

A PARTIAL SURVEY OF CULTURAL ECOLOGY STUDIES ON THE PHILIPPINES*

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Introduction

Like the broad discipline of anthropology, cultural ecology is apparently a product both of Western tradition and of colonialism. It can also be said to be a later product of human thought. The concept of ecology was not in existence before the time of the great Greek philosophers and even the Greek thinkers themselves were still unable to offer a conceptual analysis of cultural ecology. Such an analysis did not appear until the nineteenth century when the German anthropogeographer, Ratzel, and his American colleague, Mason (Helm 1962:630) emphasized the importance of habitat in effecting cultural diversity and distributions. Later, however, the concept developed into a focused area of investigation which anthropologists call "cultural ecology."

What is cultural ecology? Starting from the thirties until the fifties (Steward 1936, 1937, 1955:) cultural ecology was meant to denote "the interactional analysis of environmental-cultural relationships, an essentially deterministic position that has developed under the leadership of Julian Steward" (Anderson 1974:187). It was an approach that emphasized the adaptive and exploitative relations through the agency of technology, of the human group to its habitat, and the demographic and sociocultural consequences of these relations (Helm 1962: 630). It adapted Duncan's concept of ecological complex (1959), which included considerations of population, organization, environment, and technology in order to help understand problems of sociocultural change. In the sixties, cultural ecology was still meant to denote the "interactions between living organisms and their environments" (Vayda 1969: XI) with the focus mainly on the relation between cultural behavior function as part of systems that also include environmental

*The author regrets that works of noteworthy interest such as those of Frank Lynch, S.J., Rudolf Rahmann, SVD, Carlos Fernandez, Marcelino Maceda, James Anderson, Rosa Tenazas, and others cannot be included here due to time constraint.

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phenomena, or showing that the environmental phenomena are responsible, to a certain degree, for the origins or development of the cultural behavior under investigation" (Loc. cit.). Here we encounter the formal use of the term "system" as borrowed from the biological sciences. Rappaport's use of the term in his New Guinea study is a case in point. Rappaport regarded the Tsembaga group as a population in the ecological sense, it being one of the components of a system of trophic exchanges taking place within a bounded area (1969: 183). The Tsembaga population and its territory with its biota is an ecosystem. Rappaport applied the biological model of homeostasis to ecological aspects of war-and-ritual cycles where changes in one component of the system require adjustments in the others via the feedback flow (1969: 198-199). The recurrent war-and-ritual cycles are somehow adjusted to fluctuations in the populations of pigs and people when population pressure produces the need for land, the people go to war; then they return and consume pigs. When pig populations increase, destroying the gardens, motivation for consuming pigs arises; but because pigs are to be consumed as the culmination of a warfare episode, there has to be previous warfare to provide the excuse (Bennett 1975: 282). Whether this proposition is valid, whether it corresponds to reality or has empirical value lies beyond our immediate interest. Rather, what concerns us in this presentation is that the author concretely demonstrates how the concept of homeostasis derived from natural ecology, is applied to social data. He continued the McKenzie tradition, no doubt, of using ecological concept to understand sociological behavior (McKenzie 1928). But it is not homeostasis alone that is borrowed from biological concepts. Inherent in the borrowed terms, concepts, and models are problems attendant to their application. One would not be hard-pressed to find that many of the applications are analogical, not literal, so that the dimensions of the system involved cannot be analyzed with the precise tools used for biological systems. But even with ecosystem analogies in cultural ecology, problems are still encountered by their strict application, e.g. feedback in cybernetic contexts when applied to social phenomena.

You may ask how relevant is the brief presentation of the conceptual and methodological development of cultural ecology. Why labor a point on the work of Rappaport, for example, when the intent of this paper is to survey cultural ecology studies in the Philippines? Curiously enough, it is easier to answer these ques-

tions on the basis of our own survey this afternoon. Our consideration of the different cases of anthropological studies in the Philippines from the perspective of cultural ecology will be judged according to the concept and method of the Western tradition within which cultural ecology developed. This is a sad fact, from the nationalist viewpoint because it suggests the scholarly impotence in which students of anthropology, particularly those utilizing cultural ecology in the Philippines, proceed. We do not have our own standard for estimating the value of anthropological data; thus, we have grown theoretically dependent on Western methodologies to explain man-environment relationships instead of taking the initiative, if not bold steps, to develop them ourselves. In terms of creative contributions to cultural ecology, to anthropological knowledge, to the whole scientific enterprise, what have we accomplished? Of what, then, do the works of anthropologists in the Philippines doing studies on the relationship between man and environments consist? To what extent have anthropologists outside the country whose area of specialization is the Philippines contributed to cultural ecology?

In order to answer these questions, I will proceed in a two-fold manner. First, I will present a survey of studies from the twenties to the present concerning cultural ecology, i.e. concepts and methodologies, limiting myself to some works more appropriately labelled as "cultural" rather than archaeological or physical. A thorough survey will by no means be ideal, were it not for the fact that time limitations do not permit an exhaustive inquiry. Second, I will raise some problems, rather than solutions, common to such studies.

The Studies from 1920 to the 1960's

We can follow the development of cultural ecological thought in Philippine anthropology by tracing the existence of concepts employed in man-environment relationship in the early works of anthropologists in the twenties. The time frame will start on the twenties because of the events that occurred, and which are of substantive interest to our current survey. R.F. Barton was one of the first anthropologists to include the physical description of environment in his works and to look at it as part of the comprehensive treatment of Ifugao economics (1922: 385). He was aware of the fact that to understand food getting, agriculture and animal industry, he had to include the environment in which they all occurred. Other anthropologists have felt similarly, so that the

focus was on more specific variables. In one of his early works, A. Kroeber paid attention to one of the components of the ecosystems, the Philippine populations with respect to their growth, their "heavy congestion" (1922: 88), and the extent in which they occupied their territory.

The immediate stimulus is no doubt the heavy congestion of population, which in parts of Bontok, Ifugao, and Kalinga today attains to a hundred and more souls per square mile. Other tribes of Luzon, such as the Apayao, and most of the pagans of Mindanao, grow only upland rice; but in every such case the population is much smaller. The Apayao for instance hold a larger territory than the Ifugao with perhaps one-fifth of their population (Kroeber 1922: 88).

... In Java, which is rather narrow and distinctly mountainous island, whose population early became heavy, the same thing occurs as in Luzon. There are too many people for the bulk of them to live actually on the river mouths (Ibid., 90).

Through these statements, we can see that Kroeber had hoped to explain the role of population growth in territorial expansion. To be sure, the human use of the environment determined by population dynamics was already recognized as early as 1928 by Kroeber, although it was not until the thirties when J. Steward formally defined cultural ecology, and consequently formalized the semantic choice of such concepts as "human use," "territorial expansion," and "population dynamics." Curiously enough, in the thirties we can scarcely trace the same general trend of thought in the history of cultural ecology studies. Kroeber's implicit call to link population and territorial use together appeared unheard of. His colleagues did not misunderstand him, for obviously they all used the same symbol system, nor did they resist his emergent ecological interest. Nevertheless, his efforts to develop ecological referents failed because, like those of his colleagues, his own works at that time had to begin with a mere classification of facts about the various population groupings in the Philippines. The classification of facts about the bearers of culture is a necessary process before any theoretical attempts can be made. Like all other sciences — whether natural or social — anthropology had to begin with a mere classification of facts, guided by what Cassirer called "the class-concepts of our ordinary language" (1969: 239). Without typologies which serve as tools with which to reflect the conceptual complexity of cultural items, explanation is hardly possible. From this simple argument, we can understand why J. Garvan's *The Manobos of Mindanao* (1931), M. Vanoverbergh's *The Isneg* (1932), and *Negritos of Eastern Luzon* (1937), and F. & M. Keesing's *Taming Philippine Head-*

hunters: A Study of Government and of Cultural Change in Northern Luzon (1934) did not pick up the lead, so to speak, that was Kroeber's. Likewise, Barton's work, *Philippine Pagans*, published in 1938 served as a classification tool to permit later scientific analysis and explanation. By and large, the anthropologists were quite faithful to the interest of anthropology at that time. They amassed a great bulk of valuable facts, including ecological data without their having to venture beyond that which they perceived to be functional.

The forties, and to some extent the fifties in which anthropological output was limited because of the war, were not different from the preceding decade in terms of the trend set by the latter. What was characteristic of the works in the thirties was also highly characteristic of those in the next two decades. There remained a high respect for collecting and classifying facts. Although the forties was not as prolific a decade as the fifties, we witness here additional collection of data, such as that of the Kalinga population (Barton 1949: 14), including the environment in which they occur (Barton 1949). Barton's works including those on the Ifugao's mentioned earlier, open a new and wider horizon which we can use later for helping to describe and interpret man-environment relationships within the given area over a period of time. Moreover, the forties served to link the preceding decade of emerging anthropological interest to the fifties where a vista of renewed vigor may be looked upon as the result and product of the same interest in classification. And yet there is more in the fifties that meets the eye. When the fifties started, H.O. Beyer's *Earliest People of the Philippines* already anticipated the importance of studying population history in the Philippines (1950: 1). No doubt he was cognizant of the problem of population with respect to the "stages in cultural advancement" they represent, i.e., those "living largely by hunting, trapping, and gathering food directly from nature . . . up to the town and city populations subsisting through advanced forms of irrigated agriculture and by-product obtained from the sea and through commerce and trade with surrounding people" (Ibid., p. 2). He used a definite viewpoint in understanding the various groups; he had to project it upon their migratory past including that of their early settlements. We cannot expect Beyer at this stage of anthropological inquiry to go beyond classification or typology interest; nonetheless, his work showed us that he recognized the fact that such variables as population, technology, and environment can go together to inter-

pret population history. Neither can we expect him to identify the casually significant variable for population increase "during the four centuries of Western contact" (Loc. cit.) because there was as yet (and still is) much to learn about cultural ecology. But where Beyer failed, R. Fox succeeded in making explicit his efforts to understand population dynamics. In his article "A Consideration of Theories Concerning Possible Affiliations of Mindanao Cultures with Borneo, the Celebes and Other Regions of the Philippines" Fox devoted more attention to geographical considerations as they influenced population movement.

Bays and sheltered waters in which native fishing techniques were adaptable, as well as riverine areas providing an alluvial plain, were unquestionably the most attractive regions for settlements. The greatest population development has occurred in precisely these areas. When terrain diagrams of the Philippines are compared with the present distribution of the population and with the distribution of the population indicated in the earliest Spanish records, this correlation stands out vividly (1957: 4).

Even as Fox has not examined the extent to which technology was adapted to extant environment, we find that his work has a strong evidence of an ecological referent. Fox recognized that technological and some ecological factors relate to the distribution and numbers of Mindanao population. With this point in fact, one is immediately reminded of the early years of the development of cultural ecology under the direction of Steward. But this is no surprise. Fox was one of the anthropologists in the fifties to benefit from the growing popularity of Steward's cultural ecology. Two decades of studies had pieced together Steward's explicit formulation of the ecological domain of cultural anthropology in the fifties.

While Fox saw population increase as being influenced by the character of the environment, F. Eggan gave it a holistic frame of reference. In his article on "The Sagada Igorots of Northern Luzon," he stated:

The differences in social institutions and cultural practices have generally been explained in terms of separate migrations, but I have argued elsewhere (Eggan, 1941 and 1954) that much of the differentiation in the Mountain Province has taken place locally as the result of adjustments to new ecological conditions and increased population (1960: 25).

With the increase in population resulting from the adoption of irrigated rice cultivation, the bilateral descent groups presumably became less efficient as corporate groups, partly because of greater overlapping and the consequent difficulty of handling multiple rights and partly because of the differential investment involved in the construction and maintenance of the terrace system and the control of water (Ibid., p. 30).

Eggan was the first to describe this process of "interaction" between cultural behavior and environment in which population increase through a technological agent disturbed traditional kinship grouping. Moreover, he was the first to explicitly link population increase to adoption of wet-rice agriculture, a debatable concern of contemporary population anthropologists (Cohen 1975; Nukunya 1975). For Eggan, therefore, an approach of linking the technological, economic, sociological, and environmental aspects makes interaction so crucially a holistic goal.

Among the first to concern himself with population density as directly related to agricultural techniques was J. De Raedt in his study on Northern Luzon. Although the focal point in his study was the relationship between some religious representations and socioeconomic aspects, he considered important the incidence of high population density with respect to wet-rice terracing (1964: 251). True to the tradition of anthropological studies, De Raedt's work also achieved a meaningful relationship of religious and socioeconomic aspects. Similar considerations apply to the works of F. Landa Jocano (1965: 1968: 1969; 1971; 1973, etc.) which are holistic in substance and character. Upon perusal of his works, one can observe how settlement patterns, livelihood, diet, and beliefs associated with important ecological features are linked together. One of these recent works, "San Antonio: A Case Study of Adaptation and Folk Life in a Fishing Community," describes in lucid language the ecological features of the place which no doubt affect the "municipality . . . and its residents in many ways" (Jocano and Veloro 1976: 17). Implicit in all his works from the late fifties to the seventies, is Jocano's idea that one can only attain a comprehensive and meaningful study of social change by including environment as one of the variables. His ecological data of the lake world (*op. cit.*) was essentially ethnoecological in character and although its emic-oriented model tends to limit, at close range, intercultural ecological comparisons, it was so intended in order to study and categorize data in terms of the "inside view".

H.C. Conklin describes a similar interest on the shifting agriculture of the Hanunuo of southeastern Mindoro. Ethnoecology as first developed in the works of Conklin (1957: 19), approached the problem from an emic angle. As Conklin expressed it, ethnoecology emphasizes "not only the local environmental conditions and their apparent modification, but especially the determination

of how these conditions and modifications are culturally interpreted" (1969: 221-222). Essentially ethnographic, this work seeks to understand the environmental conditions of shifting cultivation from the Hanunuo viewpoint. It is perhaps the formal emergence of such terms as "edaphic factors," "climatic factors," or "biotic factors" as early as 1954 in Conklin's work, that makes ethnoecology so crucially an ecological problem. As we have seen in the past, anthropologists studied environment in a broader context because, among others, its semantic meaning in the biological science was also as broad as it was in the field of anthropology. But when traditional biology gave way to the modern study of plant and animal life, the likelihood of specific and more verifiable concepts increased appreciably. Indeed, only with the release of Conklin's work could we appreciate the conceptual framework which includes semantic change in cultural ecology referents.

In his work *Jama Mapun Ethnoecology: Economic and Symbolic*, E. Casiño has imbibed Conklin's influence as reflected in the following:

One meaning of "environment" is given by Conklin (1961: 27). Using a scientific ecological framework, he divides environmental components and then interrelations into three sets: climatic (moisture, temperature, air movement and sunlight; edaphic (soil conditions, fertility, porosity . . .); and biotic (floral and faunal components of the habitat). He notes that climatic factors are the least amenable to control. We will be operating within this meaning of "environment" in our analysis of the *huma* as adjustment to the rain cycle (1967: 5).

But together with the changes generated by Conklin, Casiño continued to confront man-environment relationship in a unilinear "one way" dimension, by which the Jama Mapun family "adjusted to its climatic environment by fitting its planting activities to the manual cycle of two rainy seasons" (*op. cit.*, 8). The work represents the author's attempt to assess ecological balance between man and environment; however, he pointed out that the ultimate result is that it gives a rather incomplete picture of the relationship between the two. For instance, the extent with which the climatic environment and other components are linked in a continuous feedback, remained unanswered. Against this view, it is appropriate at this point to consider what has been achieved in general ecology. Publications on cybernetics (Wiener: 1950), homeostasis (Bates on 1949), and fundamentals of ecology (Odum: 1953) already appeared and although these contained divergent views on common issues, they provided challenging frameworks with which to organize data. I think that at this time, it would have been

appropriate to already broaden the concept of ecology so as to include ecosystem as a tool for showing the dynamic relationships of variables involved. Nevertheless, Casiño's dualistic attempt to also provide an ethnoecological framework not only succeeded in describing the Jama Mapun perception of their environment but also in studying two seemingly disparate levels of data: the emic and the etic.

Studies in the Seventies

What is the difference between the sixties and the seventies? Both are regarded as decades in which ecological studies in anthropology are given empirical emphasis and to some extent, an ideal existence. But if we wish to ascertain the character of the seventies, we recognize that unlike in the sixties, the concepts, terminologies, and frameworks used by anthropologists are those that combine the leading ideas of the two decades. Whether the best of the seventies is reflected in the works we now survey, remains to be seen. One of the anthropologists in the seventies' to write about ecology, is B.J. Wallace. Defining his tasks, Wallace says that his work, "Gaddang Agriculture: The Focus of Ecological and Cultural Change" (1970) serves to illustrate the relationship between habitat agriculture, and society by using the systems approach to ecology. This work is a theoretical endeavor instead of the usual descriptive attempt to study culture change. It focuses on human adaptation without the multiple dimensions of feedback between variables so characteristic in the systems approach methodology. Wallace assumed that the environment in which a society operates, conditions and sets limits on the system of plant cultivation (*op. cit.*, 7). He further assumed that in responding to man, the environment may affect the culture of man (*op. cit.*, 14). In spite of Wallace's assumptions, however, nowhere do we find evidence in his work as to how the full potential of this interactive relationship is realized. Granting that we agree with him on environmentally caused (1970: 119) works, how do we explain the shift to plow agriculture? What is in the forest environment that so determines cultural-agricultural adaptation? Which components of the environment necessitated adaptive strategies on the part of the Gaddang to cope with the changed conditions?

The exercise no doubt permits us to understand the notion of Gaddang agriculture and to some extent the character of their environment, but the problem of neatly linking culture and

environment which are "a functionally inseparable unity" (Anderson 1974: 209) remains.

The study of A. Yengoyan, "The Initial Populating of the Philippines: Some Problems and Interpretations" does not follow the same model nor the same purpose as Wallace's. As the author explained, the purpose was to "demonstrate that the initial populating of the Philippines by hunting and collecting groups, such as the Negrito, was an extremely rapid process which led to the saturation of the Philippines in relationship to the carrying capacity of the environment (1970?)." His assumption was that late Pleistocene man was capable of adapting to a range of ecological niches. One measure of this adaptation is the variation in population densities among hunting and gathering peoples which is partially assessed from the point of view of technological differences as well as the gross carrying capacity of different environment" (*op. cit.*, 1). Yengoyan writes with the view that population growth cannot be treated independently of its ecological and technological matrices. The size and density of population are not a function of population growth alone but of these matrices. But when hunting and gathering populations grow beyond the carrying capacity of their environment, they cannot remain without population-regulating mechanisms. One mechanism is to bud off into smaller units as long as uninhabited areas exist; the other is to resort to certain cultural practices such as infanticide and abortion when a given locality is occupied to its carrying capacity and neighboring areas are also inhabited. Clearly, the approach employed in this study stands in sharp contrast with the Wallace approach in which the variables involved in an ecological, essentially reciprocal relationship, are identified and analyzed. Yengoyan should be credited for being receptive and for having incorporated into his work, some of the concerns of modern cultural ecology.

One notes with interest that if there is one population group that has received most attention from anthropologists in the seventies using systematic attempts to explain man-environment relations, it is the Negrito. After Yengoyan, P. Bennagen explored the man-environment relation in his thesis, "Kultura at Kapaligiran: Pangkulturang Pagbabago sa mga Agta ng Palanan, Isabela" (1976). Then, we have Jean Peterson's work on the Agta of Isabela which was presented as a doctoral dissertation. In attempting to illustrate how the ecosystem approach was used in the late seventies, it seems necessary to focus briefly on Peterson's study,

"The Ecology of Social Boundaries Agta Foragers of the Philippines" (1978). The aim of her study was to "examine the economic behavior of the hunters-gatherers, describing the differential distribution of resources and the mechanisms which provide them security in the face of resource variation and technological limitations" (1978: 4). To attain these goals, the author adopted a framework which gives importance to bounded territories including relevant resources, and allows not only territorial interaction or interaction with a fellow Agta but also, at a higher level, with a non-Agta. The Agta culture is examined from the perspective of a system composed of a hierarchy of social units with each level being composed of a physical area which includes boundaries, a set of personnel, a set of resources, and specialized social and economic activities related to these resources, and smaller subdivisions. The interaction of the subdividing units constitutes the internal dynamics of the larger units of which they are a part (*Ibid.*, pp. 162-163). In non-technical parlance, the author explains that "deficiency in one territory, not one household, leads to exchange across a territorial boundary, and consequently access to resources within that whole territory (*Ibid.*, p. 174). And as she points out in her study, it is food supply that is one of the needs to be fulfilled by the system. Thus, she says: "Where food shortage or surfeit occurs at any level, adjustments may be made within the level or between levels to alleviate the stress of food shortage by allowing for allocation of food surplus" (*Ibid.*, p. 178). While Peterson evoked "internal" dynamics to explain and anticipate change, not only "internal" but also external sources of change were considered, i.e., deforestation and governmental efforts to alter the technology of the Agta. This is one of author's notable attempts to depart from an externally-oriented, unicausal paradigm. The use of more refined concepts and categories, and the notable characteristics previously mentioned, constitute the author's primary contribution to cultural ecology studies on the Philippines.

Problems and Prospects in the Study of Cultural Anthropology

What does the partial survey of literature on cultural ecology tell us? As the literature of theoretical contention on man and environment grows from the twenties to the present, it becomes increasingly clear that attendant to its growth is also a development in concepts, terminology, and theoretical paradigms. Hence,

the significance of the growth is not simply quantitative. As we can see, while the traditional concern for classification or typology, as well as description remains, the attempts to study man-environment relationship from a processual dimension emerge. Eventually, when the wealth of materials gathered from description shall have been deemed sufficient, we shall have studies fathered by description and delivered by theory that will permit man to understand the dynamic interaction between him and his environment.

And yet we are far from this goal. We are still confronted by formidable problems of both theory and practice partly inherited from the affinity of cultural ecology with the biological sciences. Briefly, I shall raise some of them:

1. Is anything really gained by using ecosystem concepts and terminology, e.g., feedback in cybernetic contexts, to describe the state of social system?
2. Are we not proceeding in a circle when following a view that variables of the system are linked in a continuous, dynamic feedback so that any specific variable may be viewed as causal only at a precise instant? Change in one variable is supposed to induce change in the other, and yet the latter is to be the condition of the former. To what extent can we predict with accuracy the independent vis-a-vis dependent variable occurrence, if any variable is just as causally significant as the rest?
3. What techniques and measurement of analysis should we devise to show the connection between variables in a system which also cause dynamic fluctuations and change? This question is partially relevant to the current hazards of a program to the ecosystem, i.e., pollution of the natural environment.
4. What role might anthropologists play in contemporary situations where population growth is regarded as bad (against the accepted theory that population growth in organic evolution is commonly regarded as a sign of "adaptive success" or as a stimulus to greater production)?

I raise these questions because I am optimistic that the gap between anthropology and biological sciences can be bridged. If there are any grounds for this optimism, one of them is the belief that basically these problems are transitional and therefore solvable. Anthropology, being a holistic science (Anderson, *op. cit.*, p. 179) can accomplish much more from a fruitful interchange and collaboration with biological sciences. It holds much promise not only in learning from other sciences. It holds much promise not only in learning from other sciences where some areas of research experiences may be more fulfilling, but also in making conscious

efforts to integrate information inputs of these sciences into the study of man. If there is one discipline that cannot stand isolated from other sciences, it is anthropology.

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