

---

# Ethnogenesis, Regional Integration, and Ecology in Prehistoric Amazonia

---

## Toward a System Perspective<sup>1</sup>

---

by Alf Hornborg

---

This paper critically reviews reconstructions of cultural development in prehistoric Amazonia and argues for the primacy of regional and interregional exchange in generating the complex distributions of ethno-linguistic identities traced by linguists and archaeologists in the area. This approach requires an explicit abandonment of notions of migrating “peoples” in favor of modern anthropological understandings of ethnicity and ethnogenesis. Further, the paper discusses the significance of such a regional system perspective on Amazonian ethnogenesis for the ongoing debate on the extent of social stratification and agricultural intensification on the floodplains and wet savannas of lowland South America. It concludes that the emergence of Arawakan chiefdoms and ethnic identities in such environments after the first millennium BC signifies the occupation of a niche defined in terms of both ecology and regional exchange but also that it transformed both these kinds of conditions. In these processes, ethnicity, social stratification, economy, and ecology were all recursively intertwined.

ALF HORNBERG is Professor and Chair of the Human Ecology Division at Lund University (Finnngatan 16, 223 62 Lund, Sweden [alf.hornborg@humecol.lu.se]). Born in 1954, he received his Ph.D. from the University of Uppsala in 1986 and has taught at Uppsala and at the University of Gothenburg. He has done field research in Peru, Nova Scotia, the Kingdom of Tonga, and Brazil. His current research interest is the cultural and political dimensions of human-environmental relations in past and present societies, particularly from the perspective of world-system analysis. Among his publications are *Dualism and Hierarchy in Lowland South America* (Uppsala Studies in Cultural Anthropology 9) and *The Power of the Machine: Global Inequalities of Economy, Technology, and Environment* (Walnut Creek: AltaMira Press, 2001). The present paper was submitted 7 III 04 and accepted 26 X 04.

[Supplementary material appears in the electronic edition of this issue on the journal's web page (<http://www.journals.uchicago.edu/CA/home.html>).

1. This work, as part of the European Science Foundation EURO-CORES Programme OMLL, was supported by funds from the Swedish Research Council and the EC Sixth Framework Programme under Contract no. ERAS-CT-2003-980409. Many people have encouraged my interest in indigenous Amazonia over the years, including Kaj Århem, Bill Balée, Philippe Descola, Peter Rivière, Anne Christine Taylor, and Eduardo Viveiros de Castro. For valuable ad-

*If archeologists and ethnologists will develop an awareness of the kind of assistance they can render to each other, then the only result can be profit to both specialties and the advancement of the general field of anthropology.*

— BETTY MEGGERS AND  
CLIFFORD EVANS, 1957

To Europeans, the vast, seemingly impenetrable rain forests and swamps of Amazonia have long represented the epitome of virgin, chaotic nature. In recent decades, however, anthropological and archaeological research has presented a completely different picture. For thousands of years, the tropical lowlands of South America have been populated by many different cultures and societies that have left their marks on the landscape. I would like to review some of the evidence that has contributed to this shift of perspective and to offer an interpretation of the processes that, over the millennia, have generated the cultural diversity of indigenous Amazonia. This interpretation is based on a synthesis of ecological, economic, and cultural perspectives on the emergence and interrelations of the different ethnic groups involved. A fundamental point of departure is the recognition that Amazonia in the first millennium BC was part of a continentwide trade network and that a variety of phenomena, including ethnic identity, linguistic differentiation, cosmology, stylistic diffusion, warfare, kinship, marriage strategies, stratification, subsistence, and environmental change, should to a considerable extent be understood as products of the dynamics of this larger system.<sup>2</sup>

The reconstruction of Amazonian prehistory<sup>3</sup> raises issues of general theoretical interest for our understanding of the emergence of domestication, sedentism, and social stratification in several parts of the prehistoric world. The focal questions seem almost universally the same: What kinds of social processes are signified by the

---

vice and assistance in the context of the present project I am indebted to Inez de Aguilá, Sven Ahlgren, Bill Denevan, Love Eriksen, Bo Ernstsson, Rafael Gassón, Christian Isendahl, Juliana Machado, Betty Meggers, Daniel Morales, Eduardo Neves, Monica Panaifo, Edith Pereira, Andreas Persson, Jim Petersen, Helena Pinto Lima, Colin Renfrew, Santiago Rivas Panduro, and Per Stenborg. I also thank five anonymous reviewers for useful comments.

2. This view of Amazonia draws inspiration from the application of “world-system”-type perspectives to precapitalist societies (e.g., Chase-Dunn and Hall 1991, Schortman and Urban 1992, Sanderson 1995, Denemark et al. 2000). Although the need for consideration of regional and interregional relations and linkages has considerable longevity in archaeology (see Wilmsen 1972, MacNeish, Patterson, and Brownman 1975, Sabloff and Rathje 1975, Earle and Ericson 1977, Fry 1980, Francis, Kense, and Duke 1981) and is often recognized as crucial to an understanding of cultural variation in Amazonia (see Heckenberger 1996:426; Viveiros de Castro 1996:188), attempts to interpret societal development in pre-Columbian South America in terms of “world-system” dynamics have been few, tentative, and mostly confined to the Andean area (Gassón 2000, Hornborg 2000, La Lone 2000). Nor have studies of “world-systems” or “interaction spheres” in archaeology generally concerned themselves with ethnicity.

3. My use of the concept of “prehistoric” does not imply that Amerindians were ever a “people without history” (Wolf 1982) but simply denotes the period of social development for which no written records are available.

appearance of domesticates, permanent settlements, long-distance exchange, and evidence of status differentiation? How are the geographical distributions of various elements of material culture—such as ceramic styles or subsistence technologies—related to ethno-linguistic or other divisions recognized by prehistoric populations, and what do these divisions in turn signify? It is my hope that tracing the ethnoarchaeological continuities in the Amazonian material will provide sounder foundations for interpretation than are usually available in the archaeology of “Neolithization”<sup>4</sup> and that the similarities in the material record will prove significant enough to warrant consideration of possible parallels with other areas. I believe that generalization may indeed be possible at the abstract level of issues such as the relationship between material culture, language, and ethnic identity, the relationship between ethnicity, economy, and ecology, and the relationship between trade, social hierarchy, kinship, sedentism, and intensification of resource use.

We should begin by rejecting the image of Amazonia as pristine wilderness. The physical evidence alone forces us to reconceptualize the region as in some respects a *cultural* landscape. Studies in historical ecology suggest that more than 12% of the supposedly pristine Amazonian rain forests are anthropogenic in origin in the sense that they would not exist in their present form without human intervention (Balée 1993:231). Detailed studies of landscape change among the Kayapó and Ka’apor in Brazil (Posey 1985; Posey and Balée 1989; Balée 1993, 1994), the Waorani in Ecuador (Rival 1998), and the Nukak in Colombia (Politis 2001) have revealed how even the unintentional deposition of seeds and nuts from wild plants can generate new geographies. In different parts of Amazonia, long-abandoned settlements and gardens constitute important resources for contemporary indigenous groups (cf. Oliver 2001:72–73). In both dry and wet savannas in Brazil and Bolivia, anthropogenic “islands” of forest (such as the *apêtê* of the Kayapó) illustrate how human influence under certain conditions can enhance rather than reduce biological diversity. Through intentional and unintentional selection of species, Amazonian hunter-gatherers have for several millennia been shaping their rain forest environment. More-

over, environmental conditions even in Amazonia can be locally modified by humans to an extent that makes it difficult to argue that the tropical environment precludes the emergence of complex societies based on intensive exploitation of natural resources (Neves 1999:225).

Extensive areas of dark, anthropogenic soils (or anthrosols) called *terra preta de índio*, generally densely littered with fragments of pottery, suggest large, sedentary settlements of considerable longevity along the major rivers (Neves 1999:222–23; Petersen, Neves, and Heckenberger 2001; Denevan 2001:104–10; Lehmann et al. 2003; Glaser and Woods 2004). These finds appear to corroborate the earliest historical reports, for instance, from Orellana’s expedition down the Amazon in 1542 (Carvajal 1934), which predate what appears to have been a period of massive depopulation following the introduction of European-derived epidemics. Sixteenth-century European explorers were impressed by the populous chiefdoms lining the banks of the Amazon and farming its periodically inundated, sediment-rich floodplain or *várzea* (see Hemming 1978, Roosevelt 1993, Porro 1994, Carneiro 1995).<sup>5</sup> Judging from discoveries of earthworks such as raised fields (*camellones*), mounds, and causeways in the llanos of Bolivia and Venezuela, significant tracts of wetland savanna were also reclaimed for intensive agriculture and habitation (Denevan 2001:215–90; 1991). Add to this the remains of settlements with defensive ditches in various areas (Neves 1999:222; 2001:286; Heckenberger 1996; Heckenberger, Petersen, and Neves 1999; Petersen, Neves, and Heckenberger 2001:97, 99), the many discoveries of prehistoric cemeteries with large funerary urns (see Guapindaia 2001), and the more than 300 finds of rock art in Brazil alone (Pereira 2001) and it will be obvious that Amazonia was thoroughly *inhabited* in 1492. Yet, by the end of the eighteenth century, following the ravages of epidemics, slavery, and European colonization, hardly a trace remained of the once populous chiefdoms of the floodplains.<sup>6</sup> These were among the first indigenous societies to succumb to epidemics and slave raids, and their material culture, dominated by organic materials such as wood, fibers, skin, and feathers, has left little for the archaeologists but fragments of pottery. Only in the most isolated, upriver areas, such as the Vaupés, eastern Peru, and upper Xingú, were fragments of indigenous societies able to survive into the age of ethnography. As a consequence, European travelers in the nineteenth and

4. The term “Neolithic Revolution” or “Neolithization” is misleading in several ways, but the prehistoric processes which it denotes—that is, the intensification of resource use based on domestication of plants and animals and the emergence of stratified societies—constitute real challenges for archaeological research not least because such processes on different continents seem to have certain similarities. What I mean by “Neolithization” is not the *origin* of crop cultivation, which by this time had already occurred in Amazonia for several millennia (Oliver 2001:65–66; Heckenberger 2002:118; Neves et al. 2003:34), but a relatively sudden intensification of agriculture in conjunction with the emergence of sedentary, densely populated, and stratified societies. It is important to recognize the gradual domestication of food plants such as manioc as a process distinct from and generally much earlier than “Neolithization” in this sense. Following traditional usage, however, authorities such as Donald Lathrap have characterized the Amazonian domestication of manioc as a first step in the “Neolithic Revolution” of the New World (cf. Neves 1999:225).

5. As Denevan (2001:103–4) observes, the human settlements themselves would have been located not on the regularly flooded plains but on the 10–20-m-high bluffs in the vicinity.

6. There are scholars who estimate that the pre-Columbian population of Brazil alone may have reached 3 million (Hemming 1978:487–501). Other scholars regard such estimates as much too high, suggesting instead that all of greater Amazonia (i.e., the lowlands of Brazil, the Guyanas, Venezuela, Colombia, Ecuador, Peru, and Bolivia) originally harbored at most 2 million (Meggers 1992). Regardless of the pre-Columbian figures, Hemming’s estimate of fewer than 100,000 indigenous Amazonians in Brazil in 1978 implies a reduction by over 90%.

twentieth centuries have been inclined to perceive the tropical lowlands as the very antithesis of culture.<sup>7</sup>

### Meaningful Places: Fragments of a Prehistoric Arawakan Cartography

In order to reconstruct the ways in which prehistoric Amazonians may have perceived and engaged with their regional environment, we might begin by considering the role of place-names among contemporary indigenous groups. The Gê-speaking Suyá of central Brazil, for instance, inhabit a familiar landscape rich in memories, meanings, and reference points (Seeger 1977:353–55). When he joined a group of Suyá for a canoe trip, Anthony Seeger discovered how essential it was for them to know the names of significant places along the rivers. Like a Suyá child, he was taught a number of anecdotes and other oral history connected with the different places and was expected to memorize their names. He recounts a list of 46 toponyms that were pointed out to him during a single trip and adds that the list would have been longer if he had not already been acquainted with some of the territory traversed. Of these 46 names, 12 refer to places where specific kinds of game are abundant, 17 to particular events in the lives of elder Suyá, and 10 to geographical peculiarities such as river bends and rapids. Seeger notes that new names are continuously generated and older ones may be forgotten but older men generally know more names than younger men. He concludes that the naming of places serves to “socialize and familiarize” an extensive geographical area and offers a cultural map consisting of both history and practical knowledge of where to find food and other resources.

As it can safely be considered a universal human practice, we must assume that a similar kind of mental cartography has preoccupied all the populations that have inhabited Amazonia over the millennia. For our present purposes, an interesting aspect of such cartographical consciousness is its regional extension in space. This has recently been highlighted by the documentation of certain ceremonies among Arawak-speaking groups in the northwestern Amazon (Hill 1993, 2002; Vidal 2003). Here, on the margins of the Amazon and Orinoco Basins, Arawak-speakers have for millennia mediated a lively trade that has connected the central Amazon with the Caribbean in the north and the Andean highlands in the west. The proclivity to trade, forge alliances, and maintain far-flung fields of identification is commonly represented as a cultural peculiarity of Arawak-speaking groups throughout their vast, if fragmented, area of distribution from the Antilles to Bolivia (Hill and Santos-

7. Influential scholars such as Alexander von Humboldt (1769–1859) were convinced that the rudiments of civilization that could be encountered in Amazonia were the results of cultural intrusions from elsewhere, doomed to deteriorate in the tropical environment (see Barreto and Machado 2001:241–43). Twentieth-century anthropologists and archaeologists such as Julian Steward and Betty Meggers have offered similar interpretations (Meggers and Evans 1957, Meggers 1971).

Granero 2002).<sup>8</sup> An important element in their maintenance of a geographically dispersed Arawakan identity, it seems, may have been the recurrent ceremonial recitation of historically significant place-names. Among the Wakuénai of the Içana and Guainia tributaries of the Río Negro, Jonathan Hill (2002:236–37) has documented a list of ceremonially chanted toponyms that form a chain reaching from the mouth of the Orinoco over the Río Negro all the way to the mouth of the Amazon. These named places are often referred to as the homes of mythical ancestors (in particular Kúwai, the first human) but reflect a living knowledge of riverine geography that is undoubtedly connected to ancient Arawakan trade routes.

As signs for meaningful places, toponyms are merely words and in societies without writing risk vanishing with the people who use them. A more tangible and less ephemeral species of signs is the many petroglyphs and rock paintings that have been discovered in various parts of Amazonia (Pereira 2001). The densest concentrations of rock art are along the upper tributaries of the Río Negro (particularly the Vaupés), some of the northern tributaries of the central Amazon (Urubu, Uatumã, Erepecuru), and the large tributaries in the southeast (Xingú, Araguaia, Tocantins). The concentrations in the northwestern Amazon (Vaupés) are of particular interest, as this is an area where we have access to unusually detailed ethnographic information. Local Arawak-speakers say that their ancestors carved the petroglyphs “when the rocks were still soft” to commemorate mythical events and persons such as Kúwai (Zucchi 2002:208–9). Tukano-speakers in the area have also assisted anthropologists in deciphering the petroglyphs of the Vaupés. They have for centuries lived in close interaction with Arawaks, which has resulted in a cultural affinity that was no doubt accentuated by their joint escape upriver to evade European colonialism, slave raiders, and epidemics (Hill 1996b:158–59; Aikhenvald 1999b; Santos-Granero 2002:35–36; Heckenberger 2002:1111).<sup>9</sup> Tukanoans thus share the Arawakan preoccupation with distant, named places commemorating the movements of their ancestors (see Árhém 1981:122–26), and the Tukano-speaking Barasana have identified one of the petroglyphs on the Pirá-paraná River as Nyi, the mythical place where the first humans were created (Pereira 2001:220). Such ethnoarchaeological connections are not restricted to the significance of archaeological remains in

8. Thus, for instance, it was an Arawak-speaker (Lokono) who provided the Moravians in Surinam with “a continentwide digest of the location of various ethnic groups and their associated political relationships with each other” (Whitehead 2002:73 n.10, referring to Staehelin). In southeastern Peru, the historical memory regarding a common, Arawakan identity in some cases appears to be more shallow (Gow 2002), but Arawak-speakers here appear to share a similar preoccupation with “writing history into the landscape” (Santos-Granero 1998).

9. The relative priority of Arawak versus Tukano in the northwestern Amazon appears to be a contested issue. According to some accounts, Arawak-speakers dominated the area long before the Tukanoans arrived in the Vaupés (Hill 1996b:159), while other accounts suggest the reverse (Aikhenvald 1999b:390–91).

contemporary indigenous mythology but include direct continuities in iconography and material culture. Anthropomorphic petroglyphs by the Vaupés, for instance, are identical to the figure of the mythical *yagé* mother that the Barasana carve into the floor of the *maloca* (long house) on ceremonial occasions (Hugh-Jones 1979:78).<sup>10</sup> Similar continuities have been documented on the upper Xingú. Iconographic affinities have also been proposed between petroglyphs and prehistoric ceramics, for instance, along the upper Madeira and at Monte Alegre and Maracá on the lower Amazon (Pereira 2001:227–28). Such comparisons may one day help us generate more detailed hypotheses about the emergence and diffusion of distinct cultural traditions in prehistoric Amazonia. At this point it will suffice to observe that petroglyphs in Brazil can be divided into two fairly distinct traditions that extend throughout vast areas north and south of the Amazon, respectively (Pereira 2001). The northern tradition is dominated by anthropomorphic figures, the southern by zoomorphic designs. The northern style extends into Colombia, Venezuela, and the Guyanas (Pereira 2001) and even into the highlands of Ecuador and northern Peru (Williams 1985, Polia Meconi 1995). Considering the connections with Arawakan cartography ethnographically documented along the upper Río Negro (see Zucchi 2002:209), it may not be unreasonable to suggest that much of this rock art may reflect the propensity of Arawaks to mark, name, and memorize significant places along their extensive trade routes.

The broad distribution of the Arawakan linguistic family contrasts with the more consolidated distribution of other large language families in South America, such as the Tukano, the Pano, the Carib, and the Gê.<sup>11</sup> In contrast with the “predatory” cosmology attributed to other Amazonian groups (see Viveiros de Castro 1992, 1996; Descola 1993, 1994; Árhém 1996), the Arawaks’ ethos emphasizes peaceful relations with other Arawak-speakers even over great geographical distances (Santos-Granero 2002). The prohibition of endo-warfare has been codified in ritualized greetings serving as reminders that, whatever their genealogical or geographical distance, Arawaks do not kill each other (Renard-Casevitz 2002:130).<sup>12</sup> Arawaks have also shown a characteristic willingness to incorporate other ethnic groups into their communities, as is exemplified by the history of the upper Río Negro

10. *Yagé* is the local name for the hallucinogenic vine *Banisteriopsis*, which is used, for example, in male initiation ceremonies (Yurupari) focused on a set of sacred flutes or trumpets that may only be handled by men. Similar sacred trumpets also occur among Arawaks (Hill 2002) and were encountered by the Portuguese on the lower Amazon, giving Rio Trombetas its name (Gomes 2001:148). Yurupari is the Nheengatú (Tupí-based trade-language) name for Kúwai (Vidal 2002:268).

11. The Tupí language family was also very widely dispersed but made up of two contiguous blocks on either side of the Gê, one dominating the area south of the main Amazon River and the other occupying the entire east coast of Brazil south of the mouth of the Amazon.

12. According to Renard-Casevitz, Campa chiefs meeting for the first time traditionally say, “We are Asháninka [*a-shaninka*: *a* = inclusive we; *shaninka* = origin of humans] and the Asháninka do not kill each other.”

(Hill 1996*b*, Aikhenvald 1999*b*, Neves 2001) and the upper Xingú (Heckenberger 1996:255, 259, 262–63, 420; Seki 1999) since preconquest times. Such cultural institutions have undoubtedly been significant for their capacity to integrate remote areas of the South American lowlands into a common, continentwide trade network. From their point of origin somewhere in the northwestern Amazon, Arawak-speakers during the second millennium BC expanded northward along the Orinoco to the Caribbean and south along the Río Negro to the central Amazon (Heckenberger 2002:104–7). From the Amazon area, Arawakan languages continued to spread southward along the Purús and Madeira Rivers to the lowlands of Peru and Bolivia, where Arawak-speaking groups established themselves as middlemen in the trade between the lowlands and the Andean highlands.

The pervasive presence of Arawak-speakers, with their characteristic cultural emphasis on river navigation, trade, intensive agriculture, hierarchy, and geographically extended identities, undoubtedly played a crucial role in the emergence of a regional exchange system in prehistoric Amazonia. The Arawak phenomenon, however, poses a number of theoretical and methodological problems yet to be resolved. To what extent can archaeological remains of material culture such as ceramic styles be identified with specific ethno-linguistic groups? To what extent can linguistic groups be assumed to represent ethnic entities? To what extent can ethnic groups be assumed to represent some kind of demic, biological-genetic continuity over time, as implied by conventional categories that tend to reify “peoples” or “cultures”? A new synthesis of Amazonian prehistory will require not only a careful consideration of existing data but also a theoretical perspective that adequately accounts for the relations between material culture, language, and identity.

### Economy, Ecology, and Ethnicity in a Regional Perspective: The Significance of Trade

Until recently, anthropological attempts to account for cultural variation in Amazonia in processual terms have resorted to notions of environmental determinism, diffusion, migration, or combinations of these factors (Schmidt 1917; Nordenskiöld 1930; Meggers and Evans 1957; Steward and Faron 1959; Lathrap 1970; Meggers 1971; Brochado 1984; Oliver 1989; Zucchi 1991, 2002; Wilson 1999; Myers 2004). For several decades, however, most Amazonianist anthropologists have been less concerned with comparative or regional understandings of indigenous cultures over time than with what Christopher Crocker (1977:256) has called the “tautological hermeneutics” of individual local groups in the ethnographic present. Against this background, the recent appearance of a volume on the comparative history of Arawakan societies (Hill and Santos-Granero 2002) is very gratifying. The challenge for a renewed concern

with diachronic cultural processes in a regional perspective is to take due account of earlier concerns with ecology, diffusion, and migration while acknowledging more subtle and intangible factors such as politics, exchange, identity, and the autonomous logic of symbolic systems emphasized by most modern anthropologists.<sup>13</sup>

The best way to go about this, I believe, is to begin by assuming that cultural and linguistic variation in Amazonia has been generated through a continuous, dynamic interaction between ecology, economy, and ethnicity (fig. 1). Various natural environments have afforded particular populations different options regarding subsistence, economic specialization, and exchange with other groups, and these economic activities in turn have modified the environment as well as provided foundations for ethnic identity construction. Viewed as a regional system of exchange, Amazonia had by the first millennium BC developed a differentiated political-economic structure in which the geographical positions of specific populations contributed to shaping the roles that they came to play within this system. It must nevertheless be emphasized that the indigenous groups engaged in this exchange should be viewed not as passive recipients of impulses from either their economic or their ecological environ-

ment but as agents creatively developing their own cultural responses to the economic and ecological niches that were available to them. It is precisely their status as agents or *subjects* that obliges us to include ethnic identity construction and historical self-consciousness as central factors in our account. Ethnic identity is a product of the dialectic between externally attributed and internally experienced qualities, often closely interwoven with traditional modes of subsistence and the specific kinds of landscapes within which they are conducted (Barth 1969). "Ethnogenetic" processes (cf. Renfrew 1987, Hill 1996a) therefore involve ecology and economy as well as culture, language, politics, and history.

The point of departure of any account of the ecology of Amazonia must be the fact that it harbors the largest contiguous rain forest in the world (approximately 5 million square kilometers) as well as the world's most voluminous river (with a flow of water 5 times greater than that of the Congo and 12 times that of the Mississippi). The area is customarily described as composed of 98% *terra firme* (older, poorer, and slightly higher land) and 2% *várzea* (fertile, periodically inundated floodplains along the shores of major rivers). The ecology of the Amazon Basin is actually much more diverse and complex than is suggested by this simple distinction (cf. Moran 1993), but the fertile sedimentary soils of the *várzea* in any event seem to have been a scarce and coveted resource for prehistoric populations. Intensive cultivation of maize and peanuts may have been conducted on the floodplains as early as the first millennium BC (Roosevelt 1993; Oliver 2001:65–66). In addition, these same riverbanks offer the greatest abundance of fish, turtles, manatees, and other aquatic resources. Historical sources indicate that the floodplains were densely populated and intensively exploited when the first Europeans traveled down the Amazon River in 1542, mentioning series of huge settlements obeying a paramount chief, extensive cultivation, and numerous turtle corrals (Car-

13. With obvious reference to Roosevelt (1994), Viveiros de Castro (1996:195) writes: "As to the hopes of a theoretical 'new synthesis,' I believe that any unification still lies somewhat ahead. Although researchers from opposite traditions, united by the unanimous desideratum of transcending the classical antinomies between nature and culture, history and structure, political economy of change and analysis of monads in cosmological equilibrium, 'mentalism' and 'materialism,' and so on, are certainly—and auspiciously—edging closer, it is difficult not to see the persistence of attitudes that were characteristic of earlier phases of the discipline." It seems a paradox, I would add, that the anthropological preoccupation with cosmological "monads" to such an extent has eclipsed the far-ranging perspectives of earlier generations (e.g., Schmidt, Nordenskiöld, Tello, Steward, Meggers, Lathrap, scholars who allowed themselves to sense connections between Cuba and the Beni and between Chavín and Marajó) in the very decades that have seen the birth and growth of "world-systems" analysis.

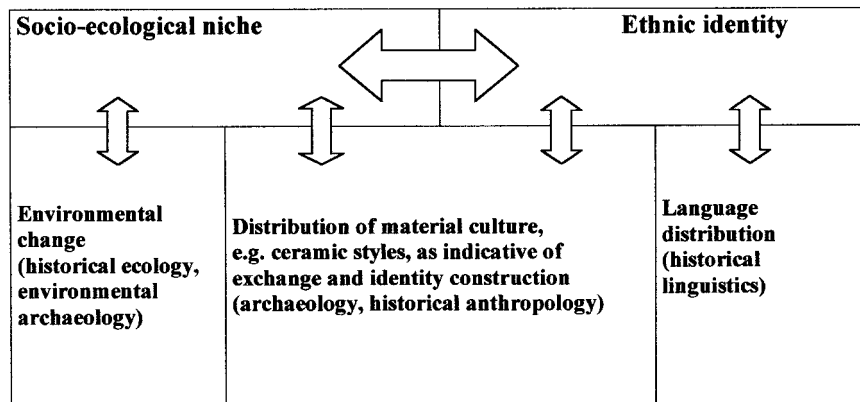


FIG. 1. The recursive relation between socio-ecological niche and ethnic identity construction, indicating the main categories of traces left by such processes in prehistory and the different academic fields required to recover them.

vajal 1934; Porro 1994). Archaeological excavations in the vicinity of Santarém and Manaus have confirmed significant prehistoric population densities, but the actual size of individual settlements is a contested issue. Roosevelt (1993:274) believes that some sites may have had tens of thousands of inhabitants, while Meggers (1992:35–36) considers such concentrations ecologically infeasible.

The occurrence of complex, stratified societies along the main rivers of prehistoric Amazonia should not, however, be reduced to a direct reflection of the fertility of their floodplains. These rivers were simultaneously the main arteries in a continentwide trade network the extent of which we have only begun to appreciate. Access to rare prestige goods from remote areas was, here as elsewhere, an important foundation for ritual and political-economic authority. Such authority, in turn, was what enabled chiefs to maintain densely populated settlements and persuade their followers to intensify the exploitation of natural resources (Heckenberger 2002: 118).<sup>14</sup> Although most of this trade undoubtedly consisted of organic plant and animal products that had no value for Europeans and quickly decomposed in the tropical climate, leaving no traces in either the historical or the archaeological record, there is plenty of early historical as well as archaeological evidence for such long-distance exchange throughout Amazonia (Lovén 1928; Gade 1972; Lathrap 1973; Oberem 1974[1967]; Roth 1974[1924–29]; Camino 1977; Lyon 1981; Myers 1983; Renard-Casevitz et al. 1986; Boomert 1987; Burger 1992; Santos-Granero 1992; Whitehead 1993, 1994; Dreyfus 1993; Arvelo-Jiménez and Bjord 1994; Hill 1996b; Gassón 1996, 2000, 2002; Kurella 1998; Taylor 1999; Shady 1999; Renard-Casevitz 2002).

Although inferences from historical evidence about precolonial conditions are always risky, the complex ways in which many of these trade relations reflect long-established and altogether *indigenous* demands and consumption patterns often suggest time depths antedating 1492. For instance, green stone amulets (called *muiráquitã* on the lower Amazon and *takourave* in the Guianas) were traded for gold objects and other products from the Vaupés, the Orinoco, and the Roraima (Boomert 1987; Whitehead 1994:38). These amulets were often shaped like stylized frogs and may have been connected with a frog cult in eastern Amazonia (Whitehead 1993: 295–96).<sup>15</sup> From three main manufacturing areas—coastal Surinam, the lower Amazon (Nhamundá-Trom-

betas-Tapajós),<sup>16</sup> and the Virgin Islands—they were traded widely and used, for instance, as prestigious ornaments in women's necklaces and as a medium of elite ceremonial exchange, including bride-price and death compensation (Boomert 1987:36–41). Representations of what may be *muiráquitã* on ceramics from Santarém, where many such amulets have been found, suggest that they may also have been used as ornaments on women's headbands (Gomes 2001:141).<sup>17</sup>

Historically, three extensive trade networks converged on the central Orinoco llanos (Hill 1996b:149–50; Spencer 1998:109). From the north and east, Caribs came to trade blowguns, arrows, baskets, arrow poison (*curare*), dyes, and pearls for shell beads (*quirípa*), turtle oil, smoked fish, gold, and salt. Arawaks traded forest and savanna products for gold, salt, and cotton textiles from the Chibchan chiefdoms in the northern Andes, and in the south they traded, among other things, gold and *curare* for shell beads, turtle oil, and smoked fish. Shell beads were used both as prestigious ornaments and as a medium of exchange. They were particularly in demand among Arawak-speakers such as the Achagua in the Orinoco area and were still being produced at the beginning of the nineteenth century by the Otomac in Uruana, on the central Orinoco, where people from all over the llanos regularly came to trade (Gassón 2000:595). Notable in all this trade is the occurrence of foodstuffs. The high population densities and intensive food production on the floodplains should in part be understood against this background. Significant portions of the fish, turtles, and even cassava were evidently produced for export (Whitehead 1994:36).

The significance of regional trade networks for the formation and reproduction of economically and ecologically specialized ethnic groups can hardly be overestimated. In eastern Peru, the salt cakes traditionally produced by the Campa of the sub-Andean *montaña* have served as a medium of exchange along the trade routes reaching deep into Amazonia (Renard-Casevitz 1993; 2002:131–36). Arawak-speaking groups such as the Campa, the Mojo, and the Piro regularly visited the Inca capital, Cuzco, to trade forest products such as medicinal herbs, birds, and tropical hardwoods for Andean metalwork and other highland products. Chiefs among, for example, the Conibo and the Cocama based their power in part on their access to objects of silver and gold obtained from Cuzco through Piro traders (Taylor 1999:199).<sup>18</sup> Different lowland groups have been

14. In indigenous Amazonia, in particular, many anthropologists have confirmed Clastres's (1987) observation that the standard response to any pretense of authority is to walk away and set up a new village elsewhere. To understand the emergence of stratified societies in Amazonian prehistory, we therefore need to reconstruct the outlines of integrative ideologies capable of counteracting such centrifugal forces. The ceremonial life of contemporary Arawakan groups in the northwestern Amazon (cf. Hill 2002) suggests such an ideological system, embedding social hierarchy in compelling constructions of inclusive ethnic identities ultimately founded on familiar notions of consanguinity.

15. The color green, frogs, and water in much of Amazonia symbolize femaleness and fertility (Boomert 1987:36).

16. Boomert (1987:40–41) suggests that the manufacturing centers in the Nhamundá-Trombetas-Tapajós area can be associated with the archaeological complexes known as Kondurí and Santarém.

17. Another kind of lithic artifact suggesting long-distance exchange networks is the characteristic stone figurines attributed to the Kondurí culture on the lower Amazon (see Nimuendajú 2004: 136–38, figs. 48–50), which show stylistic similarities with the stone sculptures of San Agustín in southern Colombia and of Pucará and Tiwanaku in highland Bolivia (see Lathrap n.d.:17; Aires Ataíde da Fonseca 2004:30, referring to Preuss).

18. Judging from archaeological discoveries along the upper Ucayali, bronze axes from the Andes may also have served as prestige goods in the lowlands (Lathrap 1970:177–78).

specialized in specific kinds of products. For example, Arawaks in the area were known for their cotton textiles with decorative motifs or feathers woven into the fabric, canoes, and pearls, while Panoans were known for their painted pottery, mats, hammocks, and gourds (Renard-Casevitz 2002:133). Such trade reinforces ethnic boundaries while institutionalizing their transgression and cementing interethnic alliances to this day. The Arawak-speaking Yanéscha (also known as Amuesha) recognize as “real human beings” (*acheñ*) not only other Arawaks such as Campa and Piro but also riverine Panoans such as Shipibo and Conibo. Among the qualities that qualify them for inclusion in this category are their drinking manioc beer and wearing the *cushma* (p. 133). Piro count both Campa and Yanéscha as “people like us,” while marginalized Panoans such as Amahuaca and Yaminahua are classified as “wild Indians” who walk about naked and eat raw, unsalted food (Gow 2002:155).<sup>19</sup> Such moral barriers within the lowlands were generally more difficult to overcome than the ethnic boundaries distinguishing highland and lowland groups with a mutual interest in trade. Along the eastern slopes of the Andes (fig. 2), there has for several centuries been lively interaction between people of the mountains and the lowlands, for instance, between the Quechua and Aymara and the Campa, Piro, and Mojo in southern Peru and Bolivia, between the Quijos and the Omagua in Ecuador and northern Peru, and between the Chibcha (or Muisca) and the Achagua in Colombia (Oberem 1974[1967]; Renard-Casevitz et al. 1986; Taylor 1999:199–201; Lovén 1928; Kurella 1998; Gassón 2002). From Colombia to Bolivia, the primary agents of this trade have often been Arawak-speakers.<sup>20</sup>

Indigenous trade in eastern Peru, the northwestern Amazon, and the upper Xingú area has encouraged alliances and a certain degree of cultural homogenization without dissolving the ethno-linguistic identities of individual groups. On the contrary, trade and specialization should be regarded as central factors in the very emergence of such ethnic identities. Material culture is an important medium for expressing ethnic specificity but can, as we have seen, be shared by several ethnically distinct groups speaking different languages. Elements of material culture such as ceramic style are frequently adopted from other ethno-linguistic groups (see DeBoer and Raymond 1987, DeBoer 1990). There are many indications that language generally constitutes a more profound core of ethnic identity than ma-

terial artifacts (see Dixon and Aikhenvald 1991b:8; Neves 2001:267–68). In the northwestern Amazon, for instance, Tukanoans use their different dialects to define the boundaries for exogamous marriages (Sorensen 1974[1967], Jackson 1983, Aikhenvald 1999b), while speakers of various Arawakan dialects are included in the common ethno-linguistic category of *wakuénai*, “people of our language” (Hill 1996b:144). In both cases a common language is a fundamental criterion for drawing societal boundaries. To shift language is no doubt generally a more profound transformation of identity than to adopt new elements of material culture.

By implication, historical linguistics should be able to tell us important things about social processes in the past. However, substantial inferences from linguistics regarding prehistoric cultural processes in Amazonia have been few, contested, and inconclusive. Although much detailed linguistic research has been carried out in the area (cf. Klein and Stark 1985, Campbell 1997), Dixon and Aikhenvald (1999a), there seems to be little general agreement on how to interpret the results. Linguists have generally been more hesitant than archaeologists to draw processual conclusions from linguistic data. The latter (e.g., Lathrap 1970; Meggers 1987; Brochado 1984; Rouse 1986; Oliver 1989; Zucchi 1991, 2002) have been inclined to view contemporary language distributions in Amazonia as fairly straightforward reflections of past migrations and the associated diffusion of material culture such as pottery. Linguists have rightly remained skeptical of such essentializing equations of language groups, ceramic styles, and genetically coherent (demic) populations but often seem to have lacked the social theory with which to replace them. While emphasizing the ubiquity of areal diffusion through borrowing and language shifts (Campbell 1997:346–52; Aikhenvald and Dixon 1998; Dixon and Aikhenvald 1999b; Facundes 2002), their accounts of the social processes historically resulting in such linguistic change rarely make use of anthropological perspectives on ethnic identity formation in relation to regional exchange (e.g., Barth 1969; Jones 1997).<sup>21</sup> Renfrew’s (1987) modification of conventional migration theory shares Lathrap’s (1970) conviction that language distribution may reflect the expansion of agriculture<sup>22</sup> but also opens European archaeology to wider theoretical questions regarding “ethnogenesis” that have hitherto been lacking in Amazonian archaeology. Recent

19. Similar indigenous categories glossed in English as “wild Indians” recur among many Arawak-speaking groups throughout Amazonia, for instance, the Mehinaku and other Arawaks on the upper Xingú (Gregor 1990:109–10; Heckenberger 1996:249, 259, 269, 272). Such moral, hierarchical distinctions between Arawaks and non-Arawaks in some areas seem paradoxical in view of actual power relations, as in the case of the historically marginalized sub-Andean Arawaks of Peru (see DeBoer 1990, Santos-Granero 1998).

20. There are even indications that Arawak- and Tukano-speakers in the northwestern Amazon at one time maintained trade relations with Quechua-speakers in the Andes (Hill 1993:221 n. 8; Dixon and Aikhenvald 1999b:10; Aikhenvald 2002:15).

21. Dixon’s punctuated-equilibrium model of language development (Dixon and Aikhenvald 1999b:16–19) seems anthropologically naive in assuming “long periods of equilibrium” during which “each geographical zone—in the tropical forests, on the grasslands, on the mountains, and so on,” would have been inhabited by “a number of small political groups of similar size, each with its own traditions, religion, laws and language,” where “no one group or language would have substantially greater prestige than any other.” Such an image of prehistoric social conditions is difficult to reconcile with modern anthropological theory.

22. Dixon and Aikhenvald (1999b:17) and Bellwood (2001) also propose a connection between the adoption of agriculture and linguistic expansion but without necessarily involving migration.



FIG. 2. Indigenous groups (1–42) and archaeological sites (43–62) mentioned in the text. 1, Achagua (Arawak); 2, Amahuaca (Pano); 3, Aruã (Arawak); 4, Baniwa (Arawak); 5, Barasana (Tukano); 6, Baré (Arawak); 7, Campa/Asháninka (Arawak); 8, Chané (Arawak); 9, Chibcha (Muisca); 10, Chipaya (Arawak?); 11, Cocama (Tupí); 12, Cocamilla (Tupí); 13, Conibo (Pano); 14, Curucirari (Tupí?); 15, Guahibo; 16, Guaraní (Tupí); 17, Ka'apor (Tupí); 18, Kallawaya (Arawak?); 19, Kaua (Arawak); 20, Kayapó (Gê); 21, Lokono (Arawak); 22, Manao (Arawak); 23, Maya; 24, Mehinaku (Arawak); 25, Mojo (Arawak); 26, Nukak (Makú); 27, Omagua (Tupí); 28, Otomac (Arawak); 29, Palikur (Arawak); 30, Piro (Arawak); 31, Quijos; 32, Shipibo (Pano); 33, Suyá (Gê); 34, Taino (Arawak); 35, Tariana (Arawak); 36, Tarumã (Arawak); 37, Tupinambá (Tupí); 38, Uru (Arawak?); 39, Wakuénai (Arawak); 40, Waorani; 41, Yaminahua (Pano); 42, Yanesha/Amuesha (Arawak); 43, Açutuba; 44, Altamira; 45, Belterra; 46, Chavín de Huántar; 47, Chiripa; 48, Cuzco; 49, Hatahara; 50, Hupa-iyá; 51, Juriti; 52, Kondurí; 53, Kotosh; 54, Los Barrancos; 55, Manacapurú; 56, Pukará; 57, Saladero; 58, San Agustín; 59, Santarém; 60, Tiwanaku; 61, Valdivia; 62, Wari.

applications of this concept to Amazonia (Hill 1996b, Schwartz and Salomon 1999, Hill and Santos-Granero 2002) have usefully reconceptualized historical processes in the area, but its ramifications for archaeology have yet to be consistently worked out. Although there are recurrent concessions to the fluidity and provision-

ality of ethnic identities in the history of indigenous populations in the region, it has proven difficult, in practice, to abandon notions of essentialized, bounded "peoples" as coherent, persistent entities to be identified in the archaeological record (see Heckenberger 1996).



## Linguistic Distribution and Societal Structures

The archaeologist Donald Lathrap (1970:74–79) suggested that the adoption of manioc horticulture propelled the initial expansion of proto-Arawak and proto-Tupí from the central Amazon around 3000 BC, the former primarily toward the north and west and the latter primarily toward the south and east. He thought that the distribution of language families in Amazonia had been generated by an outward movement of horticulturalists from the central Amazon along the major tributaries and later also along the northern and eastern coasts of South America. This pattern of expansion, he argued, differed from, for example, that of the Pano-speakers, who appear to have moved overland across the drainage basins of the Madre de Díos, Purús, Juruá, Ucayali, and other rivers in western Amazonia (p. 81). In recent years, as Heckenberger (2002:103) observes, linguists have been able to identify probable areas of origin for Arawak (the northwestern Amazon), Tupí (Rondônia), Carib (the Guyana uplands), Gê (the central Brazilian uplands), and Pano (the borderlands between Peru and Brazil).<sup>23</sup> Tupí, Carib, and Gê all appear to have founded their linguistic identity in upland areas and originally traveled primarily on foot, as did the Panoans. This suggests a conspicuous contrast to the Arawak, with their ancient connection to rivers, canoes, and water transport (Schmidt 1917; Lathrap 1970:73–74; Neves 2001:273; Heckenberger 2002:104–6; Hill 2002:228).

The distribution of Arawakan languages suggests a pattern of expansion along the very barriers that surround and separate other linguistic families: the Orinoco, Río Negro, Amazon, Ucayali, Purús, and Madeira Rivers, the llanos of Venezuela and Bolivia, and the coastal areas of Guyana (cf. Heckenberger 2002:105–6). Considering the discovery of pottery near Santarém dating from the sixth millennium BC (Roosevelt et al. 1991; Neves 1999:219), however, it is unlikely that the highly productive floodplains and aquatic resources in these areas were unoccupied prior to the Arawakan expansion beginning in the second millennium BC. Whether earlier populations were displaced by or incorporated into the Arawakan network, the linguistic distribution maps suggest that the Arawakan expansion created ethnic wedges that contributed to the geographical demarcation of other, spatially more consolidated linguistic families such as the Carib, the Tukano, and the Pano. In some cases, it is even possible to detect how a wedge of Arawakan languages has split a language family, as in the case of the Panoan groups on either side of the Arawaks along the Purús and the Madeira (cf. Erikson 1993:55). The dispersed pockets of Arawakan dialects that have been documented along the river systems from the lower Orinoco to the upper Madeira appear to be the remains of a network of Arawak-speaking societies that in prehistoric

23. For details of these reconstructions, see Dixon and Aikhenvald (1999a).

times spanned the whole of western Amazonia. In view of their role in integrating regional exchange, these Arawak-speakers should be viewed less as ethnic “wedges” than as the social “glue” of ancient Amazonia.

Although Arawakan groups have been characterized as comparatively peaceful and as the undeserving victims of raids by Caribs and others, their societies were undoubtedly the most powerful and expansive polities of pre-Columbian Amazonia.<sup>24</sup> Their identity was based on having appropriated most of the fertile floodplains, dominated trade along the major rivers, and established densely populated and allied chiefdoms along these riverine trade routes. Several of the other Amazonian language families such as Carib, Pano, and Gê appear at least originally to have been denied access to these resource-rich areas. The difference between the river-based Arawak and the more marginalized upland groups can to this day be detected in elements of their kinship systems (Hornborg 1998:179–80). Kinship terminologies and marriage rules among most Carib, Pano, and Gê express locally endogamous, atomized, and introverted exchange relations, while many Arawak groups emphasize exogamy (cf. Gow 1991; Hill 1993:9–10; 1996b:144). In some cases, an inclination to extend the category of classificatory “siblings” codifies the encouragement of distant alliances beyond an expansive field of consanguineous kin (Gregor 1977:277).<sup>25</sup> Although Arawaks in the northwestern Amazon are generally patrilineal, the apparent expansiveness of Arawakan identity may in some areas in part have derived from an inclination among offspring of interethnic marriages to identify with their more prestigious, Arawakan parent, irrespective of whether this implied patri- or matrilineation. The Arawakan preoccupation with genealogy and extended kinship categories is rare among Amazonian societies except the Tukanoans, with whom, as we have seen, Arawak-speakers have maintained close cultural interchange for centuries. It is no doubt connected with their equally rare emphasis on social stratification and with their ambition to incorporate rather than confront neighboring groups. Archaeologically, the concern with descent and ancestors is obvious in the many finds of elaborately ornamented burial urns of probable Arawakan affiliation, stylistically distinguished as Guarita, Maracá, Aristé, Aruã, etc. (see Guapindaia 2001).

Neither Carib-, Pano-, nor Gê-speakers appear to have achieved the same degree of political centralization or social stratification as the Arawak (Heckenberger 2002:

24. The capacity of Arawak groups to expand through military conquest is exemplified by the Tariana invasion of the Vaupés (cf. Aikhenvald 1999b:390, referring to Brüzzi).

25. Caribs and Pano exemplify the typical Amazonian, “Dravidian” or “two-line” system of kin classification initially defined by Rivière (1973) as geared to bilateral cross-cousin or sister-exchange marriage and subsequently confirmed for a number of indigenous groups in the region, while the Gê-speakers approximate a similarly introverted kin-affine dualism in the spatial layout of their villages (see Hornborg 1988[1986], 1993). The equation of siblings and cross-cousins exemplified by the Mehinaku and neighboring groups on the upper Xingú is referred to as a “Hawaiian” or “generation” principle or kin classification.

115). The Tupí-speakers developed extensive chiefdoms to the south and east of the Arawakan sphere of influence, but their expansion seems to have been based more on military conquest than on trade and diplomacy (Brochado 1984).<sup>26</sup> From their point of origin in Rondônia, between the upper Madeira and the upper Tapajós, the Tupí-speakers expanded eastward and conquered vast territories south of the Amazon and in southeastern Brazil, where the Tupinambá shortly prior to the European arrival had displaced Gê-speakers along the coast (cf. Morey and Marwitt 1978:254).<sup>27</sup> A westward expansion of Tupí languages was also under way when the Europeans arrived, as Tupí-speakers had recently established themselves in a narrow zone along the upper Amazon as far west as the Ucayali (the Cocama) and the Huallaga (the Cocamilla) in Peru. The most powerful of these Tupí-speaking groups was the Omagua, which at the time of Orellana's expedition in 1542 controlled the floodplain between the Napo and Juruá Rivers. The Omagua are reported to have launched annual war expeditions up the tributaries (Lathrap 1970:152; Morey and Marwitt 1978:251). Which ethnic groups or languages the Tupí-speakers had displaced or incorporated along the Peruvian floodplains is not known, but Heckenberger (2002:122 n. 6) suggests—unfortunately without much supporting evidence—that the Omagua, Cocamilla, and Cocama were former Arawak-speakers who had recently adopted a Tupí lexicon.<sup>28</sup> In the sixteenth century, at any rate, Tupí-speaking societies controlled the southern bank of the central and lower Amazon. Although the evidence is inconclusive, Arawak-speakers may at one point have dominated the opposite, northern bank, sug-

26. An example of the kind of nonmilitaristic expansion that seems to have been generally characteristic of Arawaks is the involvement of the Arawak-speaking Piro in the trade networks of eastern Peru (Gow 2002:164). The Arawakan groups in the area presumably entered into trade alliances with other indigenous groups in pre-Columbian times in much the same way as they have more recently allied themselves with European trade partners.

27. Such non-Tupí groups in the area were often referred to as "Takupuya," a category deriving from the Tupí word for "enemies."

28. The language most closely related to Cocama/Omagua is in fact the Tupinambá-derived trade language Nheengatú (Jensen 1999: 129–31), which was widely adopted by former Arawak-speakers in western Amazonia. Jensen (p. 129, referring to Cabral) is convinced that the Cocama language is a result of a language shift from an unknown non-Tupí language to Tupinambá. Interesting little clues regarding the ethnic identity of the sixteenth-century Omagua are Carvajal's (1934) references to their exquisite polychrome pottery and, not least, Cristóbal de Acuña's observation in 1639 that the Omagua obtained this pottery from the Curucirari in exchange for cotton cloth (Hemming 1978:233). In Peru, cotton cloth has traditionally been produced by Arawaks and painted pottery by Panoans (see Renard-Casevitz 2002). The polychrome decoration of recent Panoan pottery should probably be traced to their close coexistence with the Cocama during the seventeenth to nineteenth centuries (Lathrap 1970:184; Myers 1976; Brochado 1984:304; DeBoer and Raymond 1987:128–29; DeBoer 1990:87, 103). Lathrap (1970) and Brochado (1984) have suggested a general connection between the "Amazonian Polychrome Tradition" and Tupí-speakers. It should be noted, however, that Marajó Island—the source of the earliest known polychrome ceramics in Amazonia—was inhabited by Arawak-speakers (Aruá) at the time of European contact (cf. Meggers and Evans 1957; Aikhenvald 1999a:66–69).

gesting that the main Amazon here served as an ethnic boundary.<sup>29</sup> Demographically and politically, the Arawaks in this area seem to have suffered greater losses from European diseases and slave raids than the Tupí or Carib, two ethno-linguistic groups that at this time appear to have expanded at the expense of the enfeebled Arawak. It is significant, not least for our reconstructions of linguistic diffusion along prehistoric trade routes, that the Nheengatú trade language that was adopted by Arawakan groups along the Río Negro in the colonial period had Tupí roots (Sorensen 1974[1967]:152–53; Aikhenvald 1999b:387–88; Santos-Granero 2002:35; Hill 2002:240). Although beyond the scope of this paper, it appears that the argument against simple migrationism could also be applied to the spread of Tupí languages (cf. Brochado 1984:402), which in many areas appear to have supplanted Arawak in the late precontact and contact periods.<sup>30</sup>

A regional systemic view of prehistoric Amazonia also prompts us to rethink the occurrence of warfare and the ideology of "predation" that has been posited as generic to indigenous cultures in the area (cf. Viveiros de Castro 1996). It would not seem correct to attribute a "predatory" cosmology to Arawak-speaking groups in general (cf. Santos-Granero 2002). To the extent that it has been applicable to, for example, Carib- or Tupí-speakers, this must to some extent be understood historically in the context of the disorienting demographic, economic, political, and cultural convolutions of the colonial period, involving indigenous groups in slave raids on their neighbors, competition for European trade goods, and the rivalry between Dutch, Spanish, and Portuguese in South America (see Whitehead 1990, 1992; Arvelo-Jiménez and Bjord 1994). The European arrival rapidly reorganized the entire regional system and in many areas induced complete reversals in the balance of power between ethnic groups. Seventeenth-century sources from the Orinoco mention extensive fortifications among the Achagua and other Arawaks on the floodplains, who had been decimated by their encounters with Europeans and were now

29. According to J. Alden Mason's linguistic map in volume 6 of the *Handbook of South American Indians* (Steward 1950), almost the entire northern bank of the central Amazon was originally inhabited by Arawak-speakers. In Terrence Kaufman's (1994) maps, however, this bank appears to be more or less empty at "time of contact." Considering that the worst ravages of European-derived epidemics probably occurred long before the actual arrival of European colonizers, both maps may be valid, reflecting the situation around the years 1500 and 1650, respectively.

30. Brochado (1984:402–3) writes that "the importance of the acculturation and incorporation of alien groups by the Guarani and Tupinambá . . . cannot be overstated. These processes constitute one of the most important mechanisms of population increase through colonization. . . . In many cases, acculturation and complete physical and cultural absorption of the vanquished was the end result in the long run. These processes of *guaranization* or *tupianization* included the adoption of either the Guarani or the Tupinambá pottery, which makes them identifiable archaeologically." The widespread transition from Barrancoid to Amazonian Polychrome ceramics in many areas from the lower Amazon to the Ucayali (Lathrap 1970, Myers 2004) suggests not so much migration and demic replacement as an ethno-linguistic shift from Arawak to Tupí in the centuries before and after the European arrival.

being subjected to systematic predation by previously marginal groups such as the Carib and the Guahibo (Morey and Marwitt 1978:251–53). Although archaeological discoveries of defensive ditches in various areas of Amazonia confirm that warfare was by no means a postconquest invention (Heckenberger 1996:423; Neves 1999:222; 2001:286; Heckenberger, Petersen, and Neves 1999; Petersen, Neves, and Heckenberger 2001:97, 99), in many areas it was undoubtedly exacerbated by social upheavals following the European arrival. To some extent, competition over scarce resources focused on the same kinds of things as before (e.g., prestige goods, now of European origin [cf. Gassón 2000:590]), but the conditions and rules of the game had been decisively transformed.

Although a recent and authoritative summary of Amazonian linguistics (Dixon and Aikhenvald 1999a) advocates extreme skepticism with regard to higher-level genetic groupings, several studies have suggested various degrees of affinity between the four most important language families in Amazonia: Arawak, Tupí, Carib, and Gê.<sup>31</sup> To the extent that there is a foundation for any of these studies, it would lend support to the hypothesis that at least these families are to be seen as products of regional ethnogenetic processes rather than traces of migrations from other parts of the continent.<sup>32</sup> The possible significance of ecological factors in such processes also deserves to be considered. Meggers (1982, 1987) has suggested that drought-related fluctuations in the extent of forest vegetation have contributed to the geographical distribution of different language families, some of which (e.g., horticulturalists such as the Arawak, the Tupí, the Pano, and the Carib) were originally confined to distinct forest refugia but subsequently expanded, at the expense of savanna-dwelling hunter-gatherers, with

the recovery of the rain forest as the climate grew more humid. Dixon's punctuated-equilibrium model similarly implies that linguistic families such as Arawak, Carib, and Tupí, prior to the "punctuation" represented by the adoption of agriculture, originated as the result of relative confinement within specific geographical zones (Dixon and Aikhenvald 1999b:17). However, ecological factors can be assumed to be significant for the distribution of, for example, Arawak (wetland agriculturalists) and Gê (hunter-gatherers of the dry savanna) without any reference to paleoclimatic fluctuations or ecologically induced isolation. On the contrary, an anthropological perspective on the formation of ethno-linguistic identities would emphasize ecologically induced *interaction* rather than isolation (Barth 1969). The geologically recent expansion of Arawak-speakers on floodplains and wet savannas from the llanos of Venezuela to the llanos of Bolivia over the course of a millennium and a half (see Heckenberger 2002:106–7) suggests the systematic exploitation of an existing socio-ecological niche in intensive interaction with the populations of other such zones rather than reflecting post-Pleistocene changes in biogeography or long periods of homogeneous, egalitarian "equilibrium." Furthermore, as studies in historical ecology show, the relation between ecology and cultural identity cannot be a matter of one-way causality when the biophysical environment is continuously transformed by human activity.

A convincing account of the genesis of ethno-linguistic divisions in prehistoric Amazonia needs to recognize the recursive relation between ecological and economic specialization within regional exchange systems, on one hand, and ethnic and cultural creativity, on the other. The various cultural traits and institutions that enabled Arawak-speakers to integrate long-distance trade networks in ancient Amazonia should be understood not only as prerequisites for but also as *products* of these exchange systems. Cultural patterns do exhibit a certain degree of autonomy and inertia, acknowledged in notions such as "ethos" or "tradition," but rather than replace environmental determinism with cultural essentialism we should ask how the cultural creativity of the proto-Arawak may have constituted a response to the economic niche afforded them by the opportunities of riverine trade. Heckenberger (2002:121) asserts that he does not wish to replace ecological with cultural determinism, but his recurrent references to the "underlying symbolic structure" and other "cultural features" (pp. 110–13) of the Arawaks at times seem to echo the essentialist approaches of early diffusionists such as Schmidt (1917) and Nordenskiöld (1930). Heckenberger suggests (p. 121) that if Julian Steward and his followers had "recognized the historical relationship" between the various Arawakan chiefdoms in South America, "as did Schmidt," they might have come to the "startling conclusion" that "culture, as much as ecology or demography, plays a key role in differential cultural development in Amazonia. The distributional pattern—the correlation between language and culture—is unmistak-

31. For references to some of these studies, see Klein and Stark (1985), Klein (1994), Kaufman (1994), Campbell (1997:170–205), and Dixon and Aikhenvald (1999b:11–16).

32. Geneticists have expected to find a correlation between languages and genes in Amazonia, but Cavalli-Sforza, Menozzi, and Piazza (1994:341) report that it is "very difficult to make inferences about the order of entry of the people who today speak Carib, Equatorial [Greenberg's (1987:83) macro-category including Arawak and Tupí], Ge, and Panoan, on the basis of genetic data." They add that "it seems natural to suggest that they entered in the order in which they are found in South America, those located farther south being first," implying that Panoan, "Equatorial," and Gê are of roughly the same age. This is highly improbable for several reasons. A general objection would be that the major language families in Amazonia have more "discontinuous distributions . . . than . . . is found in any other part of the world" (Dixon and Aikhenvald 1999b:1), which makes it impossible to order them in terms of spatial succession. Both Carib and Arawak, for instance, range from the Antilles to the upper Xingú. Among more specific objections would be the conclusion of historical linguists that the Panoan languages, rather than equaling Arawak or Tupí in age, indicate "a fairly shallow time-depth and recent expansion and split" (Loos 1999:227). To their credit, Cavalli-Sforza and colleagues admit that their considerations "could have more weight if there was a good correlation between linguistics and genetics in South America" but that, "unfortunately, there is not, or it has not yet been found." Earlier and similarly futile attempts to find such correlations include Stegerda's (1950) observations on the virtually identical "anthropometry" of Arawak, Carib, Tupí, and Pano.

able: Where we find Arawak speakers we typically also find social hierarchy, sedentism, and regionality.”

Although Heckenberger’s understanding of the Arawakan expansion is probably the best account to date, he does not offer an analytically distinct alternative to the conclusion of earlier diffusionists that Arawak “high culture”—“unique in the lowlands”—was “already present in the ancestral Arawakan *peoples* of ancient Amazonia” (p. 110, emphasis added). Thus he ultimately fails to bridge the theoretical gap between traditional diffusionism and modern anthropological theories of ethnicity.<sup>33</sup>

Instead of treating either ecology or culture as an independent variable, a more dynamic ethnogenetic perspective can illuminate the emergence of cultural traits in a regional and historical perspective by focusing on the historical structures of regional exchange systems rather than ecology or culture in themselves. This would seem to be fertile ground for a synthesis of processual and constructionist perspectives in the study of prehistoric ethnogenesis. Viewed from a regional perspective, as Hill (2002:229) observes, the proto-Arawakan territories around the Içana and Guainia Rivers in the northwestern Amazon were actually “centrally located” in relation to the riverine connections between the Orinoco and Amazon Basins. If this was indeed the area in which Arawakan traits and institutions originally developed, it is not difficult to imagine a close connection between their cosmopolitan ethos (cf. Santos-Granero 2002) and their role as long-distance traders. When this contagious ethos became entrenched along the trade routes, however, it would be misleading to represent its diffusion in terms of the movement of “peoples.”

### Language, Ceramics, and Prehistoric Identities: Toward a Nonessentialist Approach

A central challenge for Amazonian archaeology has long been to trace connections between ethno-linguistic groups and ceramic styles. Pioneers such as Nordenskiöld (1930) observed similarities between pottery from the Caribbean and the lower Amazon and suggested a common, Arawakan origin. Meggers and Evans (1957) discovered similarities between ceramics from the Napo River in Ecuador and from Marajó Island at the mouth of the Amazon and interpreted them as evidence of a

downstream migration of groups with Andean roots.<sup>34</sup> Lathrap (1970:150–51) reinterpreted these same similarities as the result of an upstream migration of Tupí-speakers. He went on to suggest a number of other correspondences between the distribution of ceramic styles and presumed migrations of linguistic groups, such as between various fine-line incised traditions (Santarém, Paredão, Milagro, etc.) and Carib-speakers (pp. 164–70) and between Cumancaya pottery and proto-Panoans (p. 140). More central to his argument, however, is the connection between Saladoid-Barrancoid pottery and the migrations of Arawak-speakers (pp. 112, 123).<sup>35</sup> An important link in this argument is the Guarita style from the central Amazon, which appears to be related to the Barrancoid ceramics from the Orinoco (pp. 156–59). Recent archaeological excavations at sites such as Açutuba and Hatahara, near Manaus, confirm this ceramic continuity (Petersen, Heckenberger, and Neves 2003).

Most experts today seem to agree that there is indeed a connection between the distribution of Saladoid-Barrancoid ceramics and Arawakan languages but do not share Lathrap’s (1970:112, 120) conclusion, following from his model of prehistoric migration routes, that these pottery styles originated in the central Amazon.<sup>36</sup> Oliver (1989) has attempted to find support for Lathrap’s hypothesis that ancestral Arawak-speakers brought early ceramic styles from the central Amazon northward along the Río Negro to the Orinoco, but the absence of chronologically relevant finds along the Río Negro and the Amazon contradicts such an interpretation (Neves 1999: 228–29; Zucchi 2002; Gassón 2002:270–71). The oldest polychrome ceramics in Brazil may well be the Marajó style from Marajó Island, dated at around AD 400 (Schaan 2001; Oliver 2001:62; Petersen, Neves, and Heckenberger 2001:101). Such polychrome pottery (red and black on white) also occurs along the lower reaches of larger tributaries such as the Tocantins, the Xingú, and the Madeira but generally only up to the first rapids, suggesting a connection with navigable waterways and *várzea* environments (see Meggers et al. 1988:288).

The occurrence of Guarita-related pottery on the main rivers from the lower Amazon to the upper Río Negro toward the end of the first millennium AD probably reflects intense trade relations along these waterways. Guarita-type pottery was manufactured along the entire extent of the Río Negro up until European colonization. As the whole area along the Río Negro was inhabited by Arawak-speakers (Tarumã, Manao, Baré, and others) at

33. In fact Schmidt’s approach occasionally seems more in agreement with modern understandings of ethnic identity construction and cultural hybridization than some recent accounts of Arawakan “migrations.” For instance, he made several observations on indigenous language shifts (e.g., among the Kaua and Chané) and explicitly suggested that Arawak served as a trade language in the northwestern Amazon (Schmidt 1917:19–21, referring to Koch-Grünberg and Nordenskiöld). He also emphasized (pp. 36–61) the role of elite gift exchange and (male) exogamy in the expansion of Arawakan “culture” and observed that the incorporation of non-Arawak women would have resulted in the assimilation of ceramic styles and other features from neighboring groups.

34. This interpretation was shared by Hilbert (1968). Rather than a culturally marginal region passively receiving impulses from upstream, however, the lower Amazon was clearly a major center of innovation. Pottery finds near Santarém may be the oldest on the continent (Roosevelt et al. 1991; Neves 1999:219).

35. These ceramic styles are named after the sites Saladero and Los Barrancos on the lower Orinoco.

36. In fairness to Lathrap, however, we should add that he does consider the possibility that the earliest Barrancoid ceramics originated “on the network of waterways connecting the Río Negro and the Río Orinoco,” spreading along with the Maipurán branch of Arawakan languages “mainly during the first millennium B.C.” (p. 127).

AREA	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	
South Coast, Peru													<i>Paracas</i>							<i>Nazca</i>						<i>Wari</i>							<i>Inca</i>	
North Coast, Peru													<i>Cupisnique</i>																				<i>Inca</i>	
Guayas, Ecuador			<i>Valdivia#</i>										<i>Machalilla</i>																				<i>Inca</i>	
Huallaga, Peru																																		<i>Inca</i>
Upper Marañón, Peru																																		<i>Inca</i>
Titicaca Basin, Bolivia																																		<i>Inca</i>
Cuzco, Peru																																		<i>Inca</i>
Llanos de Mojos, Bolivia																																		<i>Inca</i>
North Coast, Colombia																																		<i>Inca</i>
Magdalena, Colombia																																		<i>Inca</i>
Sabana de Bogotá																																		<i>Inca</i>
Orinoco Basin, Venezuela																																		<i>Inca</i>
Ucayali, Peru																																		<i>Inca</i>
Pachitea, Peru																																		<i>Inca</i>
Central Amazon, Brazil																																		<i>Inca</i>
Trombetas, Brazil																																		<i>Inca</i>
Tapajós, Brazil																																		<i>Inca</i>
Upper Xingú, Brazil																																		<i>Inca</i>
Marajó Island, Brazil																																		<i>Inca</i>
Northeast Coast, Brazil																																		<i>Inca</i>

FIG. 3. Approximate chronology of some relevant ceramic styles and archaeological sites in ten regions of South America, 1800 BC–AD 1500. Italics, sites or styles proposed as representing Saladoid-Barrancoid ceramic influences or for other reasons suggesting involvement in an interregional, Arawak-mediated exchange network. #, sites associated with raised fields; \*, sites associated with terra preta; /, stylistic discontinuity; M.M., Masi-cito Mound; P., Paredão. Data based on Lathrap (1970), Lathrap, Collier, and Chandra (1975), Bruhns (1994), Heckenberger (1996, 2002), Bauer (2001), Denevan (2001), Petersen, Heckenberger, and Neves (2003). The main period of consolidation of the Arawakan trade network appears largely to coincide with the so-called Early Horizon (ca. 1000–200 BC) and the most significant period of reorganization with the close of the Middle Horizon (ca. AD 1000). The Early Horizon is defined by the diffusion of the lowland-oriented Chavín style across the Andean crest and the close of the Middle Horizon by the collapse of the highland polities Tiwanaku and Wari. Rather than Amazonian developments' being viewed as repercussions of political developments in the Andes or vice versa, the two processes are better approached as recursively connected within a single system of mutual interdependence.

this time, it seems legitimate here to assume a connection between the Guarita style and Arawakan languages (Neves 2001:275). Even today, in the upper Río Negro area, there is a sharp distinction between the ceramics manufactured by the Arawak-speaking Baniwa on the Içana River and the dark, monochrome pottery made by Tukanoans on the Vaupés (p. 274; cf. Aikhenvald 1999b: 389, referring to Galvão).

Several additional indications of correspondences between ceramic styles and Arawakan languages have been presented in recent years.<sup>37</sup> For instance, Zucchi (2002) has identified a Saladoid-related ceramic complex ("parallel line incised tradition") that she suggests was manufactured by Arawak-speakers on the Içana and other upper Río Negro tributaries around 1500 BC. On the Brazilian coast just north of the mouth of the Amazon,

37. Less visible aspects of prehistoric ceramics, such as tempering techniques, may also reflect ethnic boundaries. Although *cauíxi* (sponge-spicule) tempering is generally predominant along the major rivers, *cariapé* (tree-bark-ash) appears to have been in use simultaneously during the period AD 800–1400 in geographically separate but apparently Arawak-related contexts such as the Ipavu phase on the upper Xingú (Heckenberger 1996:136–37), the Guarita phase on the lower Río Negro (Petersen, Heckenberger, and Neves 2003:252), and the Mazagão phase in Maracá (Meggers and Evans 1957:596).

Guapindaia (2001:169–71) has confirmed the connection, posited much earlier by Nimuendajú (1926:23), between Aristé-style pottery from about AD 400 and the Arawak-speaking Palikur documented both historically and ethnographically in the area. Finally, Heckenberger (2002:109) has postulated connections between Saladoid-Barrancoid ceramics and Arawak-speakers in four widely separated areas: the West Indies, the Orinoco, the central Amazon, and the upper Xingú.<sup>38</sup>

There thus seems to be little doubt that pioneers like Schmidt and Nordenskiöld are being vindicated in having suggested that the distribution of pottery styles can tell us something about the distribution of Arawak-speakers in different parts of South America (fig. 3), but the implications of such correlations are unquestionably more complex than the patterns of prehistoric migra-

38. Moreover, Heckenberger posits a connection between Saladoid-Barrancoid pottery and circular village layouts wherever it has been possible to reconstruct settlement patterns in these areas. Such "ring villages," in which a circle of extended households surrounds a ceremonial plaza have long been associated with Gê-speakers (see Hornborg 1990), but Heckenberger (2002:109) argues that they were equally characteristic of Arawaks from the Antilles to eastern Peru and the upper Xingú, and elsewhere (Heckenberger 1996:219) suggests a connection with defensive works.

tions that they and their followers (e.g., Meggers, Lathrap, Brochado, Oliver, Zucchi) have imagined. Whether or not connected to ecological arguments like those of Meggers or Lathrap, earlier models of ceramic and linguistic diffusion in Amazonia have assumed a too simple relation between diffusion and migration. It may seem reasonable to believe that actual (demic) Arawak-speaking groups brought Saladoid-Barrancoid pottery with them during their initial southeastward expansion along the Río Negro, as seems to be the consensus even among modern Arawakan scholars (cf. Hill and Santos-Granero 2002), but at the moment we have no way of knowing *what* actually expanded, whether a population or merely particular ways of talking and making pottery.

Considering the rapidity and apparent ease with which indigenous populations along the Río Negro were able to adopt the Nheengatú trade language and European utensils in the colonial era and a great number of other Amazonian examples of language shifts and interethnic cultural adoptions (cf. Aikhenvald 1999b, 2002), it is puzzling that we should continue to think about pre-Columbian cultural processes in terms of reified “peoples” migrating across the Amazon Basin. Nheengatú is spoken as a first language by some populations on the upper Río Negro to this day (Jensen 1999:127).<sup>39</sup> In view of its conspicuously riverine distribution pattern, there is a distinct possibility that the Arawakan language family (i.e., proto-Arawak) similarly originated as a trade language of prehistoric Amazonia (see Schmidt 1917).<sup>40</sup> At any rate, it should be obvious that more recent ceramic styles were able to spread quite rapidly in different directions along the network of trade routes controlled by Arawak-speakers up until the arrival of Europeans. From this perspective, at least, there is no contradiction between concluding that Arawakan languages and Saladoid-Barrancoid pottery styles originally spread eastward along the Río Negro and the lower Amazon, on one hand, and suggesting that other ceramic styles employed by Arawak-speakers at times may have spread in the opposite direction, on the other. An influential and contagious “Arawakan” identity may indeed have been founded on a fairly coherent, if provisional, constellation of traits, including language and ceramic style, but this does not allow us to draw any conclusions about population movements. Rather than continuing to reproduce

39. Nheengatú “spread throughout the whole of the Amazon basin, reaching the border of Peru in the west, penetrating Colombia on the Rio Vaupés in the northeast, and reaching Venezuela along the Rio Negro (where it is called Yeral). It is still spoken fairly extensively along the Rio Negro and elsewhere in pockets in the Amazon region” (Campbell 1997:23). Similarly, even Quechua originally spread through the central Andean area as a trading language (Schwartz and Salomon 1999:457; Torero 2002:91–105; Stark 1985:181).

40. Arawakan languages—“the geographically most extended family in South America”—“typically show more structural similarities to their neighbours than to their genetic relatives” (Aikhenvald and Dixon 1998:241). This is exemplified by the diffusion of evidentiality (“a grammatical system whereby for every statement of a certain type made in the language, the evidence on which it is based must be stated” [p. 244]) from Tukanoan and Panoan into northern and southern Arawak, respectively (p. 253).

the billiard-ball model of migrating, essentialized “peoples” pushing each other across the Amazon Basin and thus generating our linguistic and archaeological distribution maps, we should be asking ourselves what prehistoric linguistic and stylistic diffusion could tell us about communicative processes within a pan-Amazonian system of exchange relations.<sup>41</sup>

## Traces of Intensification

To dissociate the Arawakan ethos and its various stylistic markers from the notion of a biologically delineated population is not to stop asking questions about material processes in Amazonian prehistory. Whatever genes they may have carried, the Arawak-speaking potters of the floodplains in the first millennium BC were engaged in a process of social transformation that also had major ecological repercussions. The tropical landscape still carries imprints of these transformations. As in other areas of the New World (see Cronon 1983:49–51), the “pristine nature” or “wilderness” discovered by the Europeans has to a large extent proven to be a cultural landscape (see Hornborg 2001). The black (*terra preta de índio*) or dark brown (*terra mulata*) anthropogenic<sup>42</sup> soils that occur along most larger rivers are less acidic and contain more humus, nitrogen, and phosphorus than surrounding soils and are appreciated by both indigenous and nonindigenous farmers for their high fertility. *Terra preta* occurs in patches normally varying between 1 and 100 hectares in extent, with an average around 21 hectares. Some sites, however, are considerably larger, measuring 500 hectares at Santarém, 350 hectares at Juriti, west of Santarém, and 200 hectares plus 1,000 hectares of *terra mulata* at Belterra, by the Tapajós (Denevan 2001:105). Sites are typically elongated and run parallel to riverbanks, for instance, at Altamira, on the Xingú (1.8 km × 500 m, 90 hectares), and at Manacapuru, near Manaus (4 km ×

41. The ceramic style known as Guarita provides an interesting example in that it suggests a continuity in material culture that in some areas survived a major linguistic shift. Although the (Barrancoid) roots of this style appear to have been among Arawak-speakers of the northwestern Amazon (Lathrap 1970:156–57; Neves 2001:275), in southern and eastern Amazonia it seems itself to be ancestral to the so-called Amazonian Polychrome Tradition, subsequently associated with Tupí-speakers (Brochado 1984:313–21). Rather than debating whether all Guarita pottery was made by Arawak- or Tupí-speakers, we might therefore conclude that, at some point in space and time, a population manufacturing Guarita-related ceramics appears to have shifted from an Arawak to a Tupí language.

42. Experts disagree on whether Amazonian dark earths were deliberately created as a “technology” of agricultural intensification (Myers et al. 2003, Myers 2004) or merely an unintentional artifact of long-term human occupation (Balée 1992:42; Neves et al. 2003:44). Considering recent research on Amazonian dark earths and following Denevan’s (1992) observation on the excessive labor requirements of shifting cultivation using stone axes, many now agree that shifting cultivation became prevalent in Amazonia only after the European introduction of metal axes, implying that pre-Columbian horticulture in Amazonia was generally of a more permanent character (Myers et al. 2003; Mora 2003; Neves et al. 2004:44; Myers 2004:74; Denevan 2004).

200 m, 80 hectares). A recent survey maps almost 400 sites in Brazil alone (Kern et al. 2003). The deposits may be up to 2 m in depth. Most researchers agree that *terra preta* was formed in connection with dense, sedentary, and extended human habitation, indicating more permanent and often larger communities than those that have been documented ethnographically in Amazonia.<sup>43</sup> It has been proposed that the black soils are the result of human habitation, while the dark brown soils are former agricultural land (Herrera et al. 1992:102, referring to Andrade, Petersen, Neves, and Heckenberger 2001:100). *Terras pretas* are usually associated with artifacts such as pottery, whereas *terras mulatas* are not (Kern et al. 2003:73). The most fertile (black) anthrosols appear to be the result of continuous deposition of household garbage, ashes, feces, urine, bones, shells, and other organic material.

*Terra preta* begins to form at roughly the same time along the larger rivers in Amazonia a few centuries BC. At Hupa-iyá, near Yarinacocha, by the Ucayali River in Peru, the oldest deposits of *terra preta* have been dated to 200 BC.<sup>44</sup> At the large site of Açutuba on the lower Río Negro, *terra preta* may have begun to form around 360 BC. (Petersen, Neves, and Heckenberger 2001:97, 100). In view of the correlations between ceramics and linguistics mentioned above, the abundant finds of Barrancoid ceramics at both Hupa-iyá and Açutuba, as at other sites with *terra preta* along the Amazon (see Myers 2004:91), could be mustered in support of the hypothesis of an Arawak-speaking population on the intensively cultivated floodplains from at least 500 BC up to its identification as such by Europeans. These anthrosols indicate a population density that could not have been sustained with the current (shifting) agricultural practices of indigenous people in the area (Oliver 2001:73; cf. Roosevelt 1993). The evidence suggests that the floodplains of Amazonia in the first millennium BC experienced an unprecedented concentration of human population in conjunction with significant economic intensification and that these material processes were part and parcel of complex new social formations associated with what we have referred to as an Arawakan culture and identity.

Another lasting imprint of complex social systems and economic intensification in Amazonia is the earthworks that have been identified in association with pre-Columbian settlements and cultivation systems. The most conspicuous of these are the extensive drainage systems that have been discovered in the seasonally inundated wet savannas of Bolivia, Colombia, and Venezuela and in other waterlogged areas (floodplains, deltas, coastal zones, lake shores, marshes) in the Guyanas, highland Colombia, Ecuador, Peru, and highland Bolivia (Denevan 2001:215–90; Parsons 1985). In these widely separated areas, a similar method of drainage was employed, the

basic idea of which was to construct artificially raised fields to protect the crops from periodic inundations. Such raised or ridged fields have been given various names in different parts of South America, but a commonly used name is *camellones*, which was already in use in the sixteenth century by Spaniards in the Orinoco llanos and in highland basins of Colombia and Ecuador. It was also being used at least by 1674 for the famous *chinampas* of the Aztecs in Mexico, which appear to belong to the same agricultural tradition. The term *camellones*, which refers to camel humps, was obviously invented by the Spaniards after 1492 but is used to this day in the Beni area in Bolivia (Denevan 2001:217, 220, 237–38, 252). Raised fields had several functions in addition to drainage, including soil aeration, reduction of root rot, increased nitrification, pest reduction, reduction of acidity, moisture retention (in the ditches), enhancement of fertility by application of muck from ditches, facilitation of weeding, facilitation of harvest, and increase in soil and water temperatures (p. 220).<sup>45</sup>

It was not until the 1960s, following William Denevan's discovery and exploration of extensive areas of prehistoric *camellones* in the Llanos de Mojos in Beni, Bolivia, that researchers began to grasp the significance of these methods of cultivation in South America. Earlier scholars who had mentioned cultivation on "mounds" or "platforms" in various parts of South America include Métraux in 1942 (having probably received the information from Nordenskiöld), Schmidt in 1951 (Schmidt 1974 [1951]), and Sauer in 1952 (Denevan 2001:218). Schmidt had perceived a connection between mound cultivation in the Llanos de Mojos, the Titicaca Basin, the Antilles, Marajó Island, and other areas of South America, and Sauer also recognized in these mounds a pattern characteristic of the New World Tropics. The only historical information on the ridged fields in Beni that Denevan was able to locate, however, was a note by two Jesuits from 1754, and the only modern researcher who had previously observed them personally was Nordenskiöld in 1916 (p. 217). The reason these fields emerged from obscurity in the 1960s is that the patterns they create are clearly visible from the air but difficult to discover on the ground.

Similar systems of cultivation have subsequently been reported from the llanos of Venezuela and Colombia, coastal areas in the Guyanas, river valleys and waterlogged basins in the highlands of Colombia and Ecuador, the Guayas Basin in coastal Ecuador, the Casma Valley on the north coast of Peru, and the Titicaca Basin on the border between Peru and Bolivia. Their occurrence in the highlands as well as the lowlands undoubtedly reflects an ancient exchange of ideas between the two areas. Their shapes and proportions vary, but there are individual fields in the Orinoco area that are over 1 km long, some in Beni that are 25 m wide, and some by the San Jorge River in Colombia that are 2 m high. Raised fields can occur over very extensive areas, particularly

43. A notable exception is Meggers, who attributes extensive areas of *terra preta* to discontinuous occupation by small groups (e.g., 1992).

44. Whether Hupa-iyá should be considered a *terra preta* site has recently been questioned, however (Myers 2004:79).

45. The final of these functions would have been particularly important in frost-prone highland areas such as the Titicaca Basin.

in the Titicaca Basin (120,000 hectares), the lower Sinú River and the Mompós area between the Cauca and San Jorge Rivers in Colombia (90,000 hectares),<sup>46</sup> the Guayas Basin (50,000 hectares), and the Llanos de Mojos in Beni (at least 6,000 hectares). In addition to *camellones*, the Beni area features a great quantity of artificial mounds, causeways, and canals. Most of these earthworks in the Llanos de Mojos are located between the Beni and Marmoré Rivers, tributaries of the Madeira. Ridged fields have also been reported from forested areas southwest of these llanos (Denevan 2001:247).

By multiplying the known acreages of raised fields with experimentally established productivity figures, it is possible to estimate how many people they could have sustained. Experimental cultivation of raised fields in the Titicaca Basin has yielded up to 16 tons of potatoes per hectare. Such harvests would theoretically have been able to sustain almost 40 people per hectare cultivated land (Erickson 2000:336; Denevan 2001:220–22, 272). Experimental fields in Mojos have yielded 25 tons of manioc and 2 tons of maize per hectare (Denevan 2001:222, 252). Irrespective of the level of optimism with regard to nutrient yields, however, these estimates should always be tempered by the recognition that a significant portion of the harvests would have been used for feasting and brewing manioc beer rather than pure subsistence. In fact, judging from historical and ethnographical documentation of indigenous consumption patterns throughout much of South America (e.g., Goldman 1966:86, 203; Gastineau, Darby, and Turner 1979), it appears likely that such “ceremonial” consumption was a major incentive for agricultural intensification in the first place. The domestication and consumption of manioc and maize in South America have undoubtedly from the very start been involved in the maintenance of social reciprocities ranging from local kinship obligations and trade partnerships to chiefly redistribution. The taste for manioc or maize beer should therefore not be underestimated in our understandings of prehistoric agricultural intensification in Amazonia.<sup>47</sup>

46. This area was the domain of the Sinú chiefdom, famous for its goldwork. Some of the canals in Mompós have been dated to 810 BC (Denevan 2001:222).

47. It has long been common for archaeologists to refer, as does Ester Boserup, to population growth as the explanation of agricultural intensification and increasing social complexity (see Lathrap 1970). Rather than view population growth as an independent variable, however, we should ask what sociopolitical factors lie behind the emergence of larger and more sedentary concentrations of population (see Petersen, Neves, and Heckenberger 2001:101; Gassón 2002:295). In Amazonia it is evident that community size depends on the ability of political and ritual leaders to integrate greater concentrations of people, which in turn depends on ethnicity, kinship, and a hierarchical cosmology. These ideological factors of integration must nevertheless be continuously supported at a symbolic and a material level through ceremonial feasting, generally focused on the consumption of manioc or maize beer (see Goldman 1966:86, 203; Renard-Casevitz 2002:128; Gassón 2003) and the redistribution of rare prestige goods (see Heckenberger 2002:117–18; Gassón 2002:292). The latter two activities are archaeologically reflected in agricultural intensification and long-distance trade, respectively. It is therefore only to be expected that sites with evidence of intensive agriculture tend to be strategically located along

Again, various kinds of evidence suggest an Arawakan ethno-linguistic identity as the common denominator of these widely dispersed but apparently related cultivation systems. When the Europeans arrived, the llanos of Bolivia, Venezuela, and Colombia as well as the Antilles and coastal Guyanas had for a long time been inhabited by Arawak-speakers. Historical sources mention mound cultivation using digging sticks among the sixteenth-century Taino of Hispaniola and the eighteenth-century Palikur on the northeast coast of Brazil (Denevan 2001:227; Renard-Casevitz 2002:140–41). The ridged fields in the Llanos de Mojos were probably constructed by the Arawak-speaking Mojo using similar methods. Excavations of *camellones* in Venezuela have yielded ceramics that Zucchi attributes to Arawak-speakers expanding north along the Orinoco after AD 500 (Denevan 2001:226; Denevan and Zucchi 1978). The Andean chiefdoms in highland basins in Colombia, Ecuador, and the Titicaca area all maintained close interaction with various ethnic groups in the adjoining lowlands, prominent among which were Arawak-speakers. Lathrap (1970:162–63, 169–70) has interpreted the prehistoric societies of the Guayas Basin in western Ecuador as an extension, by way of an unusually accessible segment of the Andean highlands, of Amazonian cultural traditions. In his view, the *camellones* of the Guayas Basin are remains of the Milagro culture of AD 500, whose pottery (funerary urns, appliqué decoration, etc.) is reminiscent of Santarém, Kondurí, and other ceramic styles from the lower Amazon.<sup>48</sup> Lathrap (p. 169) also associates the raised fields in the San Jorge Basin in Colombia with funerary urns with Amazonian affinities. Finally, he adopts Kingsley Noble’s hypothesis that an early population of the Titicaca Basin, today represented by the Uru and the Chiripa, was an Arawak-speaking group with roots in the lowlands (pp. 72, 74). This view appears to have been endorsed by several influential linguists, including Greenberg, Suárez, and Migliazza (see Campbell 1997:189; Ruhlen 1987:373). Clark Erickson has suggested that the earliest raised fields in the Titicaca Basin were built by the ancestors of the Uru around the beginning of the Chiripa period 800–200 BC (see Denevan 2001:273), and David Browman (1980:117) has also identified

riverine trade routes (see Herrera et al. 1992, Mora 2003, Kern et al. 2003). The ceremonial consumption of beer is also abundantly reflected in finds of ceramic brewing and drinking vessels (Lathrap 1970:54–56, 85–86, 88, 100–101, 183). Once major investments in agricultural intensification and sedentism have occurred, of course, a factor that could provide powerful incentives for further demographic concentration is warfare (Heckenberger 1996:203).

48. Lathrap’s suggestion that these similarities are the result of a migration of Carib-speakers from the lower Amazon to Ecuador is less persuasive than his general observations on cultural connections between Amazonia and early coastal Ecuador (see also Lathrap, Collier, and Chandra 1975). Moreover, the occurrence of raised fields in Guayas appears to predate Milagro by two millennia (Parsons 1985:155).



the Chiripa culture with the ancestors of the Uru and the Chipaya.<sup>49</sup>

It would therefore be possible to argue that, from the beginning of the first millennium BC, more or less all occurrences of raised fields in pre-Columbian South America may have been associated with an Arawakan sphere of influence. The apparently simultaneous appearance of ridged fields in areas as far apart as northern Colombia and the Titicaca Basin around 800 BC does not support the notion of migration as a significant factor in the distribution of this system of cultivation. The earliest dates are from the Guayas lowlands of Ecuador, where Valdivia-type pottery associated with raised fields suggests a time-depth going back to around 2000 BC (Parsons 1985:155). Other dates from various parts of lowland South America include the Beni area around AD 1, the Guyanas AD 200, and the Orinoco AD 500 (Denevan 2001). Like the sequence of pottery dates, this chronology should be interpreted as reflecting not a process of migration but the diffusion of an agricultural technique along a continentwide network of wetland agriculturalists integrated by intense social exchange and a common ethno-linguistic identity.<sup>50</sup> We might even suggest

49. Some linguists (see Ruhlen 1987:373) have posited affinities between Uru-Chipaya and Kallawaya, an almost extinct language spoken by a group of traveling herbalists and medicine-men who have mediated between the Aymara and Quechua in the highlands, on one hand, and Arawakan groups in the lowlands, on the other at least since the time of the Tiwanaku culture 200 BC–AD 1000 (see Wassén 1972, Bastien 1987). Campbell (1997:23) lists Kallawaya as a trade language. Around 70% of the Kallawaya lexicon is based on the extinct language Puquina (or Pukina) (Stark 1972), which enjoyed high prestige among the Inca and has been proposed as the language of Tiwanaku (see Parsons and Hastings 1988:227). Puquina has been classified by linguists such as Payne, Derbyshire, and Torero as Arawakan (Browman 1994; Campbell 1997:23, 178–79, 190; Torero 2002). Campbell (1997:6, 189, 210) notes that Chipaya has sometimes incorrectly been called “Puquina” and rejects any affinity between them but does not explicitly object to the classification of either Chipaya or actual Puquina as Arawakan. Torero (2002:488–92) suggests that Puquina was the language of Pukará, at the northern end of the Titicaca Basin, and Uru that of Chiripa, at the southern end, and that both share an Arawakan derivation (cf. Browman 1994). If the Kallawaya herbalists, who have been peddling coca and other tropical plants in the Andes since very early times, had a historical connection to ancient Arawakan trade networks, it would fit very well into the general argument of this paper. Browman (1978) proposes that cultural development in the Titicaca Basin should be understood partly in relation to the trade in narcotic and medicinal herbs from the lowlands, and Burger (1992) offers a similar interpretation for Chavín de Huántar. According to Isbell (1988:180–81), such trade along the eastern slopes of the Andes may also help explain the iconographic affinities between the Titicaca Basin (Chiripa, Pukará, Tiwanaku), the Mantaro Basin (Wari), and the upper Marañón area (Chavín de Huántar; but cf. Burger 1992:220). Moreover, the site layouts of Chiripa and Pukará have been interpreted as transitional between the “ring” villages of the lowlands and the quadrangular layouts characteristic of subsequent Andean sites (Lathrap, Marcos, and Zeidler 1977: 10–11; Hornborg 1990:76; cf. also Lathrap, Collier, and Chandra 1975:43–45).

50. The *chinampas*, the earliest of which have been dated to around 1100 BC (Parsons 1985:157), should probably be regarded as deriving from the same continentwide communication network. Circumstances which strengthen such a connection include the early occurrence of raised fields on the Caribbean coast of Colombia, the

that the finds of riverside *terra preta* and marshland *camellones* are complementary manifestations of this same social network, reflecting the conditions of both cultivation and preservation along the rivers and in the llanos, respectively. Ridged fields suggest the adaptation of intensive agriculturalists to wetland environments of a more predictable nature than the major Amazonian floodplains, where the annual floods are much more violent. At the same time, as Lathrap (1970:29–30, 39, 160–61) has proposed, the idea of artificially raised fields may well have been inspired by the natural series of sedimentary ridges created by such floods along the rivers, as it was precisely these natural ridges that were intensively farmed by the populations on the floodplains.<sup>51</sup>

## Conclusions

The complex distribution maps tracing the linguistics, ethnography, and archaeology of Amazonia represent a daunting jigsaw puzzle. Anthropologists and archaeologists have long been struggling with the challenge of finding intelligible patterns behind the patchy indications of cultural diversity. Some have sought clues in the natural environment, others in historical processes or an autonomous, semiotic logic of culture. In this paper, the analytical platform that I have chosen as a point of departure is that of regional and interregional *exchange systems*. Exchange systems are ecologically, historically, and culturally *conditioned*, but they simultaneously generate tangible ecological, historical, and cultural *consequences*. Thus they constitute a theoretical juncture where different scientific perspectives and levels of analysis can be integrated in recursive,

presence of mound-cultivating Arawaks on Hispaniola, and indirectly even the presence of Arawakan languages on Cuba. Considering that the Maya had close Arawakan neighbors, it is interesting that some linguists have suggested affinities between Maya and Arawak (Schuller, Noble, Migliazza; see Meggers 1987:171) or even Maya and Chipaya (Olson, Stark, Hamp, Voegelin and Voegelin, Suárez; see Campbell 1997:189, 324). Although Campbell dismisses all such proposals about genetic relationships, this should not preclude the identification of significant areal affinities. To pursue the discussion of early cultural connections between South America and Mesoamerica is, of course, far beyond the scope of this paper, but the many intriguing stylistic and iconographic affinities traced by Lathrap and others (1966, 1971, 1974; Lathrap, Collier, and Chandra 1975) would be difficult to explain without the assumption of long-distance exchange networks spanning vast distances in prehistoric Nuclear America. The distribution maps for Arawakan languages may be the most tangible evidence we have of such cultural connections.

51. A similar landscape of “naturally ridged fields” appears to have stimulated intense cultivation on Marajó Island and other coastal areas in eastern Brazil (Brochado 1984:339–41). Brochado (p. 395) suggests that the spread of Tupinambá initially coincided with an ecological niche characterized by “ridge-swale topography resembling that of northwestern Marajó.” As mentioned above, however, Marajó was inhabited by Arawak-speakers at the time of European contact. Parsons (1985:161) and Myers (1992:87, 91) suggest a widespread connection between raised-field agriculture and monumental earth-moving architecture such as the mounds of Mojos and Marajó.

nondeterministic ways. The geographical distribution of natural resources, territorial boundaries, and cultural patterns of consumption are all important for the development of exchange systems, just as, again, the trajectories of exchange systems are important for environmental change, politics, and cultural identities. It is often precisely these three aspects of prehistoric social change—patterns of resource use, power structures, and delineation of cultural boundaries—that we most urgently want to reconstruct, particularly in our attempts to understand the driving forces behind transitions to sedentism and agricultural intensification on different continents.

In South America, expansive exchange networks have previously been postulated as underlying the diffusion of, for instance, the Chavín art style (cf. Lathrap 1971, Burger 1992) and the Quechua language (Schwartz and Salomon 1999:457; Torero 2002:91–105; Stark 1985: 181), neither of which is believed primarily to have involved demic migration. I have suggested that a similar interpretation can be applied to the spread of Arawakan languages and certain aspects of material culture and agricultural practices that tend to appear in conjunction with them. This interpretation is based primarily on the following facts: (1) Many and sometimes widespread language shifts (e.g., to Nheengatú) have occurred in Amazonia without involving migration. (2) The areas outside their homeland in the northwestern Amazon that first adopted Arawakan languages were, with the probable exception of the upper Xingú, already fairly densely populated by that time. (3) Arawak-speakers have long been active traders, often along the very rivers that have been postulated as their primary migration routes. (4) Arawak-speaking groups also practiced extensive intermarriage with other ethno-linguistic groups. (5) Arawakan languages spoken in different areas often show more structural similarities to their non-Arawak neighbors than to each other (Aikhenvald and Dixon 1998). (6) Attempts to find correlations between Amazonian languages and genes have been conspicuously unsuccessful (Cavalli-Sforza, Menozzi, and Piazza 1994:341).

The archaeological evidence suggests that floodplains and wet savannas in various parts of lowland South America in the first millennium BC experienced the emergence of a new kind of expansive and densely settled society characterized by extensive ethnic alliances and power hierarchies based on long-distance trade and intensive exploitation of both terrestrial and aquatic resources. The intensification of resource use should be understood partly in direct relation to trade, as some of it seems to have been production for export, and partly in relation to a rising need for surplus production generated by the consumption demands of the elite, the craft specialists, and the demographically more concentrated settlements. These demands should in turn only partly be understood in terms of subsistence, as a significant proportion of the product would have been allocated to ceremonial consumption of, for example, manioc or maize beer.

This sociocultural pattern may originally have crystallized among Arawak-speaking populations inhabiting the border zone between the Amazon and Orinoco Basins, an area that had long seen a lively trade and high density of interaction between different ethnic groups. The familiarity with rivers and river traffic initially favored the rapid expansion of Arawak-speakers downstream along the Orinoco and the Río Negro, an expansion based as much on alliance-making and the ethno-linguistic assimilation of other groups as on actual population movements. With time, the expansive inertia of the Arawakan ethos as described above was more or less dissociated from the distribution of biologically definable populations. Successively more distant groups along the waterways continued to gravitate toward the prestigious new way of life and its rewards and obligations, became a part of the Arawakan network, adopted its language, ceremonies, and patterns of consumption, and finally served as its missionaries in a continuous outward movement that spanned a millennium and a half and covered most of the continent of South America. This continentwide network absorbed and disseminated new cultural traits from the groups thus Arawakized while maintaining a recognizable core of Arawakan features including language, pottery styles, and ceremonial life. In several cases it is difficult to ascertain whether traits were adopted from neighboring groups or part of the original cultural package. Such cases include the sacred trumpets, mythical cartographies, petroglyphs, and hierarchical descent ideology shared with the Tukano, the circular villages shared with the Gê, and the raised fields shared with the Andeans. This fluidity or readiness to absorb new elements is a general hallmark of ethnogenetic processes, but a more remarkable aspect of Arawakan ethnicity is the extent to which a recognizably coherent constellation of core features has been able to reproduce itself over such vast areas and over such long periods of time (Hill and Santos-Granero 2002). A conclusion that suggests itself is that this particular constellation of traits was uniquely well suited to the task of integrating the regional exchange system of prehistoric Amazonia.

The process described above has ecological as well as political and cultural aspects. Earlier attempts to account for prehistoric intensification in Amazonia and elsewhere have generally chosen to emphasize one of these aspects at the expense of others. It would be misleading, however, to imagine that the process was in any significant way “determined” either by ecological conditions, political aspirations, or cultural idiosyncrasies. All these aspects should rather be viewed as components of a more general socio-ecological logic. The process of “Neolithization” that we can discern in Amazonia during the first millennium BC is fundamentally a *regional systemic phenomenon* in the sense that it is a crystallization of a given set of geographical, historical, and cultural conditions. This *systemic* character is reflected, for instance, in the observation that “something new” occurred simultaneously in the last

few centuries BC over vast areas of Amazonia, a manifestation of which was larger and more sedentary settlements with the capacity to generate *terra preta* (Petersen, Neves, and Heckenberger 2001:101; Neves et al. 2003:29). Abrupt changes can also be detected in several sites in central Amazonia around AD 700 (Neves et al. 2004). Local cultural discontinuities associated with the integration and transformation of continentwide exchange networks should offer possibilities of juxtaposition and correlation (fig. 3). The set of relevant systemic conditions for such synchronized developments would include the geographical distribution of natural resources such as turtles, shells, and green stone and cultural constellations of symbolically and sociologically constituted demand for such products, from the Andean demand for feather mantles and hallucinogenic plants to the central Amazonian demand for frog-shaped amulets (see Boomert 1987:34–36). Systemic conditions also include the specific geographies of navigable rivers and cultivable floodplains and the distances from and the historically given political conditions in other parts of the continent such as the Andes and the Caribbean. Finally, we must count among these crucial conditions the culturally specific motives of traders and chiefs along the rivers, which necessarily involve prehistoric Arawakan political economy, kinship systems, and marriage rules. One example of these latter factors is the use of green stone amulets and shell beads as bride-price among various groups in the Amazon and Orinoco Basins (Boomert 1987:37; Gassón 2000:589).

Ultimately, the challenge is to understand the ethnic and cultural specificity of Arawakan societies as a *product* of these ecological-historical-cultural constellations and fields of gravitation. Although the appearance of having conveyed this specificity over Amazonia by means of prehistoric migrations continues to bias much of our thinking on the Arawak phenomenon, an ethnogenetic perspective has much more to offer. It will allow us to see that the Arawakan capacity to occupy the main arteries of Amazonia should be interpreted not as an essential cultural superiority intrinsic to a specific population but as an expression of the new kinds of social relations that were selected for in the context of the regional systemic processes of the first millennium BC. An early template for such new social structures may indeed have crystallized in the northwestern Amazon during the consolidation of a core area of the emergent system, but the subsequent diffusion of such structures should be understood as a product of the integrative logic of this expanding system. The “Arawakan” niche in this system emerged because the human qualities it fostered—those of waterborne traders, cosmopolitan alliance-builders, and sedentary agriculturalists—were a requirement for regional integration. After this constellation of features had been consolidated and embodied in the cultural repertoire of early Arawak-speaking populations in the northwestern Amazon, it proved highly contagious and hugely successful from the perspective of cultural selection. This

is what the distribution maps for Arawakan languages and Saladoid-Barrancoid pottery can tell us. Meanwhile, other ethno-linguistic categories (e.g., Tupí, Carib, Gê, Pano) that emerged in opposition to this cultural repertoire were equally shaped by these processes and are in their own ways also products of an overarching regional system.

The issue raised by the Arawak phenomenon is ultimately how to understand prehistoric ethnogenetic processes in more multiplex terms than traditional notions of trait diffusion and demic migration. Arawak is a set of related *languages* that appears to have diffused along Amazonian waterways in prehistory, but it would certainly be misleading to imagine them as a set of “peoples” in the implicit biological-genetic sense of the word. Throughout Amazonia, anthropologists have discovered how easily ethnic groups have adopted basic cultural patterns from their neighbors. There is in fact as much mention of the “Tukanoization” or “Panoization” of Arawaks as of the “Arawakization” of Tukano and Pano (Hill and Santos-Granero 2002). The frequency of marriages across ethno-linguistic boundaries in most areas illustrates how illusory our (and their) notion of a “people” may be. A good guess is that Arawak-speakers in Colombia have more in common genetically with their Tukanoan neighbors than with Arawaks in Peru or Bolivia. Complete language shifts have also occurred in many areas (cf. Aikhenvald 1999*b*, 2002; Jensen 1999:129; Neves 2001:277). Against this background, it seems important to reconsider our assumptions of essentialized Arawakan peoples migrating across South America. I have suggested that we should rather view Arawak as the cultural *medium* that integrated much of prehistoric Amazonia as a regional, socio-ecological system. The expanding network of riverine Arawak-speaking societies should be seen not as the infiltration of externally derived invaders but as a phenomenon internally generated by the regional system itself: a culture of trade and communication that absorbed and disseminated traits from different parts of the continent while maintaining its focus on a core set of integrating features, paramount of which was the language itself. It is important that we not reify such fluid cultural constructs. The challenge lies in conceptualizing “cultures” or even popular notions of “peoples” as entities largely disconnected from populations in a biological-genetic sense. It obviously becomes more difficult to speak of “cultures” when we acknowledge how ethereal, constructed, and continuously hybridized they must be, but the recent renegotiations of culture theory in anthropology cannot avoid affecting our interpretations of prehistory. This acknowledgment of the ethereality of cultural identity is finally only the recognition that we as researchers are no less susceptible to the illusions of ethnic essentialism than the authors of such illusions.

## Comments

RAFAEL GASSÓN

*Centro de Antropología, Instituto Venezolano de Investigaciones Científicas, Apdo. 21827, Caracas 1020-A, Venezuela (rgasson@ivic.ve). 25 IV 05*

Hornborg's stimulating essay is an important contribution to the current debate about the sociocultural processes that shaped the Amazonian past. Clearly, there has been a trend away from traditional problems of chronology and micro-historical processes such as migration and diffusion toward new paradigms concerned with issues of prehistoric political economy, social organization, ideological systems, regional and interregional studies, and historical ecology. However, it is also important to move away from simple models of the Amazonian environment. The diversity of environments in Amazonia cannot be simplified, even for the sake of creating pan-regional models (Moran 1993). Hornborg's argument still seems somewhat attached to the two traditional environmental types, *varzea* and *terra firme*, overlooking ecological differences that are critical for understanding sociocultural developments in greater Amazonia. For instance, the differences between the floodplains of Amazonia and the lowland savannas (llanos) of Colombia and Venezuela should be stressed. Most of the models and comparisons available for studying cultural developments in the savannas are based on Amazonia, but the floodplains and the savannas represent two very different environments with their own distinctive geological, climatological, and environmental histories and ecological characteristics. The savannas have been affected in distinctive ways by specific climatic fluctuations and changing rainfall patterns. These distinctive environmental factors are important for understanding the dynamics of hydrologic conditions, in particular regarding change in the boundaries between forests and savannas (Binford et al. 1987:120; Colinvaux 1987:98; Schubert 1988:135). According to Colinvaux, the differences in geological history between the llanos and the Amazonian floodplains make it unsafe to generalize from studies done hundreds if not thousands of kilometers apart (1987:96).

This statement may be valid for sociocultural as well as for ecological studies. For instance, the existence of complex developments on the level of the chiefdom on the floodplains of Amazonia and the lowland savannas of the Orinoco is well supported by archaeological data (Roosevelt 1987). In contrast, while there is clear evidence of raised- and drained-field agriculture in the llanos (the Caño Ventosidad, Gaván, and Cedral regions, the western llanos of Barinas, Venezuela), evidence for the use of raised fields or other landscape modifications for agricultural intensification in Amazonia is doubtful. Myers notes that there is still no evidence for agricultural intensification in the Amazon Basin (1992:91). Roosevelt has suggested the Marajoara chiefdom as an example of

an Amazonian complex society based on intensive cultivation of floodplains. She bases this argument on her observations that the plant communities characteristic of Marajó Island are not *terra firme* rain forest (Roosevelt 1991:18). The problem is that not all of the plant communities seem to represent a *varzea* environment either. Brochado (1980, quoted by Myers 1992:91) observed that the lakes around Lake Ararí are flooded by rainwater rather than by floodwater, in a typical savanna pattern. More important, no physical evidence for ridged-field agriculture has been recovered. Roosevelt (1991:26–33) assumes that the agricultural fields are buried under sediments. However, Barse (1993:373) argues that, if this were the case, then other kinds of remains should be also buried by sediments. It follows that, in the absence of more survey data, the existence of intensive cultivation in Amazonia is still open to question.

The development of agricultural intensification in the lowland savannas of Venezuela may be a reflection of other important differences between the llanos and greater Amazonia. I will not question the existence of sizable populations in Amazonia (see Meggers 1992 for a different opinion), but the idea of great population density in the llanos in prehistoric times is more controversial. In fact, the overall panorama of the relationships among the Orinoco prehistoric polities strongly suggests competition for labor. Drennan has tentatively proposed that "one of the dynamics of chiefly warfare in the Llanos was a scarcity of labor for surplus production rather than a scarcity of land" (1995:321). It has been observed that the drained fields of the Gaván region may have been a way to increase output in a context where available labor was a major factor limiting surplus production (Spencer, Redmond, and Rinaldi 1994:137). These arguments are strongly supported by the ethnohistoric and ethnographic accounts of the Orinoco llanos. When hostilities appeared, theft of resources and the taking of prisoners were customary. The prisoners were frequently incorporated into the victorious group through kinship ties (Arvelo-Jimenez and Bjord 1994:58).

In summary, the ecological, archaeological, and historical evidence suggests that the impact of environmental variables on technological and political developments in the llanos cannot be deduced simply from models developed in or for Amazonia. Therefore, Hornborg's excellent model would be made even more powerful by including in more detail the environmental diversity of greater Amazonia as a critical variable for explaining the sociocultural dynamics of the area.

MICHAEL HECKENBERGER

*Department of Anthropology, University of Florida, P.O. Box 117305, Gainesville, FL 32611, U.S.A. (mheck@ufl.edu). 29 IV 05*

Amazonian anthropology has undergone significant changes in the past two decades that force a rethinking of a number of regional questions, among them human-induced change in tropical forest environments, the built

environment and landscape, social complexity, and regional exchange. Hornborg's ambitious discussion touches upon a variety of these issues. It is a useful summary of recent anthropological research but fails to deliver on its primary objectives.

Despite repeated mention of "modern anthropological theories of ethnicity," ethnogenesis, cultural hybridity, and the like, none are elaborated here, either empirically or theoretically. Hornborg advocates a theoretical perspective that accounts for relations between material culture, language, and identity, but this paper does not achieve or really even attempt to offer one. He implies that previous views of relations between material culture and language are naïve but demonstrates limited knowledge of regional archaeology or material-culture studies. There is no discussion about how these issues have been or can be addressed on the basis of archaeological data.

It is hard to visualize the dimensions and nature of the systems, regions, or agents/subjects that he invokes, since few concrete ethnographic, archaeological, or linguistic examples are explored beyond a few lines of text. Hornborg's attempt to "raise the bar" of archaeological interpretation is laudable, but theories of contemporary ethnicity are insufficient for considering the ancient past: this is not simply a theoretical question. His reconstructions are often based on uncritical use of analogy—ethnographic snapshots—from across the vast region. Ironically, he notes that "tracing the ethnoarchaeological continuities in the Amazonian material will provide sounder foundations for interpretation" but provides few specific case of continuity.

Hornborg accuses me and others of essentialism, but essentialism comes in diverse forms. Mine, admittedly, is culturally specific, that is, culture-historical, looking at concrete indicators of change and continuity through time in specific socio-historical sequences that can then be compared with others to develop larger spatio-temporal constructs for heuristic purposes. By casting his net so broadly he plays down variation through time and space and implicitly promotes a fairly static notion of cultural process.

In similar fashion, he invokes agency, subjectivity, and historical self-consciousness but actually perpetuates a sense of timeless cultural process and cultural uniformity. Agency, subjectivity, and historical consciousness must be linked to actual subjects and understood through engagement in local settings. Without a detailed understanding of archaeological data or well-developed case studies, his arguments must depend on generalized processes of interaction and exchange that seem to apply equally for all areas and all times. This promotes a view of human cultural process (human nature) divorced from cultural or historical context and with an essentialist quality.

That language, material culture, and biology are not exactly correlated is unarguable, but I cannot accept Hornborg's argument that the distribution of the Arawak language family was the result of the expansion of a trade language at the expense of the native languages of autochthonous groups. Precisely what evidence supports

this? The pivotal role of colonialism in the spread of the lingua franca Nheengatu, the one example he gives, is not mentioned. Discussion of trade languages, creolization, or other such processes would be helpful.

I proposed the phrase "Arawakan diaspora" to draw attention to the fact that more than "demic" factors were at play (more than a "dispersal" or "radiation") and to comparisons with known linguistic groupings with similar distributions in lowland South America (e.g., Tupi-Guarani, Carib) or worldwide (Oceanic Austronesian, Bantu). Despite a brief reference to Renfrew, there is no discussion here at all of linguistic diasporas of similar age and scale.

The idea that Arawak-speaking peoples (or anyone else) migrated into already occupied areas and entered into dynamic "ethnogenetic" relations is not novel. Indeed, it is historically reconstructible in some areas (e.g., the Upper Xingú and Upper Amazon). But to suggest that areas that "first adopted Arawakan languages were . . . already fairly densely populated by that time," while certainly plausible, is not supported by any concrete evidence.

Ultimately, I agree entirely that cultural contact, regional exchange, language sharing, ethnogenesis, and world systems were critical factors in Arawakan expansion and general Amazonian prehistory (see Heckenberger 2005). However, migrations are known historically and ethnographically to have occurred, occasionally over large areas. Further, there are fundamental differences between cultural groups in Amazonia, and these boundaries can be traced through time. To say that cultural boundaries exist, at least from certain perspectives, is not to say that they are all-encompassing, impermeable, or immutable. Human societies collectively remember and communicate not only through language but also through practice—through habitus, performance, material culture, and the built environment—and the two sometimes do cohere over long periods of time.

JONATHAN D. HILL

*Department of Anthropology, Southern Illinois University, Carbondale, IL 62901-4502, U.S.A.*  
(*jhill@siu.edu*). 15 IV 05

Hornborg's article does an excellent job of recapitulating and advancing the main arguments that Fernando Santos-Granero and I made in *Comparative Arawakan Histories* (2002) by connecting them to recent developments in the ecological anthropology, linguistics, and archaeology of lowland South America. Like our comparative model of Arawakan histories, his argument is based on the concept of ethnogenesis as it came to be theorized in Americanist contexts in the 1990s (Hill 1996c) and in ethnographic works showing the importance of toponymy, long-distance trade relations, regionality, cross-linguistic/transethnic alliances, social hierarchy, and ritual power among Arawak-speaking peoples (Hill 1993, Santos-Granero 1998). I am grateful to him for the recognition that his article bestows on this ongoing compar-

ative research. My comments are meant as refinements of his argument from the perspective of someone who has been deeply engaged in firsthand ethnography as well as comparative approaches to history and power among Arawak-speaking peoples since the early 1980s.

Hornborg refers to the strong associations between “hierarchy, kinship, sedentism, and intensification of resource use” found among widely dispersed Arawak-speaking peoples and notes that “the Arawakan preoccupation with genealogy and extended kinship categories is rare among Amazonian societies.” I have given detailed ethnographic consideration to the social and ecological dimensions of this Arawakan pattern (Hill 1984, 1985, 1987, 1989). Perhaps the key social mechanism for understanding hierarchy and its reproduction over time is rank endogamy—the direct linkage between ideological ranking of descent groups by mythic order of emergence (“first-born” = highest ranked), on the one hand, and marital alliances between exogamous phratries, on the other. Men from the highest-ranked groups marry women from comparably ranked groups, thereby ensuring that elite status and ritual hierarchy will persist across generations. This linkage between rank and marriage is present among Arawakan groups of the Içana-Guainía drainage area and only those Eastern Tukanoan groups (e.g., Uanano, Desana, and Cubeo) that live near them (Hill 1996*b*). Farther away from the Içana-Guainía drainage area, researchers have found no evidence of such linkage between rank and marriage among Tukanoan groups in the Central Vaupés basin (Jackson 1983:75) and areas to the west (Hugh-Jones 1979:206), strongly implying that it was Arawakan rather than Tukanoan peoples who were the source of these hierarchical social practices in northwestern Amazonia. On a much broader scale of comparison, Fernando Santos-Granero and I found abundant evidence that rank endogamy was widely practiced among Arawak-speaking groups of the llanos, the northern coast, the Antilles, northwestern Amazonia, southern Amazonia, and eastern Peru (Hill and Santos-Granero 2002). The impressive continentwide geographic distribution of rank endogamy among Arawak-speaking peoples adds strong support to Heckenberger’s assertion, quoted by Hornborg, that “where we find Arawak speakers we typically also find social hierarchy, sedentism, and regionality.”

As Hornborg points out, at least some Arawakan peoples have a “cartographic consciousness” of these inter-regional connections spreading across vast distances. While I applaud his attention to these ritual performances, the ritual naming of places is not merely a mapping of ecological spaces along major rivers but also a dynamic form of historical consciousness in which the present world of distinct peoples and places is seen as having resulted from a series of dynamic movements away from and back to the center of mythic ancestral power or the place of emergence (Hill 1993, 2002). In both mythic narratives about the primordial human beings and performances of ritually powerful ways of speaking (*malikai*), the expansion of the world is a profoundly *musical* process, suggesting that musical instru-

ments, sounds, and speeches are keys to understanding the indigenous model of political-economic expansion (Hill 1993, 2004). Copies of my field recordings of these musical performances are located at the Interamerican Institute for Ethnomusicology and Folklore in Caracas (Collection No. VEN 866-874M) and the Archives of Traditional Music at Indiana University (Accession No. 82-418-F, No. 85-526-F).

Hornborg’s essay cites a growing number of archaeological and linguistic studies that identify the northwestern Amazon as the most likely place where “Arawakan traits and institutions originally developed.” Whether or not one accepts this proposition, the evidence seems nearly irrefutable that the northwestern Amazon was at least one of the major centers from which the Arawak-speaking diaspora emanated. The indigenous model of an expanding universe of trade relations with other peoples living in distant areas of the Amazon and Orinoco basins is entirely consistent with Hornborg’s argument that this expansion of trade and inter-ethnic relations need not have entailed migrations of entire peoples. The indigenous model provides a reasonable point of entry into knowing how that process is remembered by living descendants and how its lessons are shaped to fit the conditions of modernity (Hill 2003) and the globalizing nation-states of South America (Hill 1999).

EDUARDO GÓES NEVES

*Museu de Arqueologia e Ethnologia, Universidade de São Paulo, Av. Prof. Almeida Prado, 1466, 05508-900 São Paulo, SP, Brazil (edgneves@usp.br). 2 v 05*

I agree with the core of Hornborg’s argument, but I would like to offer some comments that should be considered in the further development of his model. First, the Arawakan was but one of the major linguistic expansions in precolonial Amazonia, the other being the Tupi expansion. The historical connections between the two are not yet clear, but I suspect that the Tupi expansion had the same kind of general systemic effect as Hornborg proposes and should therefore be taken into consideration as well.

Second, the better-known dates place the changes in the archaeological record of the Amazon well into the millennium AD (Meggers and Evans 1957, Roosevelt 1991, Schaan 2001) and maybe a bit earlier (Hilbert and Hilbert 1980). It therefore seems unlikely that the Arawak expansion began in the second millennium BC. In the central Amazon, ceramics similar to those from the Caribbean coast of Colombia appear only a few hundred years BC and are not as associated with large-scale, long-lasting settlements (Lima 2002, Neves 2003, but see Petersen, Heckenberger, and Neves 2003).

An intriguing research problem is the apparent gap between the early preceramic and ceramic occupations and the emergence of nucleated and dense settlements along the main floodplains. It is becoming clearer that Lathrap’s model of continuous population pressure on

riverine settlements over several millennia does not explain this pattern. In the central Amazon, for instance, large settlements on prime land adjacent to floodplains were often abandoned and never reoccupied well before European contact (Neves 2005a, Neves and Petersen 2005). If population pressure was an issue there, it did not manifest itself in competition for locations adjacent to productive land. One of the larger and longer-lasting sites, Açutuba, is located not next to the floodplain but next to the nutrient-poor sandy beaches of the Rio Negro (Heckenberger, Petersen, and Neves 1999). This may suggest that intensive floodplain agriculture was never as important as Lathrap (1977), Roosevelt (1991), and Oliver (2001) suggested. It is fair, however, to say that in the first millennium AD some areas adjacent to the major floodplains of the Amazon were densely occupied. It is also likely that this pattern changed over time: up to the sixteenth century AD these changes led to the development of buffer zones.

Looking at the scanty archaeological record of the Amazon, there seem to be only two areas where the sequences are long and continuous: the mouth of the Amazon (Meggers and Evans 1957, Neves 2005b, Roosevelt 1991, Schaan 2001, Simões 1981) and the Upper Madeira basin (Miller et al. 1992). The Upper Madeira was probably never an area of Arawak occupation, but it is the place where some interesting developments seem to have happened first in the Amazon: the domestication of both manioc (*Manihot esculenta*) (Olsen and Schaal 1999) and the peach palm (*Bactris gasipaes*) (Charles Clement, personal communication) and the development of *terras pretas* more than 4,000 years ago (Miller et al. 1992). It is also the place of greatest linguistic diversity within the Tupi stock, which has led some to consider it the center of origin and dispersal of the Tupi languages. I agree with Hornborg that *terras pretas* development can be seen as an archaeological correlate of fully sedentary life across the Amazon (Neves et al. 2003, 2004). If this is the case, then the spread of manioc agriculture may have had nothing to do with the Arawak expansion. Either the northwestern Amazon was only a secondary center of linguistic diversification or it was the original center and manioc agriculture reached it before the expansion. There is also the possibility that the expansion started before the adoption of manioc agriculture. So far, the oldest dates I am aware of in northwestern Amazonia are for pottery from ca. 3200 BC found in the Lower Uaupés basin (Neves 2000).

Although I agree with Hornborg's criticism of environmental determinism, there does seem to be a good match between the noticeable climatic and ecological changes in the Amazon around 3,000 years ago and the changes observable in the archaeological record after this period—an insight attributable to Meggers (1977, 1979, 1982; Meggers and Danon 1988).

Hornborg's contention of selection for new kinds of social relations seems to match part of what we know about the ethnography of Amazonia, but it does not explain the many references to predation (head-hunting, cannibalism, and warfare) that he mentions, which are

somewhat connected with another worldview observable, for instance, among the Tupi (Fausto 2001, Viveiros de Castro 1992). If the 1960s and 1970s were the time of Gê studies and the 1980s and 1990s the time of Tupi studies, the first decade of the twenty-first century is the time of the Arawaks. This may be the time, therefore, to incorporate what we know about the ethnography of these societies and the archaeology of these areas into an even wider general synthesis. Hornborg's paper is certainly a step in that direction. It is my hope that these comments will help strengthen his systemic approach. The changes in precolonial Amazonia were rapid and perhaps multidirectional, and they could only have happened against the backdrop of the regional systems he has envisaged.

FERNANDO SANTOS-GRANERO

*Smithsonian Tropical Research Institute, Unit 0948,  
APO AA 34002 (santosf@tivoli.si.edu). 22 IV 05*

Hornborg's reflections on how the expansion of the Arawakan model of adaptation and the Neolithization of lowland Amerindians took place benefit from recent scholarship on Arawakan peoples and significantly advance discussions into promising new areas. It has become increasingly clear that Arawak-speaking peoples represent a style of being "native Amazonian" that differs in important ways from that of the Tupi-Guarani-, Jivaro-, and Carib-speaking neighbors who have been taken as paradigms for the formulation of purportedly pan-Amazonian modes of sociality and kinship ideologies. Hornborg's emphasis on the appeal, "contagiousness," and widespread distribution of such Arawakan traits as inclusionary sociality, long-distance trade, aversion to endo-warfare, refined agricultural techniques, emphasis on consanguinity, genealogy, and descent, and development of complex hierarchical polities introduces a much needed counterbalance into current debates about the nature of native Amazonian sociality, political economy, and cosmology.

By proposing a new explanation for the distribution of Arawakan features, this article radically modifies our understanding of the Arawakan "explosion." Hornborg argues that Arawakan languages and ethos spread not as a result of the actual (demic) movement of Arawakan peoples but as a result of the fact that their model of adaptation, with its demonstrated advantages in riverine and wetland habitats, was eagerly imitated by their non-Arawakan neighbors.

The openness and inclusiveness of Arawakan modes of sociality, coupled with the appeal of Arawakan cultural practices for their neighbors, would have led to a rapid diffusion of Arawakan languages, techniques, and lifeways along the region's main rivers. This argument is theoretically attractive and is backed up by an impressive amount of archeological, historical, linguistic, and biological data, but it raises some concerns.

First, Hornborg suggests that Arawakan languages and cultural practices were imitated because of their effec-

tiveness and prestige, but if this process was unilateral, why do we find so many instances of the adoption of other languages and cultural practices by Arawakan peoples (Santos-Granero 2002:47–50)?

Second, although Hornborg is careful not to attribute the success of the Arawakan model to its intrinsic or essential cultural superiority—as both Lothrop (1940) and Radin (1946) had intimated—it seems clear that it must indeed have been considered superior by those who adopted it. In fact, Hornborg's argument implies that the Arawakan model was so demonstrably superior that it was adopted en masse, including not only its more material or practical aspects (such as agricultural techniques, navigational knowledge, and ceramic styles) but also its more ideational or ideological ones (such as language, kinship ideologies, styles of leadership, and cosmological notions). Is such a comprehensive and peaceful adoption of the knowledge, techniques, way of life, and language of a foreign people really plausible? And if we agree that it is, is it likely that such a complete adoption took place again and again over thousands of miles through imitation alone? Wouldn't the constant replication of the model by a chain of Arawakized peoples lead to its gradual modification and eventual decline?

The historical data indicate that, far from becoming radically altered, the Arawakan model thrived on the peripheries, a considerable distance away from what scholars agree was the place of origin of the proto-Arawak group. This was clearly the case with the Taino of the Greater Antilles and the Bauré of eastern Bolivia. Moreover, in all places where the Arawakan model has survived, it has done so with an impressive degree of integrity and internal consistency. Arawakan peoples separated by thousands of miles and many centuries continue to be clearly identifiable as Arawakan.

Two additional elements support the idea that the Arawakan model did not spread exclusively through peaceful imitation. First, historical data show that Arawakan peoples had a predisposition to expand and migrate and were still on the move at the time of contact. For instance, a mere generation before Columbus's arrival in the Caribbean a group of Arawak-speakers from Cuba had managed to settle in southern Florida (Escalante Fontaneda 1575: f. 4). Today, Arawakan peoples continue to occupy new areas or reoccupy areas from which they have previously been displaced (Santos-Granero 1998, Zucchi 2002). Secondly, there is abundant evidence that Arawakan peoples did not always behave peacefully toward their neighbors. They often subjected them by force, sometimes incorporating them as low-ranking commoner groups (Susnik 1971, Moya 1973, Vidal and Zucchi 1996).

By placing all the emphasis on peaceful imitation and ruling out migration, warfare, and other mechanisms for explaining the expansion of the Arawakan model, Hornborg fails to do full justice to the historical data and risks replacing one type of reductionist explanation with another. Nonetheless, his critique of previous theories about the dissemination of the Arawakan model of adaptation poses novel and exciting questions. His article

is a welcome addition to the increasing number of Arawakan studies.

## Reply

ALF HORNBERG  
Lund, Sweden. 20 V 05

I am grateful to the commentators for taking the time to consider my argument, for their (mostly) generous and courteous assessments of it, and, not least, for their (generally) constructive criticism. All of them have made very significant contributions to our understanding of long-term cultural processes in different parts of Amazonia, and I have found extensive use for their work in writing the present paper. Without such detailed and geographically focused studies it would be impossible to attempt a comparative regional synthesis.

Gassón points out that I should have paid more attention to ecological differences within greater Amazonia. The absence of raised fields in Amazonia proper, however, by no means precludes agricultural intensification in the area, as is demonstrated by the recent research on *terra preta*. Raised-field agriculture in the llanos may indeed have been associated with forms of social organization that differed from those of agricultural polities along the floodplains, but competition for labor appears to have been chronic in both areas and cannot be taken as an indicator of low population density. On the contrary, competition for labor would have been a major incentive for the development of dense settlements (see n. 47).

Hill emphasizes the role of rank endogamy in reproducing social hierarchy in Amazonian and suggests that such marriage practices are of Arawak derivation. I am persuaded by his argument but would like to add a caveat deriving from my comparative survey of the literature on Amazonian marriage practices (Hornborg 1988[1986]: 281–83). Although Arawaks appear to have disseminated ideals of rank endogamy, it is difficult to determine the origin of these ideals, as they were equally characteristic of Andean peoples such as Chibcha and Quechua, some Chaco peoples (such as the Kadiwéu), many Tupí, most Gê-speakers, and most Tukanoans. The evidence for their absence among Tukanoans farther away from the Içana-Guainía seems inconclusive, as indications of such ideals have been reported from both the Barasana (Hugh-Jones 1977:102 n. 2) and the Bará (Jackson 1975:11). Whether Arawaks or Tukanoans were first in practicing rank endogamy in the northwestern Amazon, however, is less important than Hill's observation that these practices at some point became part of Arawakan cultural identity. Rank endogamy constitutes the very nexus between hierarchy, kinship, and ethnicity, as status differentiation generally expresses relative purity of descent/identity and thus degree of symbolic centrality for the ethnic group or category in question. In this way, eth-



nicity and hierarchy can often be shown to be organically linked.

Santos-Granero pertinently asks why, if an Arawak identity was so prestigious and contagious, there is so much historical evidence of Arawakan groups' adopting other languages and cultural repertoires. I would suggest that the expansion and decline of Arawakan dominance in western Amazonia has followed a pattern not untypical of the rise and fall of other widespread cultural traditions. The linguistic distribution maps and some ceramic discontinuities suggest a peak of Arawakan dominance a few centuries before the European arrival, followed by a period of political decline that may have been exacerbated by the repercussions of colonialism and that entailed intensified pressure particularly from Tupí-, Carib-, and Pano-speakers. Part of the explanation may be that these latter groups increasingly struggled to exploit the same ecological niches that the Arawaks had previously been able to reserve for themselves (see Barth 1969 for a relevant theoretical framework). This argument would have applied more to Caribs and Panoans than to Tupí, who had previously occupied similar niches in southern and eastern Amazonia and were simply expanding north and west. In many areas Arawaks responded by affiliating themselves with more powerful neighbors and adopting their languages. Nimuendajú's (1987) *Mapa etno-histórico* shows that Arawakan languages were being displaced by other indigenous languages in several areas from the sixteenth to the nineteenth century. It seems that the first millennium AD was generally a period of Arawakan expansion and consolidation, whereas the latter half of the second millennium in most areas was a period of decline. The European encouragement of Tupí as a trade language and, in the Vaupés area, of Tukano as a mission language (Aikhenvald 2002:26–27) has continued to undermine Arawakan identity in recent centuries.

Santos-Granero also asks me to clarify in what sense Arawak culture was "superior." The distinction I wanted to make was between assuming an essential cultural superiority intrinsic to a specific biological population and acknowledging the political success and prestige of a particular way of life, the latter being an observation of culture history that could equally well be applied to the expansion of the American language and lifestyle in the twentieth century. This comparison should answer Santos-Granero's question whether such a wholesale, peaceful adoption of the way of life of a foreign people is plausible. The fact that "the Arawakan model thrived on the peripheries," finally, agrees well with observations on the cultural conservatism of more recent diasporas. More important, in most areas "the Arawakan model" would have received continuous reinforcement through the networks that until fairly recently united Arawaks along the main rivers of much of Amazonia (Hill 2002, Vidal 2003). The relations between different segments of the Arawak domain in the historically recent past should be recognized as not merely mythological or genealogical ties to a "place of origin" but active economic and cultural connections. Nimuendajú's (1987) compilation of

historical data suggests that major communication routes such as the Orinoco, the Negro, the Purús, and the Caquetá were almost completely controlled by Arawak-speakers at the time of European contact and that some continued to be so for centuries.

Santos-Granero is perhaps right in criticizing me for underestimating the role of migration and warfare in the Arawak expansion. I realize that some people must have moved and that expansion was not always achieved by peaceful means (see n. 24). If I seem to overemphasize peaceful emulation and trade, it is probably because there is such a strong tradition of migrationist interpretations to challenge. Nevertheless, "migrating" Arawaks encountered historically by Europeans in the margins may in fact often have been refugees from former core areas, reflecting a political situation completely different from the expansion of Arawak cultural hegemony. I remain convinced that demic migration was not the primary means of expansion in the first millennium AD and that ethno-linguistic incorporation rather than displacement or annihilation was the general mode of dealing with neighboring groups.

Neves suspects that my account of the Arawak expansion is largely applicable also to the Tupí, precisely as I have suggested (n. 30), and recent research identifies several "Tupí" languages whose structure is sufficiently altered to suggest that the ancestors of these people must have spoken a non-Tupí language (cf. Jensen 1999:129). Nevertheless, historical evidence does suggest a greater inclination among the Tupí toward demic migration and violent conquest than can be documented for Arawaks, and Neves seems to agree that an ideology of predation is more applicable to the Tupí than to Arawaks. Regarding the dates of expansion, Neves may be right that Arawak influence did not reach the central Amazon until the middle of the first millennium BC. In any case, the Arawak expansion reached its maximal extent around AD 500, whereas the Tupí expansion was only then gaining momentum. It may or may not be a coincidence that the differences that can be surmised between these two successive Amazonian "horizons"—emphases on trade and ritual incorporation versus military conquest—echo those of the Andean horizons (Chavín versus Wari and Inca) with which they were more or less coeval. This regularity suggests that, once hierarchical polities have emerged mainly through the former mode, militarism is the primary strategy open to groups that wish to challenge them.

Neves's guess that the upper Madeira was never occupied by Arawaks seems in accordance with Nimuendajú's (1987) ethnohistorical data, which suggest that at the time of contact the Madeira was dominated by Tupí-speakers. There were, however, substantial Arawak populations to the west (e.g., Apurinã/Ipurinã) and south (e.g., Mojo, Bauré, Paressí), and Heckenberger (2002: 106–7) offers the Madeira as a major route of Arawak expansion. At time of contact, the river was obviously a frontier zone between Tupí and Arawak. Considering that some of the Tupí languages in the area (e.g., Sirionó) appear to be the result of language shift (Jensen 1999:

129), Tupí dominance on the Madeira may have supplanted an older Arawak presence. The area immediately east of the upper Madeira (Rondônia) was nevertheless a likely point of origin of the Tupí expansion (Rodrigues 1999:108), which was originally directed eastward, perhaps precisely because a western expansion was then blocked by a compact confederation of Arawakan polities. As Neves points out, this was also an area of very early agricultural innovations, which Arawak and Tupí-speakers alike subsequently would have absorbed and benefited from. I am not yet quite convinced, however, by the cryptic references in an unpublished Eletronorte salvage report (Miller et al. 1992:37–38) to *terras pretas* in Rondônia dating between 4,807 and 2,640 BP. My doubts are derived in part from the silence about these dates in two recent volumes summarizing research on Amazonian dark earths (Lehmann et al. 2003, Glaser and Woods 2004) to which Neves himself is an important contributor.

I am puzzled by Heckenberger's dismissal of my argument, particularly as its most speculative components derive precisely from his own (2002) work. My "net" has not been cast more broadly than his, but I believe that I have been more committed to anchoring my account in a solid and consistent theoretical framework. Rather than recapitulate my argument I will simply refer to my summary of it in figure 1. I think it at least deserves to be recognized as an "attempt." Equally perplexing is his contention that I discuss few examples of ethnoarchaeological continuities when the paper is saturated with examples of how ethnographic accounts of ethnic identity construction can inform our understanding of archaeological remains. His charge that my reasoning displays a "static notion of cultural process," a sense of "cultural uniformity," and an "essentialist quality" is nonsense. I fail to see how linking oneself to specific modern (Xinguano?) subjects gives one privileged access not only to the archaeological traces left by (people who may be) their ancestors but also to the prehistory of most of the continent.

When Heckenberger finally addresses actual empirical or theoretical issues, he finds himself "agreeing entirely" with the thrust of my argument. He asks, however, what evidence there is to support my hypothesis that the distribution of Arawak languages largely reflects the extension of a prehistoric trade language or lingua franca rather than demic migration. My main point is that linguistic distribution patterns in Amazonia should be interpreted as reflecting ethnogenetic processes within regional systems of exchange rather than merely the movements of biological populations. To say that early Arawakan languages may have served as a lingua franca from the Orinoco to the upper Purús in the first millennium AD is to acknowledge that many of the populations along the riverine trade routes were probably bi- or even multilingual and that Arawak at one time was the medium through which they could all communicate. Whenever there has been a subsequent shift to other lingua francas, it has involved a shift in ethnic identity with profound cultural ramifications (Aikhenvald 2002). The language

shifts promoted by colonialism do not differ from earlier or later shifts in this respect. Discontinuities in the archaeological record are often as likely to reflect such changes in ethnic affiliation as actual demographic displacement.

When Heckenberger refers to indigenous groups' migrating into already occupied areas and entering into "ethnogenetic" relations, I am not sure that he has understood to what extent an ethnogenetic perspective must dissolve assumptions about what such "groups" really are. We must be prepared to abandon assumptions about "groups" or "peoples" as more or less bounded biological entities that move about or stay put while maintaining their constitution over time. Biologically, there has been a constant flow of people and genes over such variously constructed ethno-linguistic boundaries. Similar conclusions have recently been drawn for North America (Hunley and Long 2005). It is time to recognize our cultural assumptions about biological essence (see Jones 1997:1–14) as a distorting factor in attempts to account for the culture history of ancient Amazonia.

## References Cited

- AIKHENVALD, ALEXANDRA Y. 1999a. "The Arawak language family," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 65–106. Cambridge: Cambridge University Press.
- . 1999b. "Areal diffusion and language contact in the Içana-Vaupés basin, north-west Amazonia," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 385–416. Cambridge: Cambridge University Press.
- . Editor. 2002. *Language contact in Amazonia*. Oxford: Oxford University Press.
- AIKHENVALD, ALEXANDRA Y., AND R. M. W. DIXON. 1998. Evidentials and areal typology: A case study from Amazonia. *Language Sciences* 20:241–57.
- AIRES ATAÍDE DA FONSECA JÚNIOR, JOÃO. 2004. *História dos ídolos de pedra Amazônicos*. Belém: Universidade Federal do Pará.
- ÅRHEM, KAJ. 1981. *Makuna social organization*. Stockholm: Almqvist & Wiksell.
- . 1996. "The cosmic food web: Human-nature relatedness in the Northwest Amazon," in *Nature and society: Anthropological perspectives*. Edited by P. Descola and G. Pálsson, pp. 185–204. London: Routledge.
- ARVELO-JIMÉNEZ, NELLY, AND HORACIO BIORD. 1994. "The impact of conquest on contemporary indigenous peoples of the Guiana Shield: The system of Orinoco regional interdependence," in *Amazonian Indians from prehistory to the present: Anthropological perspectives*. Edited by A. C. Roosevelt, pp. 55–78. Tucson: University of Arizona Press.
- BALÉE, WILLIAM. 1992. "People of the fallow: A historical ecology of foraging in lowland South America," in *Conservation of Neotropical forests: Working from traditional resource use*. Edited by K. H. Redford and C. Padoch, pp. 35–57. New York: Columbia University Press.
- . 1993. "Indigenous transformation of Amazonian forests: An example from Maranhão, Brazil," in *La remontée de l'Amazonie: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 231–54. *L'Homme* 126–128, 33(2–4).
- . 1994. *Footprints of the forest: Ka'apor ethnobotany—the*

- historical ecology of plant utilization by an Amazonian people. New York: Columbia University Press.
- BARRETO, CRISTIANA, AND JULIANA MACHADO. 2001. "Exploring the Amazon, explaining the unknown: Views from the past," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 232–51. London: British Museum Press.
- BARSE, WILLIAM. 1993. Review of: *Moundbuilders of the Amazon: Geophysical archaeology on Marajo Island, Brazil*, by Anna Curtenius Roosevelt. *American Antiquity* 58:373–74. [RG]
- BARTH, FREDRIK. 1969. *Ethnic groups and boundaries: The social organization of cultural difference*. Boston: Little, Brown.
- BASTIEN, JOSEPH W. 1987. *Healers of the Andes: Kallawayas herbalists and their medicinal plants*. Salt Lake City: University of Utah Press.
- BAUER, BRIAN S. 2001. *Las antiguas tradiciones alfareras de la región del Cuzco*. Cuzco: Editorial Centro Bartolomé de Las Casas.
- BELLWOOD, PETER. 2001. Early agriculturalist population diasporas? Farming, languages, and genes. *Annual Review of Anthropology* 30:181–207.
- BINFORD, MICHAEL, MARK BRENNER, THOMAS J. WHITMORE, ANTONIA HIGUERA-GUNDEY, E. S. DEEVEY, AND BARBARA LEYDEN. 1987. Ecosystems, paleoecology, and human disturbance in subtropical and tropical America. *Quaternary Science Review* 6:115–28. [RG]
- BOOMERT, ARIE. 1987. Gifts of the Amazons: "Green stone" pendants and beads as items of ceremonial exchange in Amazonia and the Caribbean. *Antropologica* 67:33–54.
- BROCHADO, JOSÉ J. J. P. 1984. An ecological model of the spread of pottery and agriculture into eastern South America. Ph.D. diss., University of Illinois at Urbana-Champaign, Urbana, Ill.
- BROWMAN, DAVID L. 1978. "Toward the development of the Tiahuanaco (Tiwanaku) state," in *Advances in Andean archaeology*. Edited by D. L. Browman, pp. 327–49. Paris: Mouton.
- . 1980. Tiwanaku expansion and altiplano economic patterns. *Estudios Arqueológicos* 5:107–20.
- . 1994. Titicaca Basin archaeolinguistics: Uru, Pukina, and Aymara AD 750–1450. *World Archaeology* 26:235–51.
- BRUHNS, KAREN OLSEN. 1994. *Ancient South America*. Cambridge: Cambridge University Press.
- BURGER, RICHARD L. 1992. *Chavín and the origins of Andean civilization*. London: Thames and Hudson.
- CAMINO, ALEJANDRO. 1977. Trueque, correrías e intercambios entre los Quechuas andinos y los Piro y Machiguenga de la montaña peruana. *Amazonia Peruana* 1(2):123–40.
- CAMPBELL, LYLE. 1997. *American Indian Languages: The historical linguistics of native America*. Oxford: Oxford University Press.
- CARNEIRO, ROBERT L. 1995. "The history of ecological interpretations of Amazonia: Does Roosevelt have it right?" in *Indigenous peoples and the future of Amazonia: An ecological anthropology of an endangered world*. Edited by L. E. Sponsel, pp. 45–70. Tucson: University of Arizona Press.
- CARVAJAL, GASPARD DE. 1934. "Discovery of the Orellana River," in *The discovery of the Amazon according to the accounts of friar Gaspar de Carvajal and other documents*. Edited by H. C. Heaton, pp. 167–235. New York: American Geographical Society.
- CAVALLI-SFORZA, L. LUCA, PAOLO MENOZZI, AND ALBERTO PIAZZA. 1994. *The history and geography of human genes*. Princeton: Princeton University Press.
- CHASE-DUNN, CHRISTOPHER, AND TOM HALL. 1991. *Core/periphery relations in precapitalist worlds*. Boulder: Westview Press.
- CLASTRES, PIERRE. 1987. *Society against the state: Essays in political anthropology*. New York: Zone Books.
- COLINVAUX, PAUL. 1987. Amazon diversity in light of the paleoecological record. *Quaternary Science Review* 6:93–114. [RG]
- CROCKER, J. CHRISTOPHER. 1977. "Why are the Bororo matrilineal?" in *Actes du XLIIe Congrès International des Américanistes*, vol. 2, pp. 245–58. Paris: Musée de l'Homme.
- CRONON, WILLIAM. 1983. *Changes in the land: Indians, colonists, and the ecology of New England*. New York: Hill and Wang.
- DE BOER, WARREN R. 1990. "Interaction, imitation, and communication as expressed in style: The Ucayali experience," in *The use of style in archaeology*. Edited by M. W. Conkey and C. A. Hastorf, pp. 82–104. Cambridge: Cambridge University Press.
- DE BOER, WARREN R., AND J. SCOTT RAYMOND. 1987. Roots revisited: The origins of the Shipibo art style. *Journal of Latin American Lore* 13:115–32.
- DENEMARK, ROBERT A., JONATHAN FRIEDMAN, BARRY K. GILLS, AND GEORGE MODELSKI. Editors. 2000. *World system history: The social science of long-term change*. London: Routledge.
- DENEVAN, WILLIAM M. 1991. "Prehistoric roads and causeways of lowland tropical America," in *Ancient road networks and settlement hierarchies in the New World*. Edited by C. D. Trombold, pp. 230–42. Cambridge: Cambridge University Press.
- . 1992. Stone vs. metal axes: The ambiguity of shifting cultivation in prehistoric Amazonia. *Journal of the Steward Anthropological Society* 20:153–65.
- . 2001. *Cultivated landscapes of native Amazonia and the Andes*. Oxford: Oxford University Press.
- . 2004. "Semi-intensive pre-European cultivation and the origins of anthropogenic dark earths in Amazonia," in *Amazonian dark earths: Explorations in space and time*. Edited by B. Glaser and W. I. Woods, pp. 135–43. Berlin: Springer.
- DENEVAN, WILLIAM M., AND ALBERTA ZUCCHI. 1978. "Ridged-field excavations in the central Orinoco Llanos, Venezuela," in *Advances in Andean archaeology*. Edited by D. L. Browman, pp. 235–45. Paris: Mouton.
- DESCOLA, PHILIPPE. 1993. "Les affinités sélectives: Alliance, guerre et prédation dans l'ensemble jivaro," in *La remontée de l'Amazone: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 171–90. L'Homme 126–128, 33(2–4).
- . 1994. *In the society of nature: A native ecology in Amazonia*. Cambridge: Cambridge University Press.
- DIXON, R. M. W., AND ALEXANDRA Y. AIKHENVALD. Editors. 1999a. *The Amazonian languages*. Cambridge: Cambridge University Press.
- . 1999b. "Introduction," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 1–21. Cambridge: Cambridge University Press.
- DRENNAN, ROBERT. 1995. Chiefdoms in northern South America. *Journal of World Prehistory* 9:301–40. [RG]
- DREYFUS, SIMONE. 1993. "Os empreendimentos coloniais e os espaços políticos indígenas no interior da Guiana ocidental (entre o Orenoco e o Coarentino) de 1613 a 1796," in *Amazonia: Etnologia e história indígena*. Edited by E. Viveiros de Castro and M. Carneiro da Cunha, pp. 19–41. São Paulo: Núcleo de História Indígena e do Indigenismo/Fundação de Amparo à Pesquisa do Estado de São Paulo.
- EARLE, TIMOTHY K., AND JONATHAN E. ERICSON. Editors. 1977. *Exchange systems in prehistory*. New York: Academic Press.
- ERICKSON, CLARK L. 2000. "The Lake Titicaca Basin: A Precolumbian built landscape," in *Imperfect balance: Landscape transformations in the Precolumbian Americas*. Edited by D. L. Lentz, pp. 311–56. New York: Columbia University Press.
- ERIKSON, PHILIPPE. 1993. "Une nébuleuse compacte: Le macro-ensemble pano," in *La remontée de l'Amazone: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 45–58, L'Homme 126–128, 33(2–4).
- ESCALANTE FONTANEDA, HERNANDO DE. 1575. Memoria de las cosas i costa i Indios de la Florida. Photocopy of a transcript of the original document extant in the archive of Simancas, attested by Muñoz and preserved in the Lenox Library, Library of Congress. [Fs]

- FACUNDES, SIDNEY DA SILVA. 2002. "Historical linguistics and its contribution to improving knowledge of Arawak," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 74–96. Urbana: University of Illinois Press.
- FAUSTO, CARLOS. 2001. *Inimigos fiéis: História guerra e xamanismo na Amazônia*. São Paulo: Editora da Universidade de São Paulo. [EFN]
- FRANCIS, PETER D., F. J. KENSE, AND P. G. DUKE. Editors. 1981. *Networks of the past: Regional interaction in archaeology*. Calgary: Archaeological Association of the University of Calgary.
- FRY, ROBERT E. Editor. 1980. *Models and methods in regional exchange*. Society for American Archaeology Papers 1.
- GADE, DANIEL W. 1972. "Comercio y colonización en la zona de contacto entre la sierra y las tierras bajas del valle del Urubamba en el Perú," in *XXXIX Congreso Internacional de Americanistas*, vol. 4, pp. 207–21. Lima: Instituto de Estudios Peruanos.
- GASSÓN, RAFAEL A. 1996. "La evolución del intercambio a larga distancia en el nororiente de Suramérica: Bienes de intercambio y poder político en una perspectiva diacrónica," in *Caciques, intercambio y poder: Interacción regional en el área intermedia de las Américas*. Edited by C. H. Langebaek and F. Cardenas-Arroyo, pp. 133–54. Bogotá: Departamento de Antropología, Universidad de los Andes.
- . 2000. *Quiripas and mostacillas: The evolution of shell beads as a medium of exchange in northern South America*. *Ethnohistory* 47:581–609.
- . 2002. Orinoquia: The archaeology of the Orinoco River Basin. *Journal of World Prehistory* 16:237–311.
- . 2003. "Ceremonial feasting in the Colombian and Venezuelan llanos: Some remarks on its sociopolitical and historical significance," in *Histories and historicities in Amazonia*. Edited by N. Whitehead, pp. 179–201. Lincoln: University of Nebraska Press.
- GASTINEAU, C. F., W. J. DARBY, AND T. B. TURNER. Editors. 1979. *Fermented food beverages in nutrition*. New York: Academic Press.
- GLASER, BRUNO, AND WILLIAM I. WOODS. Editors. 2004. *Amazonian dark earths: Explorations in space and time*. Berlin: Springer.
- GOLDMAN, IRVING. 1966. *The Cubeo: Indians of the Northwest Amazon*. Urbana: University of Illinois Press.
- GOMES, DENISE. 2001. "Santarém: Symbolism and power in the tropical forest," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 134–55. London: British Museum Press.
- GOW, PETER. 1991. *Of mixed blood: Kinship and history in Peruvian Amazonia*. Oxford: Clarendon Press.
- . 2002. "Piro, Apuríná, and Campa: Social dissimulation and assimilation as historical processes in southwestern Amazonia," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 147–70. Urbana: University of Illinois Press.
- GREENBERG, JOSEPH H. 1987. *Language in the Americas*. Stanford: Stanford University Press.
- GREGOR, THOMAS. 1977. *Mehinaku: The drama of daily life in a Brazilian Indian village*. Chicago: University of Chicago Press.
- . 1990. "Uneasy peace: Intertribal relations in Brazil's upper Xingú," in *The anthropology of war*. Edited by J. Haas, pp. 105–24. Cambridge: Cambridge University Press.
- GUAPINDAIA, VERA. 2001. "Encountering the ancestors: The Maracá urns," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 156–73. London: British Museum Press.
- HECKENBERGER, MICHAEL. 1996. War and peace in the shadow of empire: Sociopolitical change in the upper Xingu of southeastern Amazonia, A.D. 1400–2000. Ph.D. diss., University of Pittsburgh, Pittsburgh, Pa.
- . 2002. "Rethinking the Arawakan diaspora: Hierarchy, regionality, and the Amazonian Formative," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 99–122. Urbana: University of Illinois Press.
- . 2005. *The ecology of power: Culture, place, and personhood in the southern Amazon, AD 1000–2000*. New York: Routledge. [MH]
- HECKENBERGER, MICHAEL, JAMES B. PETERSEN, AND EDUARDO G. NEVES. 1999. Village permanence in Amazonia: Two archaeological examples from Brazil. *Latin American Antiquity* 10:353–76.
- HEMMING, JOHN. 1978. *Red gold: The conquest of the Brazilian Indians*. London: Macmillan.
- HERRERA, LUISA FERNANDA, INES CAVELIER, CAMILO RODRIGUESZ, AND SANTIAGO MORA. 1992. The technical transformation of an agricultural system in the Colombian Amazon. *World Archaeology* 24:98–113.
- HILBERT, PETER PAUL. 1968. *Archäologische Untersuchungen am Mittleren Amazonas*. Marburger Studien zur Völkerkunde 1.
- HILBERT, P., AND K. HILBERT. 1980. Resultados preliminares de pesquisa arqueológica nos rios Nhamundá e Trombetas, baixo Amazonas. *Boletim do Museu Paraense Emílio Goeldi*, n. s., 75. [EGN]
- HILL, JONATHAN D. 1984. Social equality and ritual hierarchy: The Arawakan Wakuénai of Venezuela. *American Ethnologist* 11:528–44. [JDH]
- . 1985. "Agnatic sibling relations and rank in northern Arawakan myth and social life," in *Sibling relations in Lowland South America*. Edited by Judith Shapiro, pp. 25–33. Working Papers on South American Indians. Bennington, VT: Bennington College. [JDH]
- . 1987. Wakuénai ceremonial exchange in the northwest Amazon region. *Journal of Latin American Lore* 13:183–224. [JDH]
- . 1989. Ritual production of environmental history among the Arawakan Wakuénai of Venezuela. *Human Ecology* 17 (1): 1–25. [JDH]
- . 1993. *Keepers of the sacred chants: The poetics of ritual power in an Amazonian society*. Tucson: University of Arizona Press.
- . 1996a. "Introduction: Ethnogenesis in the Americas, 1492–1992," in *History, power, and identity: Ethnogenesis in the Americas, 1492–1992*. Edited by J. D. Hill, pp. 1–19. Iowa City: University of Iowa Press.
- . 1996b. "Ethnogenesis in the northwest Amazon: An emerging regional picture," in *History, power, and identity: Ethnogenesis in the Americas, 1492–1992*. Edited by J. D. Hill, pp. 142–60. Iowa City: University of Iowa Press.
- . 1996c. *History, power, and identity: Ethnogenesis in the Americas, 1492–1992*. Iowa City: University of Iowa Press. [JDH]
- . 1999. Nationalisme, chamanisme, et histoires indigènes au Venezuela. *Ethnologie Française* 29:387–96. [JDH]
- . 2002. "Shamanism, colonialism, and the wild woman: Fertility cultism and historical dynamics in the upper Rio Negro region," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 223–47. Urbana: University of Illinois Press.
- . 2003. Shamanizing the state in Venezuela. *Journal of Latin American Lore* 21:163–77. [JDH]
- . 2004. "Metamorphosis: Mythic and musical modes of exchange in the Amazon rain forests of Venezuela and Colombia," in *Music in Latin America and the Caribbean: An encyclopedic history*, vol. 1, *Performing beliefs: Indigenous cultures of South America, Central America, and Mexico*. Edited by Malena Kuss, pp. 25–48. Austin: University of Texas Press. [JDH]
- HILL, JONATHAN D., AND FERNANDO SANTOS-GRANERO. Editors. 2002. *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Urbana: University of Illinois Press.

- HORNBERG, ALF. 1988 (1986). *Dualism and hierarchy in lowland South America: Trajectories of indigenous social organization*. Uppsala Studies in Cultural Anthropology 9. Stockholm: Almqvist & Wiksell International.
- . 1990. Highland and lowland conceptions of social space in South America: Some ethnoarchaeological affinities. *Folk* 32:61–92.
- . 1993. Panoan marriage sections: A comparative perspective. *Ethnology* 32:101–8.
- . 1998. "Serial redundancy in Amazonian social structure," in *Transformations of kinship*. Edited by M. Godelier, T. R. Trautmann, and F. Tjon Sie Fat, pp. 168–86. Washington, D.C.: Smithsonian Institution Press.
- . 2000. "Accumulation based on symbolic versus intrinsic 'productivity': Conceptualizing unequal exchange from *Spondylus* shells to fossil fuels," in *World system history: The social science of long-term change*. Edited by R. Denemark, J. Friedman, B. Gills, and G. Modelski, pp. 235–52. London: Routledge.
- . 2001. Vital signs: An ecosemiotic perspective on the human ecology of Amazonia. *Sign Systems Studies* 29:121–52.
- HUGH-JONES, CHRISTINE. 1977. Social classification among the South American Indians of the Vaupés region of Colombia. Ph.D. diss., University of Cambridge, Cambridge, U.K.
- HUGH-JONES, STEPHEN. 1979. *The palm and the Pleiades: Initiation and cosmology in northwest Amazonia*. Cambridge: Cambridge University Press.
- HUNLEY, KEITH, AND JEFFREY C. LONG. 2005. Gene flow across linguistic boundaries in Native North American populations. *Proceedings of the National Academy of Sciences, U.S.A.* 102:1312–17.
- ISBELL, WILLIAM H. 1988. "City and state in Middle Horizon Huari," in *Peruvian prehistory: An overview of pre-Inca and Inca society*. Edited by R. W. Keatinge, pp. 164–89. Cambridge: Cambridge University Press.
- JACKSON, JEAN E. 1975. Patrilineal organization in the northwest Amazon. Paper presented at the 74th annual meeting of the American Anthropological Association. San Francisco.
- . 1983. *The fish people: Linguistic exogamy and Tukanoan identity in northwest Amazonia*. Cambridge: Cambridge University Press.
- JENSEN, CHERYL. 1999. "Tupí-Guaraní," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 125–63. Cambridge: Cambridge University Press.
- JONES, SIÂN. 1997. *The archaeology of ethnicity: Constructing identities in the past and present*. London: Routledge.
- KAUFMAN, TERRENCE. 1994. "The native languages of South America," in *Atlas of the world's languages*. Edited by C. Moseley and R. E. Asher, pp. 46–76. London: Routledge.
- KERN, DIRSE C., GILMA D'AQUINO, TARCÍSIO E. RODRIGUES, FRANCISCO J. LIMA FRAZÃO, WIM SOMBROEK, THOMAS P. MYERS, AND EDUARDO G. NEVES. 2003. "Distribution of Amazonian dark earths in the Brazilian Amazon," in *Amazonian dark earths: Origin, properties, management*. Edited by J. Lehmann, D. C. Kern, B. Glaser, and W. I. Woods, pp. 51–75. Dordrecht: Kluwer.
- KLEIN, HARRIET E. MANELIS. 1994. "Genetic relatedness and language distributions in Amazonia," in *Amazonian Indians from prehistory to the present: Anthropological perspectives*. Edited by A. C. Roosevelt, pp. 343–61. Tucson: University of Arizona Press.
- KLEIN, HARRIET E. MANELIS, AND LOUISA R. STARK. Editors. 1985. *South American Indian languages: Retrospect and prospect*. Austin: University of Texas Press.
- KURELLA, DORIS. 1998. "The Muisca: Chiefdoms in transition," in *Chiefdoms and chieftaincy in the Americas*. Edited by E. M. Redmond, pp. 89–216. Gainesville: University Press of Florida.
- LA LONE, DARRELL. 2000. Rise, fall, and semiperipheral development in the Andean world-system. *Journal of World-Systems Research* 6(1):68–99.
- LATHRAP, DONALD W. n.d. The Upper Amazon Basin as an archaeological area: Problems and prospects. MS.
- . 1966. "Relationships between Mesoamerica and the Andean areas," in *Handbook of Middle American Indians*, vol. 4, *Archaeological frontiers and external connections*. Edited by G. F. Ekholm and G. R. Willey, pp. 265–76. Austin: University of Texas Press.
- . 1970. *The Upper Amazon*. London: Thames and Hudson.
- . 1971. "The tropical forest and the cultural context of Chavín," in *Dumbarton Oaks Conference on Chavín*. Edited by E. P. Benson, pp. 73–100. Washington, D.C.: Dumbarton Oaks Research Library and Collection, Trustees for Harvard University.
- . 1973. The antiquity and importance of long-distance trade relationships in the moist tropics of Pre-Columbian South America. *World Archaeology* 5:170–86.
- . 1974. The moist Tropics, the arid lands, and the appearance of great art styles in the New World. *Museum, Texas Tech University, Special Publications* 7:115–58.
- . 1977. "Our father the cayman, our mother the gourd: Spinden revisited, or A unitary model for the emergence of agriculture in the New World," in *Origins of agriculture*. Edited by C. Reed, pp. 713–51. The Hague: Mouton. [EGN]
- LATHRAP, DONALD W., DONALD COLLIER, AND HELEN CHANDRA. 1975. *Ancient Ecuador: Culture, clay and creativity 3000–300 B.C.* Chicago and Guayaquil: Field Museum of Natural History and Museo del Banco del Pacífico.
- LATHRAP, DONALD W., JORGE G. MARCOS, AND JAMES A. ZEIDLER. 1977. Real Alto: An ancient ceremonial center. *Archaeology* 30(1):2–13.
- LEHMANN, JOHANNES, DIRSE C. KERN, BRUNO GLASER, AND WILLIAM I. WOODS. Editors. 2003. *Amazonian dark earths: Origin, properties, management*. Dordrecht: Kluwer.
- LIMA, H. P. 2004. Cronologia da Amazônia Central: O significado da variabilidade da fase Manacapuru. MS, Fundação de Amparo à Pesquisa do Estado de São Paulo. [EGN]
- LOOS, EUGENE E. 1999. "Pano," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 227–50. Cambridge: Cambridge University Press.
- LOTHROP, SAMUEL K. 1940. "South America as seen from Middle America," in *The Maya and their neighbors*. Edited by Clarence L. Hay et al., pp. 417–29. New York and London: D. Appleton-Century. [ES]
- LOVÉN, SVEN. 1928. "The Orinoco in old Indian times (Economy and trade)," in *Atti del XXII Congresso Internazionale degli Americanisti*, vol. 2, pp. 711–26. Rome: Istituto Cristoforo Colombo.
- LYON, PATRICIA J. 1981. "An imaginary frontier: Prehistoric highland-lowland interchange in the southern Peruvian Andes," in *Networks of the past: Regional interaction in archaeology*. Edited by P. D. Francis, F. J. Kense, and P. G. Duke, pp. 3–18. Calgary: Archaeology Association of the University of Calgary.
- MAC NEISH, RICHARD S., THOMAS C. PATTERSON, AND DAVID L. BROWMAN. 1975. *The Central Peruvian prehistoric interaction sphere*. Papers of the Robert S. Peabody Foundation for Archaeology 7.
- MEGGERS, BETTY. 1971. *Amazonia: Man and culture in a counterfeit paradise*. Chicago: Aldine.
- . 1977. Vegetational fluctuation and prehistoric cultural adaptations in Amazonia: Some tentative correlations. *World Archaeology* 8:287–303. [EGN]
- . 1979. Climatic oscillation as a factor in the prehistory of Amazonia. *American Antiquity* 44:252–66. [EGN]
- . 1982. "Archeological and ethnographic evidence compatible with the model of forest fragmentation," in *Biological diversification in the tropics*. Edited by G. T. Prance, pp. 483–96. New York: Columbia University Press.
- . 1987. "The early history of man in Amazonia," in *Biogeography and Quaternary history in Tropical America*. Edited by T. C. Whitmore and G. T. Prance, pp. 151–74. Oxford: Clarendon Press.
- . 1992. "Prehistoric population density in the Amazon Basin," in *Disease and demography in the Americas*. Edited by J.

- W. Verano and D. H. Ubelaker, pp. 197–205. Washington, D.C.: Smithsonian Institution Press.
- MEGGERS, B., AND J. DANON. 1988. Identification and implications of a hiatus in the archaeological sequence on Marajó Island, Brazil. *Journal of the Washington Academy of Sciences* 78:245–53. [EGN]
- MEGGERS, BETTY, ONDEMAR F. DIAS, EURICO T. MILLER, AND DELSO PEROTA. 1988. "Implications of archaeological distributions in Amazonia," in *Proceedings of a workshop on Neotropical distribution patterns*. Edited by P. E. Vanzolini and W. R. Heyer, pp. 275–94. Rio de Janeiro: Academia Brasileira de Ciências.
- MEGGERS, BETTY, AND CLIFFORD EVANS. 1957. *Archaeological investigations at the mouth of the Amazon*. Washington, D.C.: Smithsonian Institution.
- MILLER, EURICO, ET AL. 1992. *Arqueologia nos empreendimentos hidrelétricos da Elettronorte: Resultados preliminares*. Brasília: Elettronorte. [EGN]
- MORA, SANTIAGO. 2003. "Archaeobotanical methods for the study of Amazonian dark earths," in *Amazonian dark earths: Origin, properties, management*. Edited by J. Lehmann, D. C. Kern, B. Glaser, and W. I. Woods, pp. 205–25. Dordrecht: Kluwer.
- MORAN, EMILIO. 1993. *Through Amazonian eyes: The human ecology of Amazonian populations*. Iowa City: University of Iowa Press.
- MOREY, ROBERT V., AND JOHN P. MARWITT. 1978. "Ecology, economy, and warfare in lowland South America," in *Advances in Andean archaeology*. Edited by D. L. Browman, pp. 247–58. Paris: Mouton.
- MOYA PONS, FRANK. 1973. *La sociedad taína*. Santo Domingo, R.D.: Editorial Cultural Dominicana. [FS]
- MYERS, THOMAS P. 1976. Isolation and ceramic change: A case from the Ucayli River, Peru. *World Archaeology* 7:333–51.
- . 1983. Redes de intercambio tempranas en la hoya Amazónica. *Amazônia Peruana* 4(8):61–75.
- . 1992. Agricultural limitations of the Amazon in theory and practice. *World Archaeology* 24:82–97.
- . 2004. "Dark earth in the upper Amazon," in *Amazonian dark earths: Explorations in space and time*. Edited by B. Glaser and W. I. Woods, pp. 67–94. Berlin: Springer.
- MYERS, THOMAS P., WILLIAM M. DENEVAN, ANTOINETTE WINKLERPRINS, AND ANTONIO PORRO. 2003. "Historical perspectives on Amazonian dark earths," in *Amazonian dark earths: Origin, properties, management*. Edited by J. Lehmann, D. C. Kern, B. Glaser, and W. I. Woods, pp. 15–28. Dordrecht: Kluwer.
- NEVES, EDUARDO G. 1999. "Changing perspectives in Amazonian archaeology," in *Archaeology in Latin America*. Edited by G. Politis and B. Alberti, pp. 216–43. London: Routledge.
- . 2000. Paths in dark waters: Archaeology as indigenous history in the Upper Rio Negro Basin, Northwest Amazon. Ph.D. diss., Indiana University, Bloomington, Ind. [EGN]
- . 2001. "Indigenous historical trajectories in the upper Rio Negro Basin," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 266–86. London: British Museum Press.
- . 2003. Levantamento arqueológico da área de confluência dos rios Negro e Solimões, Estado do Amazonas: Continuidade das escavações, análise da composição química e montagem de um sistema de informações geográficas. MS, Fundação de Amparo a Pesquisa do Estado de São Paulo. [EGN]
- . 2005a. "Warfare in precolonial Amazonia: When Carneiro meets Clastres," in *Warfare in cultural context: Practice theory and the archaeology of war*. Edited by A. Nielsen and W. Walker. Tucson: University of Arizona Press. In press. [EGN]
- . 2005b. A Amazônia pré-colonial. MS. [EGN]
- NEVES, E., AND J. PETERSEN. 2005. "The political economy of pre-Columbian Amerindians: Landscape transformations in Central Amazonia," in *Time and complexity in the Neotropical Lowlands: Explorations in historical ecology*. Edited by W. Balée and C. Erickson. New York: Columbia University Press. In press. [EGN]
- NEVES, EDUARDO G., JAMES B. PETERSEN, ROBERT N. BARTONE, AND MICHAEL J. HECKENBERGER. 2004. "The timing of terra preta formation in the central Amazon: Archaeological data from three sites," in *Amazonian dark earths: Explorations in space and time*. Edited by B. Glaser and W. I. Woods, pp. 125–34. Berlin: Springer.
- NEVES, EDUARDO G., JAMES B. PETERSEN, ROBERT N. BARTONE, AND CARLOS AUGUSTO DA SILVA. 2003. "Historical and socio-cultural origins of Amazonian dark earths," in *Amazonian dark earths: Origin, properties, management*. Edited by J. Lehmann, D. C. Kern, B. Glaser, and W. I. Woods, pp. 29–50. Dordrecht: Kluwer.
- NIMUENDAJÚ, CURT. 1926. *Die Palikur Indianer und ihre Nachbarn*. Gothenburg.
- . 1987. *Mapa etno-histórico de Curt Nimuendajú*. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística.
- . 2004. In pursuit of a past Amazon: Archaeological researches in the Brazilian Guyana and in the Amazon region. Edited by P. Stenborg. Etnologiska studier 45. Gothenburg: Världskulturmuseet i Göteborg.
- NORDENSKIÖLD, ERLAND. 1930. *L'archéologie du Bassin de l'Amazone*. Paris: Les Éditions G. Van Oest.
- OBBEREM, UDO. 1974 (1967). "Trade and trade goods in the Ecuadorian montaña," in *Native South Americans: Ethnology of the least known continent*. Edited by P. J. Lyon, pp. 346–57. Boston: Little, Brown.
- OLIVER, JOSÉ R. 1989. The archaeological, linguistic, and ethnohistorical evidence for the expansion of Arawakan into northwestern Venezuela and northeastern Colombia. Ph.D. diss., University of Illinois at Urbana-Champaign, Urbana, Ill.
- . 2001. "The archaeology of forest foraging and agricultural production in Amazonia," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 50–85. London: British Museum Press.
- OLSEN, K., AND B. SCHAAL. 1999. Evidence on the origin of cassava: Phylogeography of *Manihot esculenta*. *Proceedings of the National Academy of Sciences, U.S.A.* 96:5586–91. [EGN]
- PARSONS, JAMES J. 1985. "Raised field farmers as pre-Columbian landscape engineers: Looking north from the San Jorge (Colombia)," in *Prehistoric intensive agriculture in the Tropics*. Edited by I. S. Farrington, pp. 149–65. British Archaeological Reports International Series 232.
- PARSONS, JEFFREY R., AND CHARLES M. HASTINGS. 1988. "The Late Intermediate Period," in *Peruvian prehistory: An overview of pre-Inca and Inca society*. Edited by R. W. Keatinge, pp. 190–229. Cambridge: Cambridge University Press.
- PEREIRA, EDITHE. 2001. "Testimony in stone: Rock art in the Amazon," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 214–29. London: British Museum Press.
- PETERSEN, JAMES B., MICHAEL HECKENBERGER, AND EDUARDO NEVES. 2003. "A prehistoric ceramic sequence from the Central Amazon and its relationship to the Caribbean," in *XIX International Congress for Caribbean Archaeology*, vol. 1. Edited by L. Alofs and R. A. C. F. Dijkhoff, pp. 250–59. Publications of the Archaeological Museum, Aruba, 9.
- PETERSEN, JAMES B., EDUARDO NEVES, AND MICHAEL HECKENBERGER. 2001. "Gift from the past: Terra preta and prehistoric Amerindian occupation in Amazonia," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 86–105. London: British Museum Press.
- POLIA MECONI, MARIO. 1995. *Los Guayacundos Ayahuacas: Una arqueología desconocida*. Lima: Pontificia Universidad Católica del Perú.
- POLITIS, GUSTAVO. 2001. "Foragers of the Amazon: The last survivors or the first to succeed?" in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 26–49. London: British Museum Press.
- PORRO, ANTONIO. 1994. "Social organization and political power in the Amazon floodplain," in *Amazonian Indians from prehistory to the present: Anthropological perspectives*. Edited

- by A. C. Roosevelt, pp. 79–94. Tucson: University of Arizona Press.
- POSEY, DARRELL A. 1985. Indigenous management of tropical forest ecosystems: The case of the Kayapó Indians of the Brazilian Amazon. *Agroforestry Systems* 3:139–58.
- POSEY, DARRELL A., AND WILLIAM BALÉE. Editors. 1989. *Resource management in Amazonia: Indigenous and folk strategies*. Advances in Economic Botany 7.
- RADIN, PAUL. 1946. *Indians of South America*. Garden City: Doubleday. [FS]
- RENARD-CASEVITZ, FRANCE-MARIE. 1993. "Guerriers du sel, sauniers de la paix," in *La remontée de l'Amazone: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 25–43. *L'Homme* 126–128, 33[2–4].
- . 2002. "Social forms and regressive history: From the Campa cluster to the Mojos and from the Mojos to the landscaping terrace-builders of the Bolivian savanna," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 123–46. Urbana: University of Illinois Press.
- RENARD-CASEVITZ, FRANCE-MARIE, THIERRY SAIGNES, AND ANNE CHRISTINE TAYLOR-DESCOLA. 1986. *L'Inca, l'Espagnol et les sauvages: Rapports entre les sociétés Amazoniennes et Andines du Xve au XVIIe siècle*. Synthèse 21. Paris: Editions Recherche sur les Civilisations.
- RENFREW, COLIN. 1987. *Archaeology and language: The puzzle of Indo-European origins*. London: Pimlico.
- RIVAL, LAURA. 1998. "Domestication as a historical and symbolic process: Wild gardens and cultivated forests in the Ecuadorian Amazon," in *Advances in historical ecology*. Edited by W. Balée, pp. 232–50. New York: Columbia University Press.
- RIVIÈRE, PETER G. 1973. The Lowland South America culture area: Towards a structural definition. Paper presented at the 72nd Annual Meeting of the American Anthropological Association, New Orleans.
- RODRIGUES, ARYON D. 1999. "Tupí," in *The Amazonian languages*. Edited by R. M.W. Dixon and A. Y. Aikhenvald, pp. 107–24. Cambridge: Cambridge University Press.
- ROOSEVELT, ANNA. 1987. "Chiefdoms of the Amazon and Orinoco," in *Chiefdoms in the Americas*. Edited by R. Drennan and C. A. Uribe, pp. 153–85. Lanham, Md.: University Press of America. [RG]
- . 1991. *Moundbuilders of the Amazon: Geophysical archaeology on Marajo Island, Brazil*. New York: Academic Press [RG, EGN]
- . 1993. "The rise and fall of the Amazon chiefdoms," in *La remontée de l'Amazone: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 255–83. *L'Homme* 126–128, 33[2–4].
- . 1994. "Amazonian anthropology: Strategy for a new synthesis," in *Amazonian Indians from prehistory to the present: Anthropological perspectives*. Edited by A. C. Roosevelt, pp. 1–29. Tucson: University of Arizona Press.
- ROOSEVELT, ANNA C., R. A. HOUSLEY, M. IMAZIO DA SILVEIRA, S. MARANCA, AND R. JOHNSON. 1991. Eighth-millennium pottery from a prehistoric shell midden in the Brazilian Amazon. *Science* 254:1621–24.
- ROTH, WALTER EDMUND. 1974 [1924–29]. "Trade and barter among the Guiana Indians," in *Native South Americans: Ethnology of the least known continent*. Edited by P. J. Lyon, pp. 159–65. Boston: Little, Brown.
- ROUSE, IRVING. 1986. *Migrations in prehistory: Inferring population movement from cultural remains*. New Haven: Yale University Press.
- RUHLER, MERRITT. 1987. *A guide to the world's languages*. Vol. 1. *Classification*. Stanford: Stanford University Press.
- SABLOFF, JEREMY A., AND WILLIAM L. RATHJE. 1975. *Changing pre-Columbian commercial system: The 1972–1973 seasons at Cozumel, Mexico*. Monographs of the Peabody Museum 3.
- SANDERSON, STEPHEN K. Editor. 1995. *Civilizations and world systems: Studying world-historical change*. Walnut Creek: AltaMira.
- SANTOS-GRANERO, FERNANDO. 1992. *Etnohistoria de la Alta Amazonia: Siglos XV–XVIII*. Quito: Abya-Yala.
- . 1998. Writing history into the landscape: Space, myth, and ritual in contemporary Amazonia. *American Ethnologist* 25:128–48.
- . 2002. "The Arawakan matrix: Ethos, language, and history in native South America," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 25–50. Urbana: University of Illinois Press.
- SCHAAN, DENISE. 2001. "Into the labyrinths of Marajoara pottery: Status and cultural identity in prehistoric Amazonia," in *Unknown Amazon: Culture in nature in ancient Brazil*. Edited by C. McEwan, C. Barreto, and E. Neves, pp. 108–33. London: British Museum Press.
- SCHMIDT, MAX. 1917. *Die Aruaken: Ein Beitrag zum Problem der Kulturverbreitung*. Ph.D. diss., Universität Leipzig, Leipzig, Germany.
- SCHMIDT, MAX. 1974 [1951]. "Comments on cultivated plants and agricultural methods of South American Indians," in *Native South Americans: Ethnology of the least known continent*. Edited by P. J. Lyon, pp. 60–68. Boston: Little, Brown.
- SCHORTMAN, EDWARD M., AND PATRICIA A. URBAN. Editors. 1992. *Resources, power, and interregional interaction*. New York: Plenum.
- SCHUBERT, CARLOS. 1988. Climatic changes during the last glacial maximum in northern South America and the Caribbean: A review. *Interciencia* 13 (3):128–37. [RG]
- SCHWARTZ, STUART B., AND FRANK SALOMON. 1999. "New peoples and new kinds of people: Adaption, readjustment, and ethnogenesis in South American indigenous societies (colonial era)," in *The Cambridge history of the native peoples of the Americas*, vol. 3, *South America*, pt. 2. Edited by F. Salomon and S. B. Schwartz, pp. 443–501. Cambridge: Cambridge University Press.
- SEEGER, ANTHONY. 1977. "Fixed points on arcs in circles: The temporal, processual aspect of Suyá space and society," in *Actes du XLIIe Congrès International des Américanistes*, vol. 2, pp. 341–59. Paris: Musée de l'Homme.
- SEKI, LUCY. 1999. "The upper Xingu as an incipient linguistic area," in *The Amazonian languages*. Edited by R. M. W. Dixon and A. Y. Aikhenvald, pp. 417–30. Cambridge: Cambridge University Press.
- SHADY SOLÍS, RUTH. 1999. "Sociedades formativas de Bagua-Jaén y sus relaciones andinas y amazónicas," in *Formativo Sudamericano, una revaluación*. Edited by P. Ledergerber-Crespo, pp. 201–11. Quito: Abya-Yala.
- SIMÕES, M. 1981. Coletores-pescadores ceramistas do litoral do Salgado (Pará). *Boletim do Museu Paraense Emílio Goeldi*, n.s., no. 78, pp. 1–31. [EGN]
- SORENSEN, ARTHUR P., JR. 1974 [1967]. "Multilingualism in the northwest Amazon," in *Native South Americans: Ethnology of the least known continent*. Edited by P. J. Lyon, pp. 138–58. Boston: Little, Brown.
- SPENCER, CHARLES S. 1998. "Investigating the development of Venezuelan chiefdoms," in *Chiefdoms and chieftaincy in the Americas*. Edited by E. M. Redmond, pp. 104–37. Gainesville: University Press of Florida.
- SPENCER, CHARLES, E. REDMOND, AND M. RINALDI. 1994. Drained fields at La Tigra Venezuelan llanos: A regional perspective. *Latin American Antiquity* 5:119–43. [RG]
- STARK, LOUISA R. 1972. Machaj-Juyai: Secret language of the Callahuayas. *Papers in Andean Linguistics* 1:199–227.
- . 1985. "Indigenous languages of lowland Ecuador: History and current status," in *South American Indian languages: Retrospect and prospect*. Edited by H. E. M. Klein and L. R. Stark, pp. 157–93. Austin: University of Texas Press.
- STEGGERDA, MORRIS. 1950. "Anthropometry of South American Indians," in *Handbook of South American Indians*, vol. 6, *Physical anthropology, linguistics, and cultural geography of*

- South American Indians*. Edited by J. H. Steward, pp. 57–69. Washington, D.C.: Smithsonian Institution.
- STEWARD, JULIAN H. Editor. 1950. *Handbook of South American Indians*. Vol. 6. *Physical anthropology, linguistics, and cultural geography of South American Indians*. Washington, D.C.: Smithsonian Institution.
- STEWARD, JULIAN H., AND LOUIS C. FARON. 1959. *Native peoples of South America*. New York: McGraw-Hill.
- SUSNIK, BRANISLAVA. 1971. *El indio colonial del Paraguay*. Vol. 3. *El Chaqueño: Guaycurúes y Chanés-Arawak*. Asunción: Museo Etnográfico "Andrés Barbero." [Es]
- TAYLOR, ANNE CHRISTINE. 1999. "The western margins of Amazonia from the early sixteenth to the early nineteenth century," in *The Cambridge history of the native peoples of the Americas*, vol. 3, *South America*, pt. 2. Edited by F. Salmon and S. B. Schwartz, pp. 188–256. Cambridge: Cambridge University Press.
- TORERO, ALFREDO. 2002. *Idiomas de los Andes: Lingüística e historia*. Lima: Instituto Francés de Estudios Andinos.
- VIDAL, SILVIA M. 2002. "Secret religious cults and political leadership: Multiethnic confederacies from northwestern Amazonia," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 248–68. Urbana: University of Illinois Press.
- . 2003. "The Arawak-speaking groups of northwestern Amazonia: Amerindian cartography as a way of preserving and interpreting the past," in *Histories and historicities in Amazonia*. Edited by N. L. Whitehead, pp. 33–57. Lincoln: University of Nebraska Press.
- VIDAL, SILVIA, AND ALBERTA ZUCCHI 1996. Impacto de la colonización hispanolusitana en las organizaciones sociopolíticas y económicas de los Maipures-Arawakos del alto Orinoco-Río Negro, siglos XVII–XVIII. *América Negra* 11:107–29. [Es]
- VIVEIROS DE CASTRO, EDUARDO. 1992. *From the enemy's point of view: Humanity and divinity in an Amazonian society*. Chicago: University of Chicago Press.
- . 1996. Images of nature and society in Amazonian ethnology. *Annual Review of Anthropology* 25:179–200.
- WASSÉN, S. HENRY. Editor. 1972. *A medicine-man's implements and plants in a Tiahuanacoid tomb in highland Bolivia*. Etnologiska Studier 32. Gothenburg: Göteborgs Etnografiska Museum.
- WHITEHEAD, NEIL L. 1990. "The Snake Warriors—Sons of the Tiger's Teeth: A descriptive analysis of Carib warfare, ca. 1500–1820," in *The anthropology of war*. Edited by J. Haas, pp. 146–70. Cambridge: Cambridge University Press.
- . 1992. "Tribes make states and states make tribes: Warfare and the creation of colonial tribes and states in northeastern South America," in *War in the tribal zone*. Edited by R. B. Ferguson and N. L. Whitehead, pp. 127–50. Santa Fe and Oxford: School of American Research/James Currey.
- . 1993. "Ethnic transformation and historical discontinuity in native Amazonia and Guayana, 1500–1900," in *La remontée de l'Amazone: Anthropologie et histoire des sociétés amazoniennes*. Edited by P. Descola and A. C. Taylor, pp. 285–305. L'Homme 126–128, 33(2–4).
- . 1994. "The ancient Amerindian polities of the Amazon, the Orinoco, and the Atlantic coast: A preliminary analysis of their passage from antiquity to extinction," in *Amazonian Indians from prehistory to the present: Anthropological perspectives*. Edited by A. C. Roosevelt, pp. 33–53. Tucson: University of Arizona Press.
- . 2002. "Arawak linguistic and cultural identity through time: Contact, colonialism, and creolization," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 51–73. Urbana: University of Illinois Press.
- WILLIAMS, DENIS. 1985. Petroglyphs in the prehistory of northern Amazonia and the Antilles. *Advances in World Archaeology* 4:335–87.
- WILMSEN, EDWIN N. Editor. 1972. *Social exchange and interaction*. Museum of Anthropology, University of Michigan, Anthropological Papers 46.
- WILSON, DAVID J. 1999. *Indigenous South Americans of the past and present: An ecological perspective*. Boulder: Westview Press.
- WOLF, ERIC R. 1982. *Europe and the people without history*. Berkeley: University of California Press.
- ZUCCHI, ALBERTA. 1991. "El Negro-Casiquiare—Alto Orinoco como ruta conectiva entre el Amazonas y el norte de Suramérica," in *Proceedings of the Twelfth Congress of the International Association for Caribbean Archaeology*. Edited by L. S. Robinson, pp. 1–33. Martinique.
- . 2002. "A new model of the northern Arawakan expansion," in *Comparative Arawakan histories: Rethinking language family and culture area in Amazonia*. Edited by J. D. Hill and F. Santos-Granero, pp. 199–222. Urbana: University of Illinois Press.