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which comprise “interdependent parts of a coherent, indivisible whole.” The failure of California fisheries managers to understand this has led to another instance of the “tragedy of the commons.”

A final example from the book represents an unusual perspective in environmental literature. Peter W. Huber’s “Safety and the Second Best: The Hazards of Public Risk Management in the Courts” (1985) asserts that manufacturers, engineers, and scientists provide goods that are designed to be increasingly safe for public use. Huber concludes “The technological community, far from ushering in an endless series of new terrors, can rightfully claim full credit for the extraordinary safe society it has built. Huber also asserts “the reality is that life has grown safer not because of the legal system but despite it.” These statements will surely spark spirited discussions among those who adopt this book for classes.

The volume would have benefited from an additional section focusing on the environmental ethics and laws from outside the U.S., giving readers a clearer perspective on the unique character of U.S. environmental history and affairs. An international comparison of cases would also help to explore the successes and limitations of efforts to export a U.S. model of environmental protection to other national contexts. This is a minor criticism. The book provides a valuable service by compiling in one well-organized volume a selection of key historical and contemporary selections on law and the environment.

**In the Society of Nature: A Native Ecology in Amazonia by Philippe Descola. 1994 (paperback 1996). Cambridge: University of Cambridge Press, pp. xviii+354 pages, subject and plant and animal indices.**

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Reading Descola’s book brought to mind a conversation I’d long forgotten. Once when canoe fishing during my thesis fieldwork in Brazil I overheard a Juruna man, whose people have long dwelled along a major Amazonian waterway, grill a forest-dwelling Kayapo about his tribe’s dietary restrictions. Systematically, the two exchanged information about what fish, fowl and game animals each consumed or avoided, cheerfully noting areas of agreement and disagreement. At that moment I imagined a ghostly anthropological twin seated at the far end of the canoe furiously taking notes. Reflecting the unyieldingly different approaches within our discipline, if I was concerned with deciphering the meaning of food taboos, my twin would certainly be pondering their adaptive implications given the respective environments of the Juruna and Kayapo. The conversation would serve as very different grist for our analytical mills. Descola’s work echoes this remembered/imagined scene, as it also concerns itself with the opposition between the different subsistence potential of the Amazonian varzea and terra firme (he defines these as riverine and interfluvial biotopes) and the void between ecological and symbolic approaches in anthropology.

Dr. Descola’s research represented in this volume is as challenging as one might conceive. Originally published in France in 1986 and completed as a doctoral dissertation two years before, the work continues to be timely and relevant. Descola seeks to bridge the gap between ecological

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and symbolic paradigms that have separated scholars of Amazon into opposing camps. These opposing camps rarely have much of interest to say to one another and their exchanges lack the open willingness to agree to disagree evinced by my Amazonian hosts' cross-cultural conversation on food taboos. Along with his mentors, Lévi-Strauss and Godelier, Descola takes any separation between the technical and the symbolic to be misguided. Rather than fortify the opposition between materialism and idealism he seeks to demonstrate the irreducibility of praxis in understanding human ecology.

The people chosen to demonstrate this proposition are a sector of the Ecuadorian Achuar people whose dispersed settlements appear to reflect a centuries-old pattern. More recently, large number of Achuar have begun to cluster in nucleated settlements to facilitate access to western trade goods and are excluded from the general analysis. The Achuar (along with the Shuar, Aguaruna, and Huambisa) are one of the four dialect groups of the Jivaroan linguistic family that includes some 80,000 people scattered throughout southern Ecuador and Northern Peru. They live in imposing houses constructed at a great enough distance apart to make daily cooperation impractical. Each household is made up of a married group, usually polygynous, and attached kin. Each household regulates its own activities independently of one another except in cases of war, house construction, and other sporadic occasions. While each household is potentially at war with every other, intermarriage and military alliance usually form the basis of ties between ten to fifteen households within a contiguous territory strung out along a watercourse. Independent households, however, are not tied together by descent, united under chiefs, or grouped into any sort of named community organization.

While each household thus appears isolated from other similar units, an understanding of Achuar society requires a comprehension of the continual transactions between the Achuar and the sentient natural beings from whom they wrest life's necessities--through cajoling, threats, force and seduction.

all of nature's beings have some features in common with mankind, and the laws they go by are more or less the same as those governing civil society. Humans and most plants, animals, and meteors are persons (aents) with a soul (wakan) and an individual life (p. 93).

Herein lies the paradox of the Achuar: while their isolated households would appear to reflect an absence of social ties, in fact, men and women can do nothing without the correct social etiquette, knowledge, and skill needed to successfully interact with humans and non-humans. Achuar society encompasses nature (at least "nature" as constituted in western thought).

Achuar conceptions regarding sociality regulate hunting and gardening, which therefore can never be reduced to a checklist of technical specifications. Activities conjoin the supernatural, technical and social, as when men direct their musical incantations at species leaders, invoking their personal relationship with coquettish game. Descola shows how relations between hunter and his game are like those between a man and his affines, involving an identical combination of charm, guile, observation of social niceties, and force. Likewise, women's garden work lacks none of the perils of the hunt as women cope with bloodthirsty manioc plants and spells of rivals aimed at undermining their efforts. As with hunters, gardeners' success also depends on a set of practices in which invocations to supernatural and mythological beings are part and parcel of the required mastery over technical and social knowledge.

The book takes us through the background necessary to understand the complex social transactions of what Descola calls "the society of nature." After a detailed description of the environment and the geomorphological, pedological, vegetational, and faunal characteristics of riverine and interfluvial biotopes, Descola introduces the reader to the animated natural world. The next four chapters describe activities in the house, the gardens, the forest, and the river, respectively. While the information is extremely detailed and of high quality, much of the quantitative information is presented in a narrative style than makes it more rather than less difficult to grasp the essentials. However, the narrative of these chapters, in which myths, incantations, symbolic exegesis, species names, and measurements of labor time and productivity are all interspersed, is meant to bolster Descola's central contention: these diverse types of data are

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all essential to understand Achuar ecology, and the possibility of their analytical integration lies in an analytical focus on Achuar practical activity.

The energy and determination with which he carried out his fieldwork should itself be cause for admiration among anthropologists. The distances between settlements, the need to constantly move between settlements in the absence of easy transportation, the monolingualism, the small number of Achuar in each settlement, and the ambitious agenda of data collection made the realization of the research project daunting. The resulting data are rich as Descola develops a magnificent interpretation of Achuar natural symbolism and performed many quantitative measurements.

What remains open to question, however, is the extent to which Descola is succeeds in integrating within a single analytical framework both the material effects of human-environment interactions and cultural ideas about nature. The reactions of both "ecological" and "symbolic" anthropologists make an evaluation of Descola's method particularly important. On the one hand, cultural ecologists, such as Betty Meggers (personal communication), feel that, whatever Descola may conclude, his measurements bear out the cultural ecologists' ideas regarding the different potentials of riverine and interfluvial environments in the Amazon. Symbolic anthropologists, on the other hand, greet the work as a refutation of environmental determinism and a promising new methodology. As trumpeted in a review of the first 1986 French edition: "It is to be hoped that the ecological determinists are not so entrenched in their own dogma as to ignore what he has to say. Certainly there should be enough statistical information on the size of gardens and harvests, hunting and fishing returns, and time expended on various activities to satisfy them" (Riviere 1987, 754). Thus, on the one hand, the ecologically minded seem to see nothing new here, while symbolic anthropologists seem to accept Descola's conclusions rather uncritically (cf. Viveiro de Castro 1996). That an innovative combination of ecological and symbolic methodologies merely succeeds in reaffirming the received wisdom of symbolic anthropologists while evincing practically no reaction from ecological anthropologists is disturbing.

In my view reactions from both camps can be explained by their implicit convergence regarding two basic and interrelated understandings of the relationship between environment and society: 1) Despite initial nods in the direction of practice in Descola's book, in common with cultural ecology, the environment is conceived to be external to society and human activity;[1] 2) Being external, the environment primarily shapes human activity by constraining or allowing the expression of all its possibilities. These two propositions combine to produce an either / or impasse that impoverishes the study of the relationship between human meanings and material transactions within an environment. The research agenda is reduced to establishing whether the primary determinants of the patterns of human activity are either ecological or cultural. The "non-reaction" from symbolic and ecological anthropologists may be due to this comfortable fit between Descola's argument and both camps' current assumptions.

Descola reserves his harshest criticisms for adherents of ecological approaches, whom he labels "distant heirs of Buffon [pressing the indigenous Amazonian] into service as [an] unwitting illustration of the implacable determinism of ecosystems" (p.2). His criticisms of symbolic approaches are considerably more muted, although he allows that "symbolic morphology...fail[s] to take into account the effect of material determination on the concrete processes involved in the socialization of nature" (p. 332, fn.1).

While he suggests that practice is irreducible to either environment or culture Descola does not theorize any key aspects of social practice that would articulate belief with activity and would be subject to variation or change. Instead, praxis remains subordinate to and derivative of a total symbolic structure. In the end, Descola's viewpoint is static and his method is additive; that is, symbolic interpretation is supplemented with time allocation and productivity measurements.

His most essential measurements aim to show that resources would be available for all Achuar to inhabit the riverine zone and maintain current settlement and subsistence patterns (implying that those who remain in the interfluvial environment do so because of cultural

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choice). He also aims to show that in both the riverine and interfluvial habitats Achuar, irrespective of gender, do not work as much as they could and still, they do not eat all the food they produce, i.e., they overproduce. Descola also shows that productivity is a function of skill and labor intensity rather than time because all Achuar workers, both male and female, riverine and interfluvial inhabitants limit their work to between 4 hours and 6.25 hours/day. While female gardening effort varies between averages of 1 hour 25 minutes and 2 hours 52 minutes per day, this variation is not correlated with the ratio of productive to dependent members in a household.

One of the problems with the measurements is that both Descola and ecological anthropologists appear to assume that an environment's productive potential exists in the absence of any human activity. If one takes a deterministic view, different productive potentials should give rise to or at least permit the appearance of different social and cultural forms. However, the crux of Descola's argument is that while biotopes and their productive potentials are different, this has not produced differences in Achuar social forms or culture. The problem is that while Descola documents some differences in productivity between the riverine and the interfluvial habitats, in the symbolic realm he asks us to assume what must be documented, i.e., that culturally and socially the two areas are indistinguishable.

We learn that 1,250 Achuar inhabit 2,800 km<sup>2</sup> of riverine habitat while 750 inhabit the 8,500 km<sup>2</sup> of interfluvial forest and that riverine men spend almost as much time fishing as they do hunting, while their interfluvial counterparts spend more than twice as many hours per day in the hunt. The claim that these differences are unimportant rests on an acceptance of facts that Descola does not document at all, namely that there exists no significant cultural or social differences among Achuar inhabiting the two habitats. At a point where we ought to be able to look at the relationship between practical activity, the environment, and culture, we are asked to accept without question the view that a uniform symbolic ordering of the world exists among people interacting with different environments, performing different activities (e.g., different fishing techniques and proportion of fish in the diets in both areas), and subject to no common political or social organization above the level of what Descola calls the "endogamous nexus," the neighboring houses from whom spouses and allies are sought. One might reasonably ask why such a situation, apparently existing for centuries, has not given rise to a great deal of cultural variation.

By not distinguishing between different sorts of practice, Descola implies that all meanings and activities and socialization experiences are equally important in their overall contribution to the "total social fact" of Achuar ecology. The structured improvisations of practice seemed to be derived from but not to contribute to the total social fact of ecology. Thus when Descola contrasts the riverine and interfluvial Achuar, the notion of practice disappears from his account and he relies on standard measurements of subsistence effort set against a presumably uniform cultural backdrop shared by all Achuar. The main theoretical problem, of course, has less to do with documenting productivity or environmental variation and more to do with perceiving and documenting variation in the symbolic structuration of the world and the dialectic between cultural understanding and practical activity. Formulation of any concept of social or cultural variation is dogged by inattention to the difference between the cognitive or structuralist model of the world and the organized movements of calories and nutrients within an ecosystem and the inability to theorize the meaning of variation in either sphere.

The inability to place the variation of measured quantities within a conceptual framework leads to a serious problem in evaluating what is meant when Descola speaks of "uniformity" in practices, since all measurements in fact reveal a range of productivity and time expended. In the end, as attention to Descola's discussion shows, what are important for him are limits rather than variation. In other words, variations in protein capture or horticultural productivity are seen to be unimportant if they do not fall below a hypothetical minimum. Likewise, variations in time expended are not regarded as significant unless they exceed an even more arbitrary maximum. Practice, of course, is implicitly offered as an escape from this impasse, but, as we will see, does not figure in Descola's conclusions.

There is one curious exception in which Descola claims that a quantitative measurement hints

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at a cultural principle. This occurs when Descola discovers through time allocation studies that both men and women work only a few hours a day, regardless of their competency and efficiency, and regardless of their riverine or interfluvial location. In the absence of any native testimony on the subject, he infers the existence of a shared “representation of a limit on labor that should be expended” (p. 295). While the range of average hours worked varies less than 2.5 hours, it is unclear if the argument would hold if, for example, variation was found to be in the 3 hr. range or some other quantity. Descola apparently rejects any number of hypotheses in which the amount of labor expended may be an epiphenomenon of other aspects of the labor process, including the division of labor and the meshing of one person’s effort with other social activities. If the time quantity in question shows similarities across riverine and interfluvial environments, Descola assumes the similarity must be eminently cultural in origin. This logic by which quantity of labor time measured by the investigator is reified into a cultural representation of the Achuar must be carefully examined because on it rests Descola’s argument that production is ultimately constrained by cultural rather than ecological factors. He suggests that the limiting of work that one may legitimately perform may “constitute a determining factor for explaining what is customarily called the homeostasis of productive forces in archaic societies” (p. 295). The danger of tautology seems great: a quantitative result (hours worked) becomes construed as a cultural principle, and, assuming the form of a principle, it becomes a cultural mechanism whereby production (i.e., hours worked) is limited and homeostasis created.

Descola’s assessment of the relative contribution of culture and the environment, as previously stated, rests on a notion of the environment as something external to society. The interpretation of his quantitative data thus seem to contradict his careful examination of the way natural processes form a part of society and the interpretation offered by the Achuar themselves. That is, there is a tension in Descola’s analysis between his naturalistic observations and symbolic analysis and his use of measurements and notion of environmental constraints. In his use of “ecological limits” the environment becomes transformed into an abstract constraint or potential, little more than a substrate upon which social regularities may take hold and flourish.

To strike a blow against environmental determinism Descola resurrects the environment/culture opposition and merely reverses the arrow of causality. Thus in his discussion of manioc “overproduction” in both riverine and interfluvial biotopes, Descola concludes that there is no advantage to be gained by cultivating the fertile alluvial plain. “So whether in the area of labor or in the domain of resources management, under-exploitation of productive capacities is determined by social and cultural specifications, not by ecological limits” (p.313). Now presumably any kind of human activity is determined by cultural specification rather than ecological limits • even “overexploitation,” environmental destruction and activities whose environmental outcomes are hard to discern. Such an assertion as Descola’s, if made at the beginning of a study, would only suggest that all human activity is meaningful activity. As a conclusion Descola’s statement is more properly interpreted as an assertion of the superordinate role of human meaning over environmental factors within human ecology, rather than as an assessment of the interplay of meaning and environment.

However, in common with environmental approaches that Descola criticizes he shares an adherence to “limiting factors” approach in which limits can be defined in the absence of concrete human activity. Thus he only needs to prove that nutrition within the riverine and interfluvial biotopes is above some postulated minimum to assert the unimportance of environment as opposed to biology. For instance, the “average daily protein intake is 76 g/person in the interfluvial houses, compared to 119 g in the riverine houses. It is true that 43 grams seems an enormous difference, but only if such a deficit causes the interfluvial Achuar to fall below the fatal threshold of 27.45 g, which is not the case” (317).

Descola parts company with determinists in his consistent (and apparently literal) use of “choice” throughout his work. He seems to be suggesting that when absolute impoverishment or starvation does not loom humans have choices in how to apportion their activities and, when

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possible, they will try to realize their values in accordance with cultural understandings. Thus we can see Achuar ecology as a result of a persuasive and pervasive symbolic ordering of the world which Achuar choose to follow. Limits are important because in their absence the preexisting symbolic model may be given free reign and is apparently stable as well.

It might be sufficient to recall Godelier's response to the idea that every society chooses its culture, "Indeed! Societies and cultural systems are not individuals; they are not invented by any one person" (Godelier 1994, 103). That is not to say, however, that choices are never made. Individual households (or their head or groups of brothers, etc.) chose to live in riverine or interfluvial districts. Why they do so may be an interesting question (it is the one Descola chooses to highlight on p. 62) and yet it is clear that this question need not be answerable with reference to environmental variables. Warfare, attachment to place, proximity to familiar trading partners, in short, more or less historical factors, all spring immediately to mind as reasons why a particular Achuar may want to live in a particular spot. In fact, Descola seems to me to use a sleight of hand to argue with cultural ecologists, namely, environmental variables must explain everything (i.e., they must constrict human choice so that cultural models become irrelevant), or they explain nothing as cultural imperatives are formed "largely independent of material constraints" (p. 285)!

As expressed in the final chapters, Descola's conclusions are not predicated on a consideration of practice but on the lack of material constraint on the expression of Achuar symbolism. Rather than adding to our understanding of symbolism, the plethora of ecological data seem to be meant to bludgeon environmental determinists into submission • or to hoist them on their own petard of measurements as it were • by demonstrating that ecological limits do not exist. In the process, though, the materiality of culture, the ability of practical activity to change the world, and the human propensity to reflect on our own activity and its results are muted. The exegesis of Achuar cosmology and the ecological measures remain unreconciled. In the end, the result of a work that begins with a desire to overcome the opposition between ecological and symbolic approaches seems to be precisely to strengthen the opposition between them.

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[1] For an alternative formulation to such an assumption cf. Levins and Lewontin 1985 and Lewontin and Levins 1997.