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Cultural Materialism and the Problem of Probabilities

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The time is ripe . . . to replace the inchoate and unconscious paradigms under whose auspices most anthropologists conduct their research with explicit descriptions of basic objectives, rules, and assumptions. That is why I have written this book. [Harris 1979:26]

Marvin Harris's *Cultural Materialism: The Struggle for a Science of Culture* (1979) will very likely rank as one of the most important anthropology works of the past quarter century. In it Harris calls for the full explication of existing sociocultural research strategies and for the operationalization of their key variables. He also offers a systematic presentation of the theoretical principles of his brand of cultural materialism (C.M.), and challenges all rivals to test their explanatory powers against it. Harris even provides a round of action by taking on sociobiology, dialectical materialism, structuralism, structural marxism, psychological and cognitive idealism, "eclecticism," and "obscurantism."

Rather than enter the skirmish by offering an

alternative to C.M., this paper critically examines certain aspects of C.M. as a research strategy. It looks particularly at some of the incongruencies between Harris's stated logic and his logic in use, and offers suggestions for addressing some of the difficulties noted. It is written in a positive spirit, in accordance with Harris's claim that C.M. is an imperfect strategy open to correction and improvement. I begin by briefly summarizing C.M.'s theoretical principles.

The Theoretical Principles of Cultural Materialism

Harris presents C.M. primarily as a scientific research strategy, which he defines as "an explicit set of guidelines pertaining to the epistemological status of the variables to be studied, the kinds of lawful relationships or principles that such variables probably exhibit, and the growing corpus of interrelated theories to which the strategy has thus far given rise" (ibid.: 26).

Harris states that the kernel principle of C.M. was established by Karl Marx when Marx postulated that "the mode of production in material life determines the general character of the social, political, and spiritual processes of life. It is not the consciousness of men that determines their existence, but on the contrary, their social existence determines their consciousness" (quoted in Harris 1979:55). C.M. improves on Marx's original strategy, says Harris, by omitting the Hegelian dialectic mechanism of system change, and by adding reproductive pressure and ecological variables to the conjunction of material conditions.

Harris says that the universal structure of sociocultural systems rests on the following biopsychological constants:

1. People need to eat and will generally choose diets that offer more rather than fewer calories and proteins and other nutrients.
2. People cannot be totally inactive, but when confronted with a given task, they prefer to carry it out by expanding less rather than more energy.
3. People are highly sexed and generally find reinforcing pleasure from sexual intercourse — more often from heterosexual intercourse.
4. People need love and affection in order to feel secure and happy, and other things being equal, they will act to increase the love and affection which others give them (ibid.: 63).

He justifies this brief list on the basis of its generality, which "is guaranteed by the existence of similar bio-psychological predispositions among most members of the primate order" (ibid.), and on the basis of the adequacy of the theories it helps generate. In addition to the above bio-psychological constants, Harris explains that the universal structure of socio-cultural systems rests on the distinction between thought and behavior and emics and etics.

According to C.M., the four major universal components of sociocultural systems and examples of some of their subcomponents are as follows (ibid.: 52-54):

Infrastructure

Mode of production: The technology and practices employed for producing food and other forms of energy, including technology of subsistence, techno-environmental relationships, ecosystems, work patterns, etc.

Mode of reproduction: The technology and practices employed to regulate population size, including demography, mating patterns, fertility, natality, mortality, nurturance of infants, medical control of demographic patterns, contraception, abortion, infanticide, etc.

Structure

Domestic Economy: The organization of reproduction and basic production, exchange and consumption within domestic settings, including family structure, domestic division of labor, domestic enculturation, age and sex roles, domestic discipline, hierarchies, sanctions, etc.

Political Economy: The organization of reproduction, production, exchange, and consumption within and between bands, villages, chiefdoms, states, and empires. It includes political organization, division of labor, taxation, tribute, political enculturation, class, caste, urban and rural hierarchies, discipline, police/military control, war, etc.

Behavioral Superstructure

"Given the prominence of human speech acts and the importance of symbolic processes for the human psyche, one can infer the universal recurrence of productive behavior that leads to etic, recreational, sportive, and aesthetic products . . . [ibid.:52] [including art, music, dance, literature, advertising, rituals), games, science, etc.]

Mental and Emic Superstructure

[According to Harris, these components run]"roughly parallel to the [above] etic behavioral components. . . . Rather than distinguish the mental and emic components according to the strength of their relationship to specific etic behavioral components, I shall lump them together and designate them in their entirety as the *mental and emic superstructure*, meaning the conscious and unconscious cognitive goals, categories, rules, plans, values, philosophies, and beliefs about behavior elicited from the participants or inferred by the observer." [ibid.: 53-54]

These include such phenomena as ethnobotany, religion, kinship, political ideology, myths, philosophies, epistemologies, taboos, and so forth.

The basic principle guiding C.M. strategy is the principle of infrastructural determinism, which holds that "the etic behavioral modes of production and reproduction probabilistically determine the etic behavioral domestic and political economy, which in turn probabilistically determine the behavioral and mental emic superstructures" (ibid.: 55-56). Hence, the principle of infrastructural determinism provides a set of priorities for the formulation and testing of theories about the causes of sociocultural phenomena.

According to Harris, "theories that bestow causal primacy upon the mental and emic superstructure are to be formulated and tested only as an ultimate recourse when no testable etic behavioral theories can be formulated or when all that have been formulated have been decisively discredited" (ibid.:56). To my knowledge, cultural materialists have never reached this point, partly because their enterprise is comparatively new, partly because their faith in or commitment to their enterprise may prevent them from doing so. Cases where cultural materialists do resort to the emic superstructure for causal explanations would tell us a great deal more about their theories and stated logic than we now know.

The Problem of Probabilities

In his explication of C.M. as a scientific research strategy, Harris appeals to two different kinds of probabilities, both of which create difficulties. The first kind of probability helps structure the principle of infrastructural determinism, which maintains that "the etic

behavioral modes of production and reproduction probabilistically determine the etic behavioral domestic and political economy, which in turn probabilistically determine the behavioral and mental emic superstructure (ibid.: 55-56).

On the surface, this may seem simple enough. If we are optimistic about our probabilities, assuming that each link in the infrastructural-structural-etic superstructural-emic superstructural chain has a causal probability of .8, then the ultimate probability would be $(.8)^5$ or .51. However, an actual situation would involve many more links, because infrastructure is not a single-factor prime mover, but rather "a vast conjunction of demographic, technological, economic, and environmental variables" (ibid.: 74). Each of the four universal components of sociocultural systems is loaded with a vast conjunction of subcomponents.

Unfortunately, C.M. as presented thus far lacks operational instructions for identifying the causally decisive connections between or among the large number of subcomponents comprising infrastructure with the large number comprising structure, and so on. The task of making the connections at this point requires more imagination and art than science.

In addition, it is important to point out that the type of probability being called upon here is of a nonfrequency nature. It is not based on empirically derived frequencies, but rather on an unexplicated logic of decision making in the face of the unknown and on psychological factors, one of which may be faith in the research strategy involved. The more strongly one believes in the causal connection of two or more phenomena (such as the veiling of Muslim women and veiling's bio-psychological rewards for men [ibid.: 61]), the higher will be the probability assigned to the inferred causal link. The process is more procedural than validating. Hence, we should not expect adherents to rival research strategies to agree often on the magnitude of the causal probabilities connecting sociocultural phenomena.

Most behavioral and mental phenomena are associated with a wide array of infrastructural phenomena. Hence, a cultural materialist has no problem locating associations and calling them causal links. There is a problem in scientifically determining (in a fashion open to independent replication) which associations are crucial. To avoid a situation of "infrastructural eclectics," cultural materialists must devise explicit methodologies for discovering the critical

causal links among the vast conjunction of variables and for assessing the causal probabilities of those links. Lacking an explicit basis for quantification, such posited probabilities are not open to rigorous scientific testing and cannot be falsified.¹

According to Harris, C.M. also depends on frequency probability as a justification for its competitive edge over rival strategies.

Cultural materialism does not deal with unique specifications but with probabilistic causes . . . probabilistic causality exists whenever there is the expectation that theories can never be verified in 100% of all tests. Probabilistic theories are not falsified by negative instances as long as positive instances occur with greater-than-random frequencies. [ibid.:244]

Harris has also written that "we would today seek to qualify any deterministic statement in probabilistic terms, *given a sufficient number of cases and in the long run*" (1968:244).

In order to translate this stated logic into an appropriate logic-in-use, Harris must define "the long run" in a nontautological, quantitative manner and must define what constitutes comparable sets of cases for purposes of theory testing. Thus far, he has not been clear on either point. Below, I take up the "comparable cases" issue only.

In his book, *Cows, Pigs, Wars and Witches* (1974), Harris offers an ecological or infrastructural deterministic theory to explain the Jewish and Muslim prohibitions on eating pork. It would seem that the other prohibited animals in these two religious systems should constitute an appropriate set of cases to test his theory. However, Harris avoids applying this theory to them. Shortly after mentioning them, he writes that "this is an appropriate moment to deny the claim that all religiously sanctioned food practices have ecological explanations. Taboos also have social functions, such as helping people think of themselves as a distinctive community" (ibid.: 45). If, of the dozens of prohibited animals in Judaism and Islam, Harris's theory can adequately deal with only one, then it lacks the generality which he claims. In this respect, Mary Douglas's (1966) structural theory is more nomothetic than Harris's because it applies to all the prohibited animals of the book of Leviticus.

Harris's treatments of India's sacred cow and of Aztec cannibalism provide similar examples. The first, Harris treats as a unique member of a cultural complex, which includes other animals

regarded as sacred by Hindus; the second, Harris refuses to admit to membership of any set of cases. He writes,

The Aztec are a unique case, and they therefore demand a unique explanation. Sahlins, however, tries to lump the Aztec complex with instances of small-scale pre-state ritual cannibalism in Oceania and elsewhere. He distorts the problem from one of explaining Aztec cannibalism in particular to one of the explaining cannibalism in general. [1979: 335]

Harris's treatment of the Aztec case appears to contradict his own statement that "at the heart of the cultural materialist theoretical corpus is a set of theories dealing with . . . the nomothetic process giving rise to a *type* of institution under a set of recurrent conditions" (ibid.:78). Harris also maintains that C.M. is not concerned with "the unique concatenation of historical events leading to the first appearance of a particular thought or practice in a particular geographical spot . . ." (ibid.).

Rather than being nomothetic and explicitly objective, probabilities relating to single, nonrepetitive events are idiographic and subjective. "Such probabilities are measures of the strength of a person's belief concerning the occurrence or nonoccurrence of events, and they are arrived at by mental processes which are generally difficult to reconstruct or evaluate" (Freund 1967:100-101).

The relative frequency concept of probability relies on experience; it is empirical and self-corrective (e.g., an actuarial table). However, since it can only be assigned to a class or series of events, it does not explain any one particular event. Cultural materialists need to be more careful about the specification of such classes and series. For each theoretical problem solution, they should clearly stipulate the criteria by which cases will be admitted to a set considered appropriate for purposes of theory testing on a broad scale. Ideally, the resultant set will be large enough to permit the employment of appropriate statistic techniques for measuring probability. Failing to do this, cultural materialists render their theories untestable by the very scientific procedures they advocate.

A related problem involves Harris's frequent employment of known frequency distributions as support for "predictions" made on the basis of C.M. principles. For instance, in his attempt to offer a nomothetic C.M. explanation of the

origins of hunter-gatherer political organization, Harris writes that historically hunter-gatherers have relied on dispersed wild flora and fauna over whose reproduction they have no control. This necessitated low densities of population. "Hence," Harris claims, "political organization into bands is a predictable theoretical consequence of the infrastructure of paleolithic peoples and of many surviving groups of recent and modern-day hunter-gatherers" (ibid.:80).

This, of course, is not a prediction supported by post hoc frequencies, but a plausible explanation of what is already known, i.e., that a variety of people who for various reasons have been labeled "hunter-gatherers" tend to have a variety of political organizations that for various reasons have been labeled "bands." Harris's use of known frequencies in this way has aroused some extreme negative criticism. For example, Freidman writes "it is absolutely impossible for Harris's framework to do anything other than restate in a deceptive form that which we already know as a fact. Once again, explanation dissolves into redescription, but the original distribution remains forever unexplained" (1974:465).

I disagree with the first part of Friedman's statement. A central part of the problem is that any nomothetic prediction is impossible if there can be no expectation of a sufficient number of new cases against which to test the prediction. This is the situation with respect to hunter-gatherers and some other types of societies based on traditional technologies. Because a sufficiently large number of such societies have already been studied and have had their sociocultural components categorized in the Human Relations Area File, the distributions of various "traits," such as band organization, are already known. Explanations of the origins or causes of these traits can at best be plausible, not predictive. Predictions of previously unknown distributions where a sufficient number of test cases exist or will exist are, of course, possible and should be the focus of those wishing to demonstrate the nomothetic and predictive powers of C.M.

Harris has laid down a proper challenge for anthropology—the reexamination of research assumptions and their explanation. All research strategies, including C.M., can benefit from such critical analysis and disclosure. Without such explications, we will need a special "emics" of C.M., just as we already need a special emics of French Structuralism and of other heavily intuitive research strategies.

Notes

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¹ This criticism parallels the one made by Harris of dialectical materialism ("The Hegelian Monkey"). Harris (1979:145) writes:

The central weakness of dialectical epistemology is the lack of operational instructions for identifying causally decisive "negations." If every event has a negation, then every component in that event also has a negation . . . Which negation is the crucial "contradiction"? . . . Since there are no instructions for identifying the properties or components that are the crucial negations, dialectical relationships can never be falsified.

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Reply to Paul J. Magnarella

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Magnarella has raised several important points about cultural materialism (henceforth C.M.). I am grateful for his insightful comments and for this opportunity to identify and clarify sources of misunderstanding. In order of appearance (but not necessarily of importance) these points are:

[1.] Cases where cultural materialist do resort to the emic superstructures for causal explanations would tell us a great deal more about their theories and stated logic than we now know.

There are two kinds of independent emic determinations. First, there are innovations in religion, ritual, and art, which may neither add nor subtract in any differential cost/benefit sense to or from the fulfillment of the biopsychological imperatives that drive cultural selection processes. It is unlikely, for example, that C.M. can account for the British rule that traffic must keep to the left instead of the right or for the rule that boy babies get blue blankets and girl babies get pink blankets, by referring to differential etic cost/benefits. The trouble is, however, that one cannot know a priori which superstructural traits are genuinely neutral. Hence, the irritating habit (to some) of talking about the possibility of superstructural variables that are independent of structural and infrastructural conditions without any accompanying display of instances which C.M. admittedly cannot explain. In any event, one learns more about C.M., not by the superstructural puzzles it cannot explain, but by those which it can explain better than rival strategies (e.g., Vaidyanathan, Nair, and Harris, in press; Ross 1980).

The second type of independent superstructural determination constitutes a more serious challenge to C.M. This involves major upheavals in political economy brought about by the influence of charismatic ideologues and revitalization prophets. Some current examples are the Iranian Islamic and Chinese cultural revolutions. C.M. admits that such movements can exert an autonomous effect on microevolutionary trends, but C.M. predicts that where the infrastructural conditions are functionally inappropriate, or especially if they are antagonistic, to the "top-down" changes, the superstructural innovations will be short-lived.

I have deliberately excluded from discussion cases such as the sacred cow in India, where the force of superstructural determinations lies in their functional resonance with the infrastructural conditions (or seem to lie there—an empirical issue still being studied). As has been stressed in the "cow controversy," ideology plays a crucial functional role in maintaining, optimizing, and changing various forms of socio-cultural systems and subsystems (Harris 1981a).