materialism is certainly not offered as a disciplinary panacea with which the behaviorist, after picking up any nearby source, may get on with culture science.

The very heart of functional materialism is its experimental, evolutionary prescriptive content toward critical evaluation of sciences of selection. That process will not simply cease when the functional materialist encounters historical materialism, but will be applied to an assessment of what that attempted science of culture has to offer.
It is our main contention that a historical materialism which is selectionist, functional, and thoroughly materialist does exist, and a collusion with this branch of anthropological science will bear the most fruit in terms of the achievement of a beneficent science of culture that will work for the culture, and all of the culture that supports and sustains it. This is offered in non-adversarial opposition to a projected collusion with Harris' Cultural Materialism, which has been found to be problematic.

Which of these views will dominate the radical behaviorist's digression into anthropological science is unknown at this time; functional materialists are in the minority. Only time will tell which of the anthropological frameworks will contribute most to the science of culture, but if that science can then be called functional materialist, then our efforts will not have been in vain.

In conclusion, it seems apparent that a science of culture, of equal potency to the sciences of biology and behavior, holds the same conceptual and technological revolutions within its scope. Space exploration and the predicted conquest of the solar system is often characterized as "the final frontier of man", but the functional materialist disagrees. Space technology and exploration could theoretically proceed, while sociocultural problems of man's inhumanity to man continue to plague our one planet.

To paraphrase Jerry Ulman, never has there been such a gulf between what is, and what could be. What could be, in terms of a science of culture, is a technology of culture which could develop and establish a superior world culture by design, using the most advanced forms of positive control of human behavior for the ultimate survival and reinforcement of the entire culture.
Once developed, however, a science of culture could not withhold it's technology from a suffering world. The gulf between this amalgam of feuding nations called the World and a planned culture will hold a literal fight for the control of the means of production from whence science and society springs, and us or our children must cross it if our world is to survive.

In a personal note, I would like to say that I am at once proud and determined to be a part, however small, of the development of a science of culture. This paper will be less of a milestone and more of a catalyst to continued study toward the real final frontier of science.

Truly, we have met the enemy, and he is us. What remains to be seen is whether our species can realize that we are ultimately our greatest comrade as well.

D. R. FEENEY
REFERENCES:

Articles:


Glenn, Sigrid. *Verbal Behavior and Cultural Practices*. Center for Behavioral Studies. PO Box 13438, University of North Texas, Denton, Texas 76203.


Books:


