

CULTURAL ANTHROPOLOGY
AND THE MAN-ENVIRONMENT RELATIONSHIP:
AN HISTORICAL DISCUSSION

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Cultural anthropology's interest in the man-environment relationship is reviewed within the larger context of Western intellectual history. It is concluded that: 1) like most of Western science, anthropology is permeated by the fundamental notion of a distinction between man and nature; 2) cultural anthropology including the subdiscipline of cultural ecology has limited its concern to only a narrow aspect of the man-environment relationship. It is suggested that anthropology needs to incorporate non-Western assumptions about man and nature, rid itself of culture-centricity, and utilize more fully the total ecosystem model. [ecology, ecosystem, environment, history of anthropology, intellectual history, man-environment relationship, theory, Western ideology]

INTRODUCTION

The intellectual provenance of the present concern with man's degradation of his environment is found in the work of the geographer-statesman George P. Marsh, who wrote in 1864:

The earth is fast becoming an unfit home for its noblest inhabitant and another era of equal human crime and human improvidence and of like duration with that through which traces of that crime and that improvidence extend, would reduce it to such a condition of impoverished productiveness, of shattered surface, of climatic excess, as to threaten the depravation, barbarism, and perhaps even the extinction of the species (1965: 43. Originally published 1864).

Nearly a century later biologist Rachel Carson repeated the warning demonstrating that men are destroying the balance of nature with sophisticated chemical death rain and that in these ingenious

modifications may lie man's demise (Carson 1962). It is not surprising that the scientists who first sounded the alarm were naturalists whose subject matter seemed threatened--Marsh worried mostly about the forest, Carson about the insects. What is startling is the lack of response from those who study the other element in the man-environment relation, that is anthropologists. The aspect of man that makes him so capable of altering the world is his culture, anthropology's central concern. Engrossed in defining the nature of the cultural animal, delineating the varieties of socio-cultures around the world, and trying to predict socio-cultural behavior, anthropologists have seen little to be alarmed about.

The question of anthropology's lack of interest in environmental problems lies imbedded in the larger issue of the nature of anthropology's concern with the man-environment relationship. It is only, for example, since the early 1950's that anthropology has embraced the concept of adaptation as applied to human biological and sociocultural systems. We shall see below that in spite of the emphasis on adaptedness, the focus of cultural ecology, potentially as broad a field as anthropology itself, is still quite narrow and specialized.

Historically, anthropology's concern with the man-environment relationship derives from the heritage of Western thought on the topic, and it is important for the advance of anthropological thought for us to recognize this heritage. The goals of this paper are thus threefold: 1) to demonstrate that certain attitudes about the man-environment relationship carry over into anthropology from Western intellectual tradition; 2) to show the ways anthropology has been concerned with men and their environments; and 3) to suggest some implications and new directions.

Unless otherwise stated, "anthropology" in this paper means Western cultural anthropology. Of course, the ecological perspective cross-cuts all subfields of anthropology and is particularly strongly developed in archeology and physical anthropology (see Helm 1962;

Schoenwetter 1967; Baker 1962 for reviews of ecological studies in these areas), but the focus of this paper is upon the man-environment concern within the bounds of traditional ethnology. Though an attempt has been made to cover most important American works on the topic, I certainly have not covered all; thus the following should be taken as suggestive rather than definitive.

ANTHROPOLOGY AND THE MAN-ENVIRONMENT RELATIONSHIP

The word 'ecology' was coined by Ernst Haeckel in about 1870, and it meant to him basically what it means to us--the relationships of the animate world with both the inorganic and organic environments (Bates 1953:700). However, men have been discussing the relation between man and nature since ancient times. Glacken (1967), after extensive perusal of the literature on the history of Western thought, stated that three questions concerning man and nature have persistently been asked by men of the Western tradition: 1) Was the earth made for man, with man dominant over other forms of life? 2) Has the earth's environment influenced human character and society? 3) How have men changed the earth? (Glacken 1967:vii). These three questions dominated the Western view of the man-nature relationship until at least the end of the 18th century; they persist--though not exclusively--to form the fundamental moral outlook of a large part of science and society today.

I have borrowed Glacken's three themes in the organization of the material below. They will become particularly meaningful in the discussion of anthropology's concern with the man-environment relationship.

The Western intellectual heritage

There is widespread awareness today that the historical roots of the crisis in ecology lie in large part in the Judeo-Christian worldview (White 1967). So strongly is this felt that some opt for the development of a new religion (Shepard 1969), as the only recourse for

a society so permeated by an anti-ecological morality.

Though Christianity is a complex religion, replete with rebels such as St. Francis of Assisi, there seems little question that its dominant theme regarding man's place in nature has been that of man's distinctness from his environment and his fellow creatures, and of his dominance over them. After creating man and woman:

...God said unto them, Be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth (Genesis 2:28).

Christianity is extremely anthropocentric; man is like a god, the world having been designed for his use and exploitation. In the 17th century, John Ray, a natural theologian, carried the argument further in The Wisdom of God as Manifested in the Works of Creation (1759; originally published 1680). The earth, he held, is an orderly well-planned place with nothing ill-made or frivolous. Man is supposed to explore and exploit it, advancing himself in understanding the Creator's plan by seeking the "grand design" in the "great chain of being", pleasing the Creator by using natural resources and improving the "barren and desolate Wilderness" (Glacken 1967:483-4). Ritterbush (1968) suggests that 17th century Utopian fantasies like this one are the ultimate intellectual sources of the exploitative side of scientific endeavor.

Although the idea of a consciously designed earth has lost power, in part because we are now more cognizant of the nature of geologic time, the idea of man as both distinct from nature and manipulator of nature has remained. The business of scientific technology, indeed, requires manipulation of nature by an "objective outsider". Anthropology, as the youngest of the sciences, is heir to this complex of ideas and like all other sciences has had difficulty coming to grips with such moral considerations. "Despite Copernicus, all the world rotates around our little globe. Despite Darwin, we are not, in our hearts, part of the natural process" (White 1967:1206).

If the notion of man's dominion over the earth is as old as Judaism, the question of the degree to which environment has molded the race, psychology and socioculture of man is probably at least as old. In his History, written in the 5th century B.C., Herodotus proved keenly interested in the effects of geography and environment, and occasionally attempted to correlate culture and environment. He suggested that the nomadic way of life in combination with the nature of their land made the Scythians practically unconquerable (1954:257). Isidore of Seville, the transmitter of classical knowledge from Greece to the Middle Ages, also remarked on the influence of climate on the diversity of man, attributing to geography the "seriousness of the Romans, light-heartedness of the Greeks, and the cunning of the Africans" (Glacken 1967:208-9). Ibn Khaldun, an Arab who lived from 1322-1406, thought climate set absolute limits on culture, influencing greatly the shape of society (1950:38-70). The most important of the many Renaissance thinkers on this general subject was Jean Bodin (1530-96). In the Six Books of a Commonweale (1606) Bodin held the state to be a product of the conquest by nomads of developed agricultural peoples. The latter, due to their way of life, lacked vigor; the former's stringent existence produced militant types. Later 18th century thinkers included Montesquieu, William Robertson and Kant, all of whom had environmental deterministic theories.

It is a curious and provocative fact that Western thinkers have been so obsessed with the effects of environment on human life and so little concerned with the effects of humans on their physical environment. There are many possible reasons for this. If the environment is a "home" which man dominates and exploits by divine grace, then man need not worry about the effects of his inroads. After the first great era of discovery in the 15th century, intellectuals were interested in explaining the diversity of men; concomitantly there was little awareness of the huge exploitative endeavor in which the West was engaged. Possibly refusal to consider the effects of culture

on environment has been a kind of large-scale defense mechanism.

Whatever the case, the notion that man has only recently been exploiting his environment is fallacious; groups of men have been exercising their talents upon the earth's face since they first grasped bone or stone as tools. We can more safely say that it is only in this century that technological developments have accelerated degradation so that sociocultural suicide is a distinct possibility. In previous eras man seems to have greatly altered his environment and exploited natural resources, although, as we shall see below, little systematic research has been conducted on the topic by anthropologists. Stewart (1956) suggests that large-scale burning of vegetational areas in association with hunting may have produced the grasslands of the world. Ritterbush notes that smelters were in operation three thousand years ago.

It is estimated that the mining of a single copper lode (near Salzburg) in the Bronze Age required about 180 men to work a single mine, and that the 32 mines which were worked in the lode over a period of several centuries yielded about 12,000 metric tons of copper! (1968:108).

In the Western tradition little mention is made of man's role as a geographic agent until the 18th century. One of the first to be interested in the idea was Comte de Buffon. In Histoire Naturelle (1750) he commented on the changes wrought in nature by man, particularly those accompanying the growth of civilization. Buffon felt man must change the earth's surface if he is to become civilized. Nature will win out if man falters, becomes lazy, doesn't populate. Some of the purposeful changes noted by Buffon were animal domestication, the drying up of marshes, control of river courses and cataracts, forest clearance and land cultivation (see Glacken 1967:658-81).

It was George P. Marsh, in Man and Nature (1864), who first thoroughly explored the changes man has made on the earth's face, and first suggested that this might be cause for concern (see quotation at beginning of paper). His theme was that man disrupts the fundamental harmony or balance of nature, and that it is man who exerts a revolutionary effect on nature, not the reverse. The earth was not made for man only.

In 1864, Marsh called for political and moral reforms, not technological solutions or more scientific understanding.

These three ideas--man's dominion, environmental influence on socioculture, and man as geographic agent--intertwine in Western intellectual history. It is suggested that in general the first has been accepted as a "given", the second has been a topic of almost endless discussion and speculation, and the third has been neglected.

The anthropological tradition

The aim of this section is to demonstrate the carry-over of these three themes into the modern discipline of anthropology, defined as commencing with Tylor in the last quarter of the 19th century. The idea of man's dominion reached a peak during the second half of the 19th century in association with the "stage-theory" of cultural evolution which placed Western industrialized civilization at the forefront. Tylor had little to say about man's relation with the environment, but near the end of the 19th century, Otis T. Mason, one of the first American anthropologists, wrote:

...progress looks forward to a time when the whole earth will have been exploited, every pernicious plant and animal and man or tribe of men removed, and all that is good domesticated: when the powers of nature will all be harnessed or enslaved...The earth will be subdued by men who will say of the mountains "Be ye removed and be ye cast into the sea, and it shall be done, and the desert shall blossom as the rose" (1894:61).

For Mason, "technogeography" was the study of the relationship between the earth and human arts and inventions, and it would demonstrate the gradual trend from the dominance of nature over man to the prevalence of civilization through its technology over nature (1894:137-161). Mason's effort is an outstanding example of the powerful influence of ideas in the general intellectual milieu upon the kinds of questions asked by social scientists.

Progressive Social Darwinism has long gone by, however. The Boasian period and succeeding eras in American anthropology have been void of this kind of millenarianism. In the first quarter of this century, anthropology was going about the business of discovering and defining its subject matter; and while the idea of the superorganic was taking shape, Wissler wrote The Relations of Nature to Man in Aboriginal America (1926). Title notwithstanding, this work concerned itself with developing the notions of culture area and culture trait distribution and had little to say about nature. The assumption that man is somehow qualitatively separate from his environment, if not the old idea of man's dominance over nature, is implicit in Wissler's book. Wissler speaks of "contacts between man and his surroundings"; he suggests that "the bond between man and nature is unbreakable" and that ecology is concerned with questions regarding the degree to which environment is a determiner "in so far as living forms are forced to adjust themselves to the conditions it imposes" (1926: 212. *Emphasis added*). Later in this century, in the works of Leslie White, this insecurity about the man-environment relation reaches a strange culmination. Man is such a unique form of being, possessing culture, that White would remove him entirely from "nature". White considers environment a constant, a given.

...a consideration of environmental influence is relevant only to studies of particular cultures; it is not pertinent to a general study of culture as such...if one is concerned with culture as a distinct class of phenomena, if one wishes to discover how cultural systems are structured and how they function as cultural systems, then one does not need to consider the natural habitat at all...(1959:51).

Thus the study of man is first of all the study of culture; and, since culture is a self-contained system, cultural facts being caused only by cultural facts, concern with the environment is irrelevant for anthropologists. White's view seems certainly to justify a lack of professional interest in environmental problems on the part of anthropologists.

The idea that man's control over nature has changed through time has appeared in recent years. Ferdon (1959), while noting that man will always operate with the broadest laws of nature, states that "in the years since the last war it has become more and more evident that man, through his cultural processes, may control the more apparent factors of environment" (1959:19). His paper's thesis, indeed, is that in the evolution of culture, environment seems to determine degree of agricultural productivity "in inverse ratio to the quality of agricultural technology possessed by the occupying culture" (1959:18). Other authors who support the idea of man's increasing control over nature are Sahlins (1964:145), Steward (1955:30-42) and Gayton (1945:252-68).

I am not arguing that greater sophistication in technology and scientific knowledge about nature will not produce increased environmental control (although the ultimate cost of such "control" without application of a new morality seems devastating). I am suggesting rather that the ancient theme underlying the "designed earth" idea, the idea of man's distinctive difference from everything else in nature, carries over strongly into cultural anthropology. The kinds of problems anthropology considers in relation to the man-environment issue are still stamped with the mythology of Genesis.

If the idea of man's distinctiveness from nature is basic to present anthropological thought, the second of the themes under discussion, that of environmental influence on socioculture, has been the most common topic of debate when anthropologists choose to discuss the man-environment relationship. The great variety of comments on this topic can be divided roughly into three types: environmental determinism, environmental possibilism and cultural ecology. They will be reviewed in this order.

The early anthropologically-oriented thinkers mentioned in the section above were mostly environmental determinists. This position can be generally stated as follows: there is a direct causal relationship

between the environment or aspects of the environment and a culture (generally holistically conceived). This position has never been prevalent among anthropologists, although early "anthropogeographers" such as Ratzel (1896, 1899), Semple (1911) and Huntington (1915) espoused moderate to extreme determinist positions. Huntington, for example, states:

In the South [U.S.] we find less energy, less vitality, less education and fewer men who rise to eminence than in the North, not because southerners are in any way innately inferior to northerners, but apparently because of the adverse climate. In the Far West people seem to be stimulated to such a degree that nervous exhaustion threatens them (1915:286).

From the beginning, it seems, anthropologists were dissatisfied with the determinist position in its raw state, since they were vividly aware of the immense diversity of human cultures. Determinism has carried through in a modified form, however. In Wissler's book (1926) mentioned above, it is suggested that culture area centers (in North America) are also ecological area centers. Thus geographical distribution of traits is due to the fact that they are "adjusted to external conditions" (1926:222). Wissler is not a strict determinist because cause-effect relationships are not spelled out; a holistic determinism is implied, however. In 1954 Meggers presented the "law of environmental limitation on culture" which reads: "the level to which a culture can develop is dependent upon the agricultural potentiality of the environment, each with different cultural potential due to different agricultural potentials. The idea is not thoroughly deterministic, for it focuses primarily on subsistence activities and the relation of a culture to its environment. But it also falls short of being entirely cultural-ecological (see below) because Meggers doesn't spell out the adaptive relations between specific subsistence activities and the rest of a culture.

The second kind of approach, environmental possibilism, was quite popular in anthropology until around 1950. This position states

that environment only limits cultures. It allows variation, and in general it is a passive factor on which cultures act selectively. In 1934, C. Daryll Forde emphasized the vast variability of culture and habitats:

Neither the world distributions of the various economies, nor their development and relative importance among particular peoples, can be regarded as simple functions of physical conditions and natural resources. Between the physical environment and human activity there is always a middle term, a collection of specific objectives and values, a body of knowledge and belief: in other words, a cultural pattern (1934:463).

Forde finds the determinist position faulty, for in the determination of culture there is always an interplay between cultural and environmental factors. Various parts of the socioculture are determined by habitat, economy, and other aspects of culture: "...the economy may owe as much to the social and ritual pattern as does the character of society to the economy" (Forde 1934:465). In 1939 Kroeber further refined this idea. In Cultural and Natural Areas of Native North America he attempted to delineate the degree of isomorphism between ecological and cultural areas in North America. Kroeber emphasized, however, the healthy turning away from previous environmentalist positions.

While it is true that cultures are rooted in nature, and can therefore never be completely understood except with reference to that piece of nature in which they occur, they are no more produced by that nature than a plant is produced or caused by the soil in which it is rooted. The immediate causes of cultural phenomena are other cultural phenomena (1939:1).

It is a small step from this position to that of White, in which the environment is a given constant. The possibilistic position reiterates the extreme complexity of possible interactions between culture and environment and suggests that this makes generalization unprofitable on the whole. Thus Kroeber's ultimate aim is not a statement about man-environment relations but about historical and processual relations between cultures and culture areas (1939:1-2).

The third and most recent approach, that of cultural ecology, incorporates the idea of an adaptive response of a culture to its environment. It differs from the above two approaches by suggesting that only certain critical aspects of the environment determine certain aspects of the socioculture, and it tries to spell them out. Steward, who in 1955 made the major contribution to the development of the cultural ecology concept, states that the objective of this approach is to determine whether similar socio-cultural adjustments occur in similar environments. This is done by analyzing 1) the interrelations of productive technology and environment, 2) the behavior patterns involved in exploiting a particular area with a particular technology, and 3) the extent to which behavior patterns involved in exploiting the environment affect other aspects of culture (1955:30-42). The advantages of the cultural ecological approach over former ones are significant: direction of cause and effect is specified, cultures are treated as separate cases rather than as levels in the growth of civilization, and cultures are seen to be in a dynamic state of adaptation. Most anthropologists who today concern themselves with man-environment relationships espouse the cultural ecological approach; among these are Harris (1968) whose "cultural materialism" accounts for differences and similarities between cultures in terms of "techno-economic" and "techno-environmental" conditions, Vayda (1961), Barth (1956), Dumond (1961) and others. The cultural ecological approach has drawbacks at present, and these will be reviewed below. The important point here is that cultural ecology is still in the mainstream of the environmental influence idea.

Anthropology has neglected the issue of man as geographic agent until very recently. In 1894 Mason made passing mention of the effects of man on nature, stating that "charming books have been written on the subject" (1894:137) (referring to Marsh), but dropped the topic there. Not until nearly a century after the publication of Man and Nature, did anthropology rouse itself when in 1955 the Wenner-

Gren Foundation sponsored a symposium, dedicated to George Marsh, entitled "Man's Role in Changing the Face of the Earth". The ensuing book of the same title (Thomas 1956) included articles by Sauer on what we know about the effects of primitive and peasant cultures on their environments (which isn't much) and by Stewart on the impact of fire as a cultural tool on past environments. It is significant, however, that although sponsored by an anthropological foundation, the conference included 40% earth scientists, 28% biological scientists, and 20% researchers in applied fields such as city planning and administration (Thomas 1956:xxvi). Only about 6 papers out of the 52 published were written by anthropologists. Their conference has not been followed by a rise in interest among anthropologists in the effects of sociocultures on their environments.

A CRITIQUE OF THE ANTHROPOLOGICAL APPROACH

Cultural anthropology's attitude toward the environment has been on the whole very narrow. In compartmentalized fashion it has asked, what (if anything) can man's environment tell us about the variety and functioning of sociocultures? As we have seen above, anthropology has made a crucial decision before even asking this question, a decision deriving from the Western tradition that there is a distinctness of man from nature. Instead of commencing with an open mind, anthropology early drew a circle around "culture, the superorganic" and proclaimed as its subject matter that which so strongly distinguished man from all other living beings. Instead of seeing similarities, anthropology saw differences and embraced those differences, thereby embracing an attitude that set man against his natural environment and perpetuated the Genesis mythology.

We have seen, secondly, that anthropology, paralleling Western tradition, has indulged in lively discussion of the degree to which environment determines or influences cultures or aspects of culture, but has almost ignored the obvious complementary issues of cultures' reciprocal effects on their environments. Again, because anthropology

has drawn limits around the concept of culture as that which is to be studied and explained, anthropologists don't tend to ask such questions as, what are the effects of different levels of cultural development on the environment? Is man more destructive of his environment because of his ideology, or because of his technology? Are there cultures which are non-destructive, truly "in balance with nature", or has man always been destructive? These questions all imply causal feedback effects on the cultures involved; it seems even the most diehard cultural determinist would wish to take into account these feedback effects.

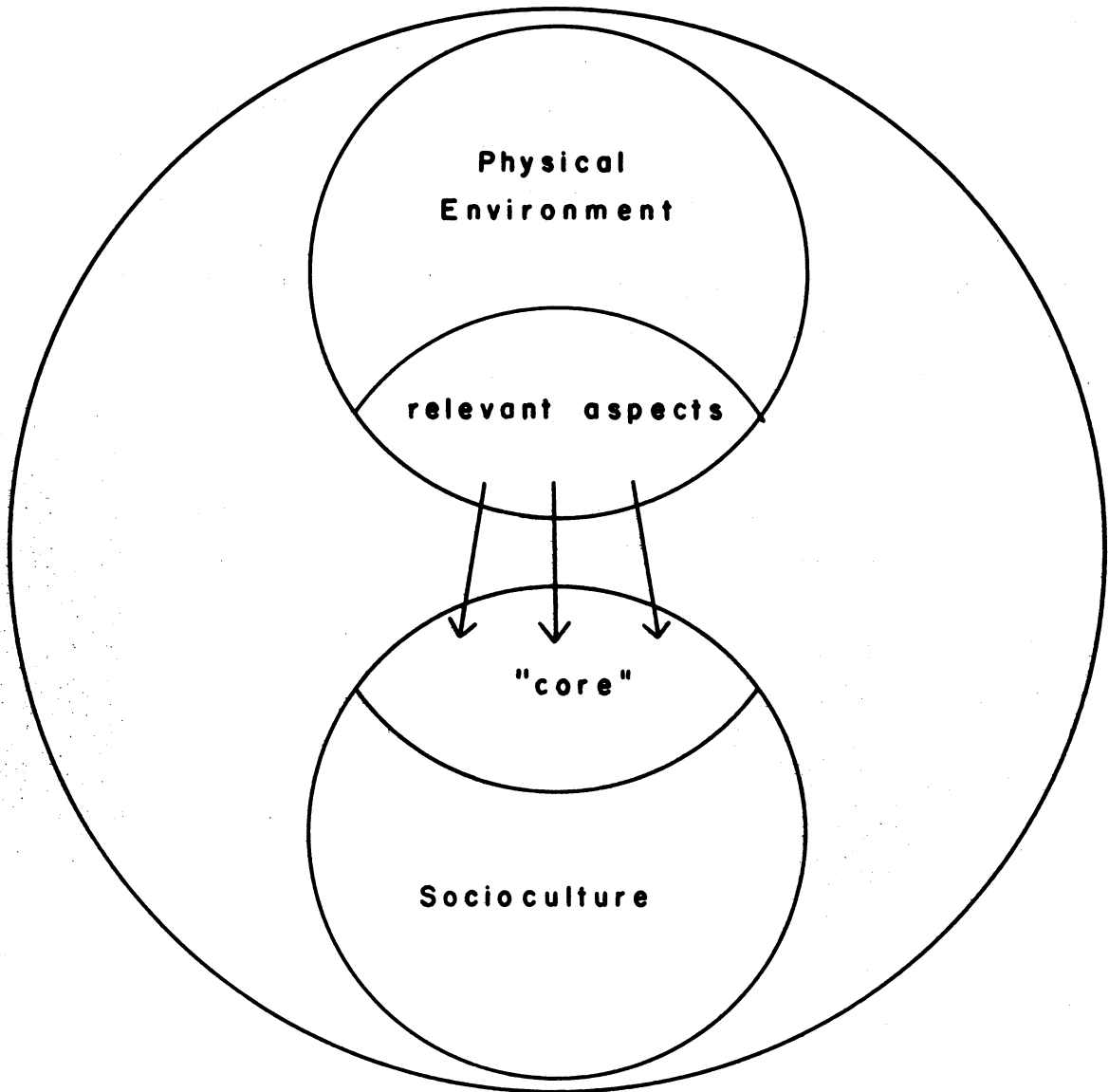
Thirdly, the cultural ecological approach (as Steward defines it), though an improvement on previous theories, remains a theory of environmental effects on culture. The emphasis is on cultural adaptation to a changing milieu, paralleling the Darwinian concept of species adaptedness to an environment. The cultural ecologist selects out those features of the environment which are critical in shaping certain aspects of the socioculture. He does not reverse this, however, and note the critical aspects of culture which shape and change the environment. Steward suggests that "primary attention be paid only to relevant environmental features rather than to the web of life for its own sake" (1955:39). This approach might be diagrammed as in Figure 1. In this diagram the arrows indicate cause-effect relationships.

Thus the range of cultural ecology, potentially as broad a field as anthropology itself and perhaps broader, is actually quite narrow and specialized, being focussed not on feedback relations between culture and environment, as one might expect, but ultimately on the ancient question of the influence of environment on culture.

CONCLUSION AND NEW DIRECTIONS

On the basis of the above criticisms, several new directions in the study of the man-environment relationship may be suggested. The first is so obvious as to be trite, and yet so difficult to implement that I hesitate to suggest it: Anthropology desperately needs to incorporate in its method and theory non-Western assumptions about man

Figure 1 The present cultural ecological approach



and nature. We might ask ourselves, how would the science of man have developed if we began with the idea of unbroken continuity and interrelatedness of all natural things? New points of view on the subject should emerge with the development of a "native anthropology," and with the "decolonization of anthropological knowledge" spoken of by Jones (1971).

Anthropology must also become less "culture-centric". As Western intellectual tradition has been anthropocentric in religion and life-style, anthropology has been culture-centric, especially since Kroeber. By becoming less culture-centric I do not mean that anthropologists should give up the study of culture. Rather I'm suggesting that anthropology should stop making culture the central issue, the important "thing" to be concerned with. By becoming purposefully more interdisciplinary in aim, cultural anthropology would gain in the understanding of culture, not lose. Both archeology and physical anthropology seem to be ahead of cultural anthropology in this respect, archeology perhaps because its methodology involves deducing things about sociocultures largely from the remnant effects of man upon his environment, and physical anthropology because feedback effects between culture, environment and human biology have been documented in evolutionary studies (for example, see Livingstone 1958).

Thirdly, anthropology might become more systems-oriented. Until extremely recently systems theory has had minimal impact on anthropological endeavors; particularly lacking is the use of the ecosystem concept, in its broadest sense defined as the interrelationships between organisms and their environment. Anthropologists, as we have seen, tend to look at cause-effect relationships in one direction-- the effects of environment on culture. The ecosystem approach focusses on feedback relationships between every appropriate part of the system considered. Duncan (1961:140-1) has suggested that the ecosystem approach is particularly important because it obviates the levels concept, a concept which tends to encourage thinkers to work within

a level (inorganic, organic, psychological, or socio-cultural) and not with it.

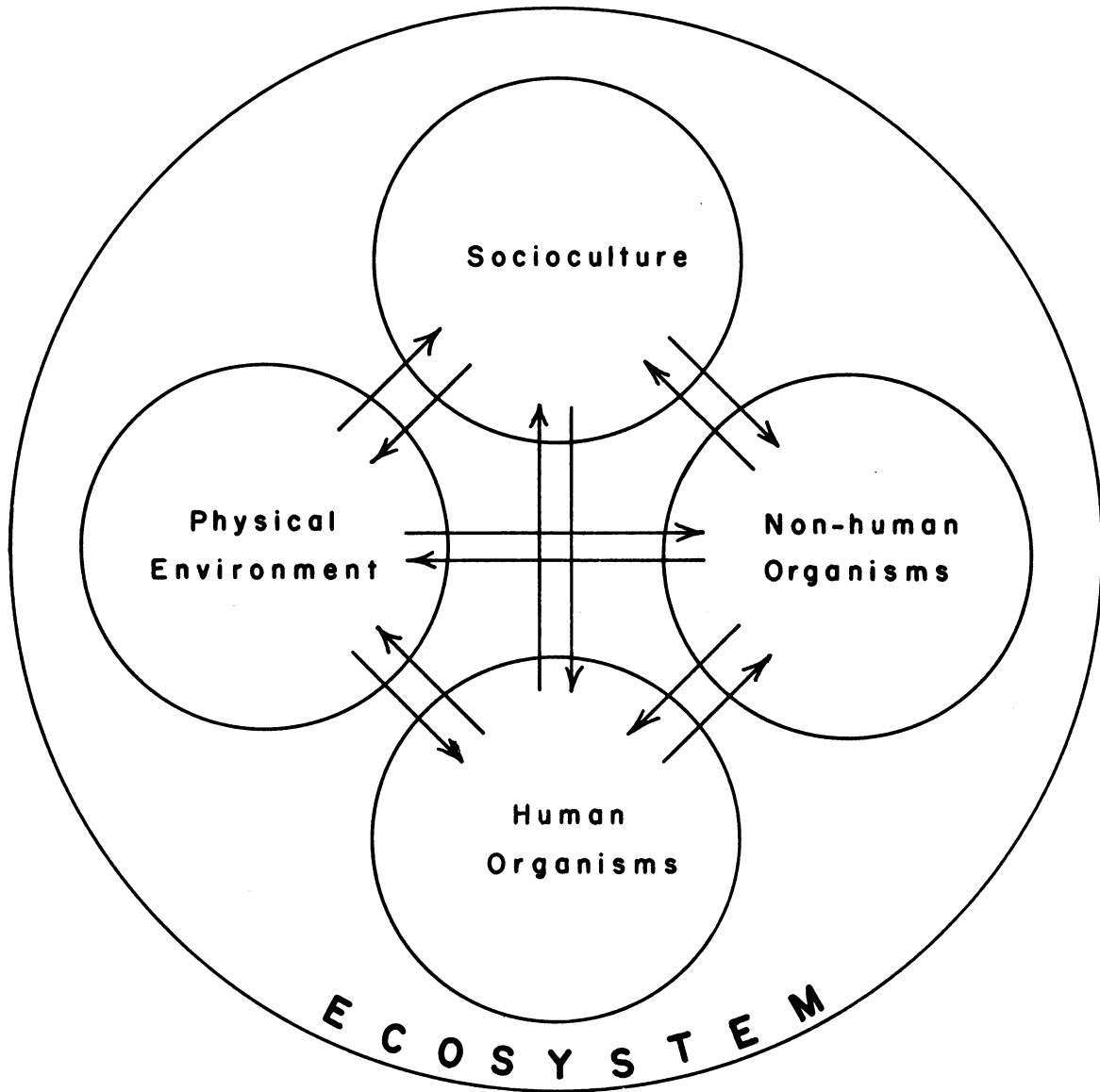
A tentative diagram of the ecosystem including human factors is presented in Figure 2. The arrows represent cause-effect relationships; of course, there are also cause-effect relationships within each circle. It is some such model of relationships that the anthropological scientist should start with when he approaches the study of man and environment.

A recent example of the use of a similar model can be found in the sociologist Duncan's article (1961) in which the ecosystem approach is illustrated by application to the problem of air pollution in Los Angeles.

Just as the way people act depends on what they think about themselves in relation to the world, the way a researcher proceeds depends on his theoretical framework. Anthropology's traditional theoretical framework has been culture-centric and devoid of the ecosystem idea. It has thus been found wanting in an area where it should have much to say. What I am calling for is that anthropologists become ecologists in a very broad sense of the term--that they become concerned with human elements and relationships within the context of a total ecosystem. The ecological approach thus becomes more a point of view than a subject, and it can be thought of as a moral commitment much like the concept of cultural relativism in the anthropology of the past.

Like most modern sciences, anthropology stands in need of a new more universal ethic. Acceptance of the ecosystem approach might lay the groundwork for this ethic; it would also lead anthropology into stimulating new areas, among these the study of our own ecosystem, and the commitment to preserving viable ecosystems rather than cultures.

**Figure 2 A suggested model for the study of
man-environment relationships**



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