

## CHAPTER 2

## Ecological History and Historical Ecology: Diachronic Modeling Versus Historical Explanation

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Anthropology finds itself at a moment when it is being challenged on two fronts: first, as to the epistemological basis of its representation of others in ethnographic, historical, and archaeological interpretation; and second, as to how those representations are historically contingent upon particular categories of cultural representation, such as *nature-culture-society*, *evolution-process-structure*, and *ecology-economy-environment*. Although this challenge is substantive, and not to be lightly dismissed (Sangren 1988; Reyna 1994), the knowing of other times, persons, and places can yet be achieved—but only through a more rigorous *philosophical* analysis of the basis of anthropological understanding (see Whitehead 1995). The historical and ecological praxis of persons is therefore an important part of anthropological knowing, since persons are always situated in time and place, the latter being key to a historicized ecology. The idea of *praxis* is used here to refer to persistent features in the sociocultural repertoire of human physical and mental behavior that is overtly oriented to the achievement of an identifiable goal. *Ecological praxis*, then, refers to those forms of human activity that structure usages of the environment.

So “ecology,” understood in the widest conceptual sense of the term—and despite its popular perception as a holistic alternative to positivist and instrumentalist representations of people and their environment—faces the same kind of critique that is currently general throughout the social sciences. Dissatisfaction with the way in which some kinds of “energetic” and “adaptability” analyses reduce human behaviors to caloric measures, and the perception that those “objective” and quantifiable measures vary “subjectively” according to a *culturally conditioned* cost-benefit analysis (Beckerman 1983), have led to a growing emphasis on human meanings as a source for understanding “natural” ecological systems (Balée 1994; Descola 1994; Moran 1993). At the same time, the rapid changes to which various

kinds of “ecologies” have been subject, especially as the result of European colonial occupation, have led to new kinds of studies on the ways in which human activity shapes ecological outcomes through time.

Together, these trends in ecological analysis make it seem opportune to propose a fully “historical” ecology—the implication being that such a style of reasoning about ecology should put persons, not organic systems, at the center of explanations of changing ecological relationships through time. Moreover, these recent analyses—which emphasize the cultural contingency of individual perceptions of the costs and benefits of varying subsistence strategies, as well as the variability of individual success, especially in activities like hunting—suggest that *individual* praxis, rather than an aggregated or abstracted social or cultural praxis, should be the initial level of our analysis. The problem of situating that individual praxis within the overall repertoire of observed behaviors then forces a consideration of the wider anthropological issue of representation (as was indicated above). However, just as the historicizing of anthropology is often proclaimed but rarely fulfilled, so too the conjunction of the terms *historical* and *ecology* does not mean that any such intellectual activity is necessarily possible, or that it represents a true “paradigm” (Kuhn 1970) rather than merely an interesting methodology. Indeed, there are compelling reasons to think that the whole idea is premature, since the historical ecological literature to date has barely even acknowledged such issues, let alone offered any distinctive solutions to them.

Accordingly, this chapter outlines how the debate on history and anthropology can illustrate the theoretical problems that a “historical ecology” must address if it is to become a paradigm, rather than just an innovative methodology. Certainly it is laudable that ideas of “interpenetration” replace those of “adaptation” as a methodological aim in the description of human ecological praxis through time, but this theoretical activity can hardly be called “paradigmatic.” Notwithstanding this I illustrate how a *methodology* of historical ecology could be applied for the purposes of field study. I then conclude by reconsidering the question whether we really need to invent a historical ecology: for one can argue that a *historical anthropology* already comprises the issues and topics that a “historical ecology” might address.

This question arises because “historical ecology” has no theory of history or of historiography, and so remains dependent on historical anthropology to develop the conceptual tools required for the interpretation of behaviors, texts, and artifacts, even where the latter are also biological entities like plants or trees (see Balée, chapter 1). Historical anthropology analyzes the interplay of *all* structures of human activity—such as polity, economy-ecology, society, culture, and so forth—with historical events, understood as the human praxis that innovatively evinces and so imperfectly reproduces these structures through time. As such, historical anthropology is quite distinct from ethnohistory, with which it is sometimes confused or conflated. *Ethnohistory*, within this framework, refers to either the history of a given ethnological group, or (following cognate usages of the prefix *ethno* in other fields) the autorepresentations of the past by a particular ethnic group. In either case, these intellectual activities are part of the analytical materials for historical

anthropology but do not delimit its range of interests, which nonetheless include the comparative study of ethnohistories and ethnologies.

Concerning Amazonia in particular, issues of the relationship between the historical and ecological praxis of native peoples are particularly acute. In the first place, it is precisely in terms of a culturally restrictive and overgeneralized picture of Amazonian ecology as a “counterfeit paradise” (Meggers 1971) that many denials of native historical praxis have been couched (see discussions in Moran 1993; Whitehead 1993, 1996). By the same token, even the careful study of ecological praxis, as a product of the socialization of nature and naturalization of society (Descola 1994), must refer to historical praxis if the representation of this ecological praxis as “homeostatic” is to be improved—as it must be.

In anthropology more generally a theoretical ambiguity over the usage of the terms *economy* and *ecology* (even though the words derive from the single Greek term for “household/habitat,” οἶκος), reflects the way this debate has been carried on in other regions. Thus, *economy* and *ecology* have tended to designate, respectively, cultural and natural systems of activity. Moreover, the unacknowledged force of this usage is to suggest that “primitive” societies (as in Amazonia) are dominated by their ecological setting, and “complex” ones by their economy. In either case, however, the issue of how human consciousness arises from, represents, and acts on its οἶκος is to the fore, which then reminds us that all human behavioral structures and events are an interwoven field of human activity (praxis) for which the complementary opposition of Nature/Culture is an insufficient analytical tool.

To the extent, then, that this dichotomy is present in “historical ecological” theories—whether or not the opposition is mediated by relationships of “interpenetration,” “dialectic,” “dialogue,” and so forth—such theories will be inadequate for the representation of human praxis through time. This is quite simply because that praxis has *already* been analytically bifurcated into the “natural” and the “cultural”: a contingent complementary opposition, but one to which ecological method, as quantification, measurement, and prediction, is necessarily committed (see Winterhalder 1994).

### History in Anthropology and Ecology

Ever since the inception of modern anthropology in the middle of the last century there has been a tension between two competing paradigms for the explanation of the past: *evolutionism* and *historicism*. Essentially the difference here is between, respectively, the diachronic modeling of processes in the distribution of phenomena, and the explanation of human thought and behavior by reference to avowed meanings and reconstructed events in the past.

It is well known that such early figures in the emergence of professional anthropology as Edward Tylor (1871) and Lewis Henry Morgan (1877) were evolutionists in their approach to understanding the past of non-Western societies. They both proposed schemes of evolutionary progression through various stages (or “ethnic

periods,” in Morgan’s terminology). Human culture was a unitary product of the species, and so a people’s relative position in the evolutionary sequence implicitly assumed that this was also their achieved historical circumstance. There is no need to rehearse now the standard objections to these ideas (Evans-Pritchard 1962), but it is important to emphasize the extent to which evolutionist ideas necessarily underlie all nonhistorical reasoning about the human past—whether that reasoning proceeds from biology, ecology, or archaeology.

The work of Franz Boas (1936), Bronislaw Malinowski (1945), and their intellectual heirs, by contrast, emphasized the particularity of the cultures they studied and the ways in which those cultures therefore had to be understood *in their own terms*. This ethnographic particularism was useful in eventually showing that human groups often failed to match meaningfully the criteria generated by many evolutionists. “Simple” hunter-gatherers, as in Australia, were found to be “complex” in sociocultural terms, and some were found to have been in a dynamic symbiosis with both agriculturalists and the state (see Shott 1992).

The intellectual and cultural disenchantment with evolutionist theory, especially with its implicit idea of an inevitable social progression through time, also led some early ethnographers to insist on a functionalist paradigm of explanation. Since history was unknowable in the case of pre-textual tribal peoples, it could only be conjectural; as A. R. Radcliffe-Brown put it, “the view taken here is that such speculations are not merely useless but are worse than useless” (1958:3). Later ethnography, in an effort to recognize change and process in forms of culture and society, if not history per se, in turn was driven by varieties of “structuralism.”

Such approaches emphasized either the role of cognitive structures in producing systematic variation, as with Claude Lévi-Strauss (1963), or the role of social structure in differentiating cultural plurality, as with Edmund Leach (1965). In either case, these abstractions from specific human contexts gave space for the theoretical discussion of the evolution and typology of these structures. So, by dealing with sociocultural phenomena rather than with the persons who embodied those phenomena, these approaches were very receptive to evolutionist ideas, especially the notion of *systemic process*, as an explanation for social and cultural patterns. The advent of poststructuralism therefore actually represented an intellectual retreat from these issues, at least ethnographically, into a kind of hyperparticularism. This trend is necessarily less evident in historical anthropology, since there is a continuing interest in the theoretical issue of relating the long-term structures of social and cultural activity to the particular practices of individuals or groups (see Obeyesekere 1992; Ohnuki-Tierney 1990; Sahlins 1995).

The “history of history” within anthropology is therefore strongly imprinted on the development of ecological anthropology as a whole. In the United States, Julian Steward played a very influential role—not least for Amazonia, in his capacity as editor of the *Handbook of South American Indians*. Cultural ecology, as envisaged by Steward (1963), was an extension and refinement of the old evolutionist paradigm, but with the all-important caveat that such evolution could result in *multilinear* trajectories for future development. Again we should note that it is “cultures,” not

persons, that represent the unit of evolutionary selection; and so this mode of analysis, as developed by Robert Netting (1977) and others, did not meet the historicist objections that cultural typologies tell us little because ethnographically (as mentioned above) it is rare that persons perfectly instantiate the relevant category of classification. Hunter-gatherers and pastoral nomads are found to be symbiotically linked with settled agriculturalists; and all the while, in Amazonia at least, characterizations of horticulturalism had failed to address the importance of fish capture, despite the intensity of debate on "protein scarcity" (Beckerman 1994; Gragson 1992).

This breakdown in the evolutionist paradigm, which in Amazonia became a kind of *environmental determinism* in the hands of Betty Meggers (1971) and Steward (1948), was also heralded within ecological anthropology by a form of neofunctionalism that examined the use of ritual or cosmology in the regulation of ecological relationships. The extent to which this was seen as a more or less *conscious* activity on the part of native peoples differed from author to author, ranging from the divine authority of Desana shamans (Reichel-Dolmatoff 1976), through Roy Rappaport's (1968) operationalized vs. cognized models in Tsembaga land, to the extreme functionalism of Harris (1977) in his solutions to the "riddles" of culture, such as food taboos and anthropophagy.

Subsequently the ecological paradigm has seen evolutionist models reemerge in various forms of biobehavioral ecology and evolutionary culture theory. In these works the role of human meanings is all but absent, and the agency of change is seen to be the structural properties of evolutionary process, whether that is seen as genetic or as cultural. The sociobiology of Napoléon Chagnon (1990) would be a relevant example for Amazonianists. Most recently, the advent of ethnoecology promises to reintegrate human meaning and understanding into models of ecological systems, stressing the need to gain access to these understandings if adequate scientific models of contemporary ecology are to be built (see Posey and Balée 1989).

It seems evident, however, that even this ethnologically sensitive kind of contemporary understanding remains incomplete, particularly in view of the nature of European global expansions during the last five hundred years. In short, one can now appreciate that such native understandings themselves are a product of *mutual* historical forces, and that the character of these historical forces is such as to have often produced radical disjunctures between past and present practices. This creates a presumption against the projection of the ethnographic present back into the past (Whitehead 1994). Moreover, in Amazonia it is already clear that making any absolute distinctions between indigenous and nonindigenous ecological understanding is highly problematical, since many non-Amerindians have occupied a range of Amazonian environments since the early seventeenth century.

Into this intellectual situation bravely marches the idea of "historical ecology." I will address the implications of a recent volume of that title (Crumley 1994) later; for the moment, I wish to draw attention to a number of studies that anticipate the

topic, but are given limited treatment in that work. Chief among these are the works of Carl Sauer and Alfred Crosby. Crosby in *The Columbian Exchange* (1972) and Sauer in *The Early Spanish Main* (1966) both anticipated the themes that are central to the methods of historical ecology, even if they failed to overtly theorize about the issues that this chapter has so far raised. Sauer is actually more concerned with the immediate and local impacts of Europe on America, rather than with the systemic and extended consequences of a series of such impacts that preoccupies Crosby (especially in his later work, *Ecological Imperialism* [1986]).

In Crosby's first volume there is an attempt to discuss how, not just individual biota, but complexes of biota had a systemic impact on the environments extant in the Americas in 1492. This theme is extended in the later work to include non-American contexts, such as the Canaries or Australia, and has been expanded beyond the historical moment of European colonialism to include earlier interactions, such as the Norse in Greenland. Since Crosby has paid attention both to the biologically systemic interactions that produce environments and to the contingent structures of human decision that initiated particular forms of systemic biological interaction, the more recent volume (1986) is therefore aptly entitled *Ecological Imperialism*.

In this form of historical study there is now a "second generation" of research that has resulted in the detailed study of particular cases of ecological imperialism, such as William Cronon's *Changes in the Land* (1983) and Carolyn Merchant's *Ecological Revolutions* (1989). Sauer and Crosby were thus among the first to see the intellectual force of this way of discussing the ecological consequences of human decisions, and the extent to which those human decisions were fundamental in producing what were apparently pristine landscapes (see also Geertz 1963; Hughes 1975). Subsequent work on the "pristine myth" (see Denevan 1992), then, has the potential to tell us as much about humans and their history as it does about landscapes and their development, which must surely be the defining element of any historical ecological methodology. As Donald Worster notes (1988:289), this involves no longer *reducing* human agency to statistical measures, but *enhancing* the physical agency of environment.

It is therefore useful to comment on whether the recent volume edited by Carole Crumley (1994) does or does not live up to this potential. Because the volume proceeds not from anthropology but from landscape science, few of the issues and problems raised so far are dealt with therein as a whole. The most cogent interpretation that can be given to the contributors' intent in this work is that some *procedural* form of ecology should be favored over a systemic or functionalist kind. In this way, the question addressed seems to be no different from that which arose between evolutionism and functionalism—namely, what is the best explanation given either by considering the way in which a system maintains itself, or by knowing by what processes it may have been produced? Certainly this is an interesting question, but it is not one that has not already been thoroughly explored in anthropology, as was explained above. Even if we were to pursue a historicist understanding of a particular "ecosystem," as Bruce Winterhalder suggests (1994:19), this would still leave

open the critical issue of what causal variables would be addressed in the explanation given.

Thus the problem is *not* one of inventing some new paradigm, as Crumley (1994) argues, where the opposition of culture and nature is broken down; for that would be to lose precisely the human-centered explanation that the use of the epithet "historical" implies. Systems, distributions, and phenomena show processual or evolutionary change; humans show historical change. To try and mix these metaphors is to confuse types of analysis. In any case, it seems doubtful that the scientific representation of "natural systems" requires in any sense an appreciation of their particular historical characteristics, for this would completely contradict the nomothetic ambitions of a *generalizing* endeavor.

Rather, the point of a methodology of historical ecology must be to make human decision-making, and the consciousness that drives it (see Posey, chapter 5), the independent variable in our analysis of environmental dynamics. The varying "ecologies" (understood as a *praxis*—see also Descola 1994) that drive those decisions and their associated environmental impacts then become a special subset of study for cultural history, as reflected by works such as Keith Thomas's *Man and the Natural World* (1983) or Robert Brightman's study of Cree hunting, *Grateful Prey* (1993). But to equate a historical ecology with a landscape history, however expansive that notion of landscape might be, is to miss the point that an ecology represents human praxis *in* the landscape. The fact that human practices never take place in a "pristine" environment, but always in a landscape shaped by the past ecological praxis of others, only serves to emphasize the importance of understanding the historical dynamics of human usages; it does not entail that such usages are equated only with particular data sets that might be used to partially reconstruct them, such as landscape forms. Simply to chart changes in landscape through time once again places phenomena, rather than persons, at the center of explanation.

The history of an ecology is more complex than this, and must include an account of the synergetic impacts of changing human ideas. That such a project is only intermittently realizable, due to the limits of historical text and archaeological data, thus threatens to produce a situation where sequential functionalist explanations of different "landscapes" are proffered as historical ecology. This situation might be partly remedied by means of a more sophisticated notion of "history." The many forms in which the past is culturally presented as "history," as well as the variety of purposes that such constructions serve, mean that "history" is not necessarily descriptive, or even chronological—yet Crumley and her fellow contributors seem content to define it in this way, even as this particular cultural idiom of historiography is being challenged by professional historians themselves. While all may agree that the historical aspect of human affairs is fundamental to their meaningful analyses, in the case of the *Historical Ecology* volume, the contributors seem largely content with grafting a temporal dimension onto the chronological study of systems. For historical anthropologists this will be an insufficient notion of "history," since the nonconflation of the evolutionary change of phenomena (including

human phenomena) with the history of persons (including their decisions that affect their landscapes) is central to the whole historical paradigm.

This analysis is borne out by the way that the issues in landscape history are reproduced in historiography at a more general level. For example, one asks: Do we read landscape retrospectively or regressively? That is, do we intend to understand past ecologies and their processual responses to change, as in the early works of Clifford Geertz (1963) and J. Donald Hughes (1975); *or*, how past ecologies produce present ones, as in the work of Crosby, Cronon, and Merchant mentioned above? Obviously it is the latter kind of research agenda that is potentially distinct enough to form at least a methodology for historical ecology. However, the fact that all these authors must engage a series of ethnographic and historiographic issues indicates that their ecological themes are necessarily secondary to the writing of the past more generally. How, then, might field study be designed to be epistemologically valid within the parameters outlined above?

### Studying Historical-Ecological Praxis in Amazonia

The soils of the Amazon have traditionally been viewed as "poor." However, the existence of a limited class of high-fertility soils called *terra preta do Indio* (Indian black earth) has been known informally for a long time in the literature of the region (Nimuendajú 1952; H. H. Smith 1879).

*Terra preta* (latosol amarelo húmido antropogênico) is a prevalent soil classification in Amazonia today—yet whether it actually forms a unified soil type remains to be investigated, and the distribution, composition, and formation of such soils are only beginning to be understood. *Terra preta* exhibits circumscribed distributions in a wide variety of environmental contexts, such as *terra firme* bluff edge, interior *terra firme*, and *várzea*; however, the relative densities of *terra preta* in each of these settings are poorly known due to the lack of systematic survey coverage. In spite of pioneering chemical and physical characterization studies, the issue of the exact composition of such soils, as it relates to the genesis and evolution of the *terra preta* category, is still unresolved. For example, it is still unclear even why these soils are "black" (Eden et al. 1984; Kern and Kampf 1989; N. Smith 1980).

Such soils are often closely identified with human habitation and activity, being replete with cultural remains. In this context, the determination of the variation in soil composition would establish a dependent variable for the evaluation of the cultural context of the *terra preta* sites. It seems likely that the contribution from human activities to the formation of these soils differs among various sites. Indeed, there is also the possibility that localized subsurface geological characteristics may have led to the "natural" formation of *terra preta*, which was subsequently occupied and augmented by human activities. Equally, the nonpedological characteristics of a given site, such as a location that straddled existing active trade routes or gave access to particular fluvial resources, could have led to a sufficiently stable

occupation for the direct formation of a *terra preta* deposit (see review in Whitehead 1996). Whatever the site-specific explanation, either situation produces a synergistic effect between environment and culture.

It is this *synergy* that is really the analytical object of a humanistic ecology—and most particularly that of a historical ecology. Thus, the usage of *terra preta* sites is known from the historic record (Whitehead 1994) but, because of the character of colonial occupation (Whitehead 1993), little of ancient Amerindian technique has been transmitted to the current occupants of Amazonia (Denevan 1992). Researching that context through archaeology and history then allows the interpretation of soil characteristics in the context of other scientific measures of human usage, and the opportunity to relate these findings to the historical record. Together such research strategies provide an active cultural and historical context for the interpretation of the soil data.

In short, this will permit a characterization of the soil compositional differences in ethnological and historical terms, as well as providing ecological referents for social and historical difference within this cultural pattern. Initial work on the historical and archaeological literature, as well as on soil science, can be used as an element for definition of the study area. In turn, the emerging results of historical and archaeological reconstruction can be progressively applied to the data from specific site investigations.

By such means it will be possible to characterize the various classes of soil formations mentioned above, suggest the human context of their development, and provide a link to broader questions of current anthropological debate in Amazonia concerning human impacts on the environment and their implications for long-term cultural development. Indigenous usages are thus a key element in the understanding of Amazon ecology—but more important is the history of those usages in the successive contexts of changing landscapes.

## Conclusion

In the practical and intellectual contexts outlined in this chapter, it seems relevant to ask: Is a new *paradigm*, as opposed to a methodology, of historical ecology achievable, or even desirable?

The achievability of a historical ecology would actually seem to rest on the same grounds as historical anthropology generally—with the critical proviso that a historical ecology is absolutely unable to resolve the paradigmatic issues because it does not theoretically address the philosophical problems posed by a conjunction of a positivist “science” and a relativist “humanism.” However, even if these contrasting approaches are philosophically incommensurable, as Thomas Kuhn (1970) and Paul Feyerabend (1975) imply, this does not entail that they are hermeneutically so (Rorty 1979; Whitehead 1995). Therefore a historical conception of human ecological relationships can form a powerful idiom for the explanation of people and place. Yet methodologically this deals only intermittently with the phenomena (in-

formants, texts, artifacts) that are the central source of the theoretical imponderabilia in anthropology, and so it is unclear how such a methodology would address these epistemological questions paradigmatically. Unless ecologically oriented anthropologists are prepared to invest the same theoretical and research effort to these issues as historical anthropologists already do, then at the very least a historical ecology will have to wait on the progress of historical anthropology in general.

In turn, and perhaps in a more parochial sense, I am tempted to wonder whether a historical ecology is even desirable, since the ecological paradigm in Amazonia has developed in a way that precluded both economy and history. I have already referred in passing to the great “protein debate” in Amazonia and have mentioned how the ethnographic data were simply incomplete as regards modes of protein capture. But worse than this was the impression created that indigenous decision-making was so constrained by the ecological imperative that no economic solutions to resource differentials, such as trade and/or the intensification of agricultural production, were ever contemplated—despite the presence of such economic mechanisms as both ethnographic and historic fact.

Clearly the integration of data sets, the expansion of causal variables, and an appreciation of systemic interactions are some of the positive methodologies that an ecological approach brings to anthropology—but these are part of anthropology anyway, and without the integration of such methodologies no independent historical ecological theory can emerge. Similarly, ideas about succession, persistence, and change are integral to ecological discussions of the past—but this, too, is part of anthropology already. In short, historical and ecological explanations are most vital to any adequate study of humanity, but the question for the would-be historical ecologist must be: *What critique (if any) can historical ecology offer not just of a functionalist, ecosystems theory but, more significantly, also of anthropological conceptions of history?*

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