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Society Culture and Environmental Adaptability in Central and South America

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This paper constitutes an in-depth and comparative review of three recent anthropological studies of environmental adaptability in Central and South America. In an attempt to overcome the dualism of former ecological anthropology, Arizpe, Paz and Velßzquez (1996), Wilbert (1998), and Santos-Graneros and Barclay (1998) bring nature and society into a common framework aimed at understanding human adaptation, as well as the changing relations of human societies to natural environments. The paper discusses the ideas and arguments contained in these three books by focusing on the cultural dimensions of human adaptation to the environment. It then examines the local and global patterns of resource management. The paper concludes with a few remarks on how to link anthropological research on indigenous survival in the context of deforestation and modernization with policy recommendations.

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The environment has become the focus of increasing scientific interest and mounting public concern over the past decade. Not without reason; the scale of human impact on our world has increased dramatically during this century, and changes wrought by our activity threaten human welfare, as well as the survival of other species. It is generally felt that good academic research on the environment must be inter-disciplinary. Knowledge gained by physical and biological science is essential, but not sufficient to understand the driving forces underlying environmental change. For this, we need to know more about the political, economic, legal, cultural and ethical dimensions of environmental issues (Rival 1998). Anthropologists, who examine the way in which different perspectives on human nature, the natural world, society and individual rights influence behavior towards the environment, have, therefore, played a special role in the study of the environmental effects of specific patterns of economic activity, of social and political practices, and of institutional arrangements (Ellen and Fukui 1997). The three books under review explore, each in its own way, the environmental consciousness and practices of Central and South American forest dwellers as they are shaped by different belief systems, religions, political ideologies and cultural knowledges. As such, they represent good examples of current anthropological studies of the environment. In an attempt to overcome the dualism of former ecological anthropology, these three books bring nature and society into a common framework aimed at understanding human adaptation, as well as the changing relations of human societies to natural environments. They are, in Bill BalÚe's (1994:1) terms, biocultural inquiries, or studies in the ways in which culture and the environment interpenetrate each other. Wilbert's study of Warao religion explains why humans have chosen to live in the Orinoco delta, an environment naturally unfit for human life, and how they use their culture to make it livable. Combining economic history with a sociological perspective, Santos-Granero and Barclay examine the economic development of the 'Selva Central' (high jungle, 1500 meters above sea level) of Eastern Peru. They focus on regional land use patterns, survey an impressive number of case-studies, contrast the economic strategies adopted by colonists and indigenous peoples, and highlight the role played by intense demographic pressure on the land in environmental degradation. Arizpe and her collaborators explore the reasons that have led the inhabitants of the Lacadona Forest in southeastern Mexico to participate actively in the rapid ecological degradation of their land. Why is this habitat, used sustainably by humans for centuries, now the object of large-scale deforestation? In which ways are the livelihoods that depend on this ecosystem threatened? What consciousness do Lacandons have of the degradation processes, and what can they do to render the exploitation of their environment sustainable?

For Lourdes Arizpe, who remarks that "the use of natural resources has a great deal to do with the way in which societies are reproduced" (p. 34), these questions encapsulate the contribution anthropology can make to the study of sustainability. For anthropologists who examine the new concept of sustainability in the light of earlier debates on social reproduction, sustainability essentially means continuity. In other words, social sustainability is a system of relationships within societies that ensures a form of social reproduction that will not increase pressures on the natural environment. Social reproduction depends on the relationship between social organization and ecology, a relationship examined from a cultural viewpoint by Wilbert, and on the basis of a study of 'global' and 'local' forms of land use and management by Arizpe and her collaborators.
Santos-Granero and Barclay choose to focus their discussion of sustainability (and lack of it), not on

the link between environmental and cultural variables, but, rather, on political factors and on the cumulative effect of historical processes.

Cultural dimensions of human adaptation to the environment Wilbert's wonderfully written account of Warao weather religion demonstrates the importance of culture in environmental adaptability. Wilbert's central thesis is that the Warao Indians of the Orinoco Delta have used religion to convert a climatologically adverse region into a habitat viable for human occupation. The book gives an account of the historical factors that forced the Warao to adapt to such a hostile environment, of the cultural means they have used to cope with it, and of the ways in which this adaptation has shaped their distinctive culture. Chapter 1, with its impressive survey of the Orinoco Delta's geographical and climatic characteristics, scientifically demonstrates the harshness of weather conditions in this region of strong winds, sudden storms, thunder, dangerously high tides and heavy seasonal rains. One major and direct effect of the climate on the delta's ecology, and, by way of consequence, on Warao subsistence economy, is that moriche (Mauritia flexuosa) male palms start flowering simultaneously with the first rains in May, which causes the stem starch (or sago), the Warao's main source of food, to disappear. The Warao, who summarize this ecological fact as "the more rain, the less sago," associate rain with anger, hunger, illness and death.

But the inhospitable swamps of the Orinoco Delta have allowed for the Warao's survival in the post-Conquest era. There, they were protected from cannibal raiders, enslavers and European-introduced diseases. It is one of the paradoxes of adaptation and successful reproduction that harsh and hostile natural environments can become zones of refuge and development. Religion, Wilbert argues, is essential for such a transformative adaptation. It alone endows humans with the means, however symbolic, yet real and with material effects, to increase their power and control - in this case, the power to control the elements and manipulate weather spirits. Religious climatology, the basis of Warao culture, organizes Warao society according to a ritual order which, through chanting and dancing, subordinates life-threatening calamities to life-sustaining transformations - of plants into food, trees into wood, or illness into well-being. Chapter 3 gives details of the Warao's complex weather rituals, and Chapter 4 shows how Warao rain shamanism is at once rooted in native South American cosmovisions, and the syncretic product of colonial Spanish mission cultural influences.

Of particular interest in these two chapters are the discussions of the traditional ancestor cult linked to the sago harvest ritual, the way in which the production of stem starch was organized and conditioned by its ceremonial use, and the remarkable continuities between theWarao temple store and the colonial store house. Both were geared to the maintenance of large supplies of sago, held primarily for religious purposes, and redistributed by religious leaders. In fact, Wilbert argues that it is the commonality of ends and means between Warao society and the 17th - 18th century Capuchin missions which has enabled the uninterrupted survival of Warao pre-agricultural practices (p. 145; see also the equivalence between colonial and Warao institutions charted in Table 5.1 p. 241). Wilbert goes so far as to assert that "the concentration of extraordinary power in the hands of the rain shaman is itself a carry-over from the position of the colonial corregidor, whose modern counter-part the rain shaman seems to be" (p. 244). Such novel thinking about the close and lasting

links between food production, ritual, politics, economy and social life makes it clear that the ecological adaptation of Amerindians cannot be studied independently from its historical context. As Steward (1946) argued decades ago, peoples of the Americas adapted to their natural environments by adapting to their historical circumstances.

This is a complex and convincing account, and a very original analysis of the ways in which one unmistakably Amazonian culture has been forced by history to adapt itself to a hostile environment, which, in turn, has shaped its religious beliefs and ritual practices. It can appropriately be contrasted with Betty Meggers's (1996) work on environmental variation and adaptation, which maintains that Amazonian societies have been severely limited by environmental constraints, and, more particularly, climatic factors. Wilbert by contrast has shown that if Warao culture has been shaped by the climatic conditions prevailing in the Orinoco Delta, it has by no means been limited by them. This book, the product of years of thinking anthropologically about the Warao, demonstrates the uniqueness and continued relevance of the anthropological approach to the nature-society interface.

Wilbert skilfully synthesizes historical, environmental and ethnological data and shows the influence exercised by local ecology on culture. However, his determination to prove the latter may constitute the limit of his analysis. It is clear from the rich and invaluable ethnographic information on mythology and ritual practices collected by Wilbert that Warao conceptions and representations of rain lords, weather demons and other anthropomorphic beings part of the weather lore are as dualistic as most Amazonian religious beliefs. Wilbert rightly relates Warao beliefs about, for instance, the perpetual hostility between the two main directional winds, two mortal enemies, with other antagonistic dual forces, such as the force of destruction against the force of regeneration, and oppositional pairs such as the Bororo's bope and aroe (Crocker 1985), which roughly correspond to the Western notions of essence and process. Is it because climatic conditions are so harsh in the Orinoco Delta that blowing, and more generally the "pneumatic ritual complex" (p. 172), is primarily directed against storms and chanting primarily used to repel the rain? It seems to me that, whatever the specifics of their environment and its ecology, all Amazonian societies invent or recreate the duel between the forces of abundance and life and those of destruction, want and death. Weather shamanism may be telling us less about life conditions in the Orinoco than it does about the dialectical and dualist relationship humans entertain with animal masters and the less natural spirits, which Eduardo Viveiros de Castro (1992) chooses to call 'gods,' as in Greek mythology. This would explain why practices and knowledge were not fundamentally transformed with colonialism. Ideas about pollution, contamination, or fertility continued to be developed with reference to objective environmental facts, as well as to Amazonian social specifics. Weather religion, like any other Amazonian cosmological system, is first and foremost a social philosophy; ecological knowledge is never detached from deeper reflections on the nature of the social. For Reichel-Dolmatoff (1996:1; see also Descola 1996, Arhem 1996, Jara 1997, and many others), the logic of South American ethno-ecology is very different from Western ecological theories and methodologies because it is monist, and, as such, best analysed as a system of socio-ecological relationships. As Descola (1992, 1996) has convincingly argued, dualisms pervade such relationships, but do not oppose culture to nature, as it is the case in much of Western tradition.

Local versus global patterns of resource management Culture as values and views about the environment and its destruction also has a place in the study by Arizpe et al. The relation between nature and culture in this region of southeast Mexico bordering with Guatemala is perhaps best illustrated by the revealing answer given by a peasant woman asked to define nature: "I wouldn't know, I'm not educated" (p. 38). She then explains, as many other people in the area do, that nature is given to humans by God The Creator to use and enjoy. Religious cosmologies can have the same definite, taken for granted character as natural laws. This may explain why the inhabitants of the Lacadona Forest continue to reproduce behaviours which are detrimental to their survival.

The rainforest discussed by Arizpe, Paz and Velßzquez is not that of aboriginal peoples who still retain their cultural heritage, cosmogonic myths and ancestral values systems expressed in rules and rituals, but, rather, that of national and international development, road building and hydroelectric dams, logging and cattle ranching. Montes Azules, the Biosphere Reserve for Humanity at the heart of the Lacadona Forest, is an important initiative to protect the bio-diversity of the Chiapas region, one of the poorest in Mexico. It is surrounded by Lacandon and Chol Indians and mestizos, whose slash-and-burn cultivation and cattle ranching contribute to the region's advanced deforestation.

This interdisciplinary study is essentially based on surveys and directed interviews with landowners, farm workers, cattle raisers, housewives, professionals, and civil servants from seven communities: four communities of indigenous people who migrated fairly recently to the area, two during the seventies and two during the 1980s; two mestizo peasant communities; and three urban subgroups (low-income; high-income; and cattle ranchers) of one of the local towns. Their views and practices constitute the local level, which is analyzed in contrast to the global level, comprising the policies and activities of regional and national governmental organizations, extractive companies, and aid donors.

The book starts with a discussion of the different approaches to global change proposed in natural sciences and in social sciences (Chapter 1), retraces the history of the Lacadona rainforest, particularly the events linked to the recent timber exploitation and colonization phase (Chapter 2), and then examines the concept of sustainable development in the light of local perceptions of the natural environment, the process of deforestation, and the construction of human agency and responsibility (Chapter 3). This book must therefore be read as a contribution to the field of political ecology (Hecht and Padoch 1989, Stonich 1993, Little et al 1987 to cite a few).

The growing importance of political ecology approaches to the study of the interaction between society and the environment results directly from the impact of global economic forces on the world's tropical rainforest areas, and, more particularly, on Central and South American rainforests, which are being redefined as the new frontiers for the extraction of timber, oil and minerals. The following quote by Louis Emmerij, Special Advisor to the President of the International Development Bank (IDB) and responsible for IDB's Social Agenda Policy Group, perfectly illustrates this tendency: "Liberalization of imports, deregulation, privatization of most state-owned enterprises, and radical reform of the government sector would stabilize and improve macroeconomic conditions, strengthen market forces, and bring about achievement-oriented competition and the specialization of the economies through pursuit of the optimal participation in

the global market place" (Emmerij 1997:14). Many commentators have discussed the implications of economic specialization for Latin American countries. Comparative advantage for countries such as Colombia, Peru or Ecuador, which are set to displace the Middle East as the preferred source of US oil, actually means the intensification of natural resource extraction for export. Arizpe and her collaborators note a shift in development policies in the Chiapas from promoting agriculture and cattle raising in the 1960s to encouraging sustainable forestry, conservation management and eco-tourism in the 1990s. This change in policy needs to be understood in the context of major shifts in the world trade order. The shift from an agricultural and livestock frontier to a logging and mineral frontier in the Central and South American tropical rainforests has not primarily been dictated by a new ecological consciousness about the cultural and biological importance of these regions which have held a key place in the Western imaginary since - at least - the eighteenth century, but, rather, by new economic imperatives. While the comparative advantage of southeastern Mexico is no longer agricultural production (now understood to be highly destructive for the environment), logging and the extraction of minerals and oil are seen as ecologically viable economic alternatives, as long as they can be shown to be "sustainable." The political economy of natural resources extraction, the environmental and social consequences of this type of extractive development, and the representations held by local people on large-scale extractive activities, are all domains to which anthropological studies contribute. Arizpe, Paz and Velßzquez see anthropology as an essential discipline for the study of what social scientists and developers call sustainable development, for it looks at the ways in which global trends affect local practices. Their aim is to demonstrate that environmental change does not result from the direct relationship of an individual to the natural environment. Instead, the choices of individuals and their behaviour toward nature are shaped and channelled by pre-existing conceptual frameworks, as well as by the matrix of social relationships in which each individual's group is embedded (p. 93). In other words, their ambition is to have a global perspective on the human dimensions of environmental change, so as to contribute to the development of norms which will allow for the development of the world as one world, as wished in the Brundtland Report (1987).

Chapters 4, 5 and 6 discuss interview and survey data focussing on the local perceptions of urban environmentalists, regional government officials, members of the World Bank and other outsiders concerned with the future of the Lacadona rainforest. Internal differences in views between indigenous and mestizo people, men and women, government officials and community leaders are mentioned in passing. Local definitions of bio-diversity and change are said to be at variance with those found in official discourses. To the question 'What is the world's greatest danger?' people have answered war and poverty far more often than deforestation or overpopulation. Here too variations are reported between poorer and more wealthy informants, as well as between men and women. Deforestation was more often recognized as a source of concern in the two communities settled in the forest since the 1970s.

In Chapter 5 we learn that poor rural dwellers do not feel especially guilty, vulnerable or responsible for the deforestation and ecological degradation of their land. Those interviewed seem perfectly aware of the environmental harm caused by logging, but feel that government authorities, which have overall responsibility for economic development, are to blame for deforestation. They should

propose economic alternatives to local people (see Stonich 1993 for similar observations in Honduras). Government officials, in contrast, unanimously answered that the government was actively working at promoting conservation and proposing alternatives. Arizpe and her collaborators identify three main positions - the conservationist, the developmentalist and the fatalistic - which are evenly distributed among the local population, regardless the gender, ethnicity, religious affiliation, or socio-economic level of the respondents. They also found that, despite the criticisms mentioned above, government intervention and policies were seen as the number one condition for conservation. They conclude that deforestation is not perceived as a problem because ecological sustainability is not socially perceived as the long-term basis for the economy of rural communities. The loss of bio-diversity and the ecological imbalances which are already occurring and are visible in some areas are perceived as isolated events which have nothing to do with ecological or economic processes. Local people tend to assess deforestation more as an issue that concerns outsiders and interventionists, whose motives and interests they are suspicious of, than as an issue that really and directly concerns their future welfare.

The objectives and intentions of, and the questions raised by, Arizpe's study are legitimate. However, the book reads as a fairly superficial and hastily written report. The reader is left with the impression that the local information on which the study is based was not collected through long-term fieldwork based on participant-observation techniques, but, rather, through RRA (rapid rural appraisal) methods. Moreover, the data are presented in a condensed and abbreviated form, which leaves the reader wondering whether the strength of the study was not partially undermined by the superficiality of the analysis. Finally, the argument that anthropology is the best discipline to study global change, since anthropology is "global in scope and intent", is interdisciplinary in its basic assumptions, and aims to understand peoples and their interactions with the natural environment in the present as well as in the past (p. 17), is ill-served by the lack of bibliography and index, and the paucity of comparative materials. Santos-Granero and Barclay, whose approach to deforestation and land erosion is markedly different from Arizpe's, stress macro-economic and political factors over cultural ones in explaining the unsustainable development and serious environmental degradation of Peru's Selva Central. On the basis of remarkably detailed empirical studies, they argue that environmental degradation in this region has wrongly been attributed to productive activities such as logging and commercial agriculture. In their view, environmental degradation does not result directly from the development of economic activities that are ecologically damaging, but, rather, from the dramatic intensification of land use linked to the predominance of small holdings (minifundization), a phenomenon which they link to historical processes. Chronicling the regional development of the Selva Central from the 17th century to the present, they show the ways in which the colonial expansion progressively influenced land tenure patterns, political institutions and the emerging ethnic consciousness of the native population, and resulted in a comparatively more sustainable kind of development. It took three hundred years for the Selva Central - which, unlike many parts of the Amazon, is not a 'periphery'- to become a dynamic and well integrated economic region of Peru, producing most of the fruits consumed in urban areas, as well as coffee for export. Because of the region's key role in the national economy, and because of easy market access, demographic pressure on cultivated land is very high, leading to over-exploitation and to fragmentation in increasingly smaller holdings. Furthermore, the Yanesha and Ashaninka Indians,

who represent approximately 20 per cent of the region's rural population, and who actively participate in the regional market economy, have intensified their agricultural activities, both for subsistence and for commercial production, in order to secure their political autonomy and preserve their distinct ethnic identity, both as food producers and as natural resource extractors (see in particular p. 295).

In conclusion, Santos-Granero's and Barclay's study, by combining a global economic perspective and a detailed research of regional land-use patterns over time, demonstrate the emergence of a distinctive regional economy with specific patterns of increased poverty and environmental degradation, which cannot be explained as the result of the direct interface between the 'local' and the 'global', as in the Lacadona forest case. This study thus challenges both the Amazon boom-bust frontier thesis (see also Cleary 1990), and the corollary view that indigenous peoples are simply the victims of exogenous forms of development (see also Fisher 2000).

Cultural and social aspects of environmental adaptation The three books under review explore the relationship between social organization, culture and ecology. While Wilbert examines the cultural dimension of human adaptation to the environment, Arizpe, Paz and Velßzquez evaluate the impact technological change has on human interactions with the environment. Following the French geographer Deler (1986), Santos-Granero and Barclay argue that irreversible environmental degradation was caused by colonization and poverty in a region where ecological conditions are much more favorable to agriculture than in other parts of Amazonia. This fact must be explained in terms of economic processes structuring space over long periods of time.

Together, these three books attempt to bring nature and society into a common framework in order to understand adequately the nature of adaptation, as well as evolving patterns of people/environmental interaction. Wilbert uses scientific knowledge about climatic conditions in the Orinoco Delta to legitimate and give validity to the Warao's religious and cultural obsession with the adverse climate prevailing in their land. Arizpe takes scientific explanations of environmental degradation as the base line against which to measure local perceptions and understandings, with the view to help policy makers design policies which better address the gap between expert and local knowledge. Her study, in this sense, offers an interesting contrast to the much quoted work of Fairhead and Leach (1996). Whereas the former finds expert knowledge to be valid and local knowledge to be misconceived, the latter shows exactly the opposite. Santos Granero and Barclay do not counterpoise social anthropology and the natural sciences, but, rather, use anthropological insights to navigate through, interpret and analyze historical and geographic information, and quantitative data pertaining to the domain of agricultural economics.

In different ways, these three books support Rappaport's (1967) claim that traditional, decentralized social systems tend to develop means of regulating local ecosystems which are better geared to sustainability than modern economies. With their clear focus on the differences between local and global patterns of resource management, they belong to the growing body of studies of indigenous adaptations to tropical rainforest ecosystems that emphasize the cosmo-political dimension of human ecology and adaptation (see Sponsel 1995 for the Amazon region). Although

none of the books under review focuses exclusively on indigenous survival in the context of deforestation and modernization, each draws conclusions that unambiguously link research results with policy recommendations, thus demonstrating that if environmental adaptation continues to form an important part of anthropological research in the Americas, it is no longer understood restrictively in terms of the narrow adaptationist questions raised by earlier cultural materialists, for no one now doubts that the relationship between human societies and their natural environments is dialectical, interactive and historical (BalÚe 1994, 1998). Furthermore, by demonstrating the importance of unifying knowledge about the environment and the necessity of developing integrative approaches to modeling and thinking about complex systems, they open the path for future research on environmental change and 'resource use and abuse' (Guha 1994). Such research will no doubt put greater emphasis on how to differentiate scientific facts about the environment from forms of environmental knowledges which are "mythologized as scientifically correct" (Stott and Sullivan 2000: 7).

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