

NUKAK  
Ethnoarchaeology of an  
Amazonian People

Gustavo G. Politis

translated by Benjamin Alberti



Walnut Creek, CA  
University College London Institute of Archaeology Publications

## *Chapter 10*

### FINAL CONSIDERATIONS

The research I have developed and discussed in the previous chapters demonstrates the complexity of Amazonian forager behavior and enables particularities of the hunter-gatherers of the region to be distinguished. Even though throughout my research I focused on recording and analyzing certain ecological aspects of Nukak behavior, I believe that this ethnoarcheological research could be included in what has been called the “New Synthesis” in Amazonian studies (Viveiros de Castro 1996), or the “Revised Paradigm” (Stahl 2002). This is a new perspective on Amazonian cultural development that emphasizes historical circumstances and takes into account the socio-ideational dimension of these societies. Within this framework I have summarized and discussed several issues of major interest for archaeologists, although it is my belief that some of the subjects tackled in this book are also of interest for social anthropologists and human ecologists. This last chapter distinguishes the main subject areas covered in this book to highlight what I think are the principle contributions of this study.

#### THE NUKAK AS HUNTER-GATHERERS

There are several present-day groups in the Lowlands of South America who maintain, or until recently maintained, a hunter-gatherer way of life; however, this fact need not imply that they do not practice—or have not practiced—some type of small-scale horticulture (Wilbert & Simoneau 1992). Examples are the Amahuaca (Lathrap 1968), Waorani (Yost 1981; Rival 1996), Xokleng (Henry 1941), Cuiva (Arcand 1972, 1976; Hurtado & Hill 1986), Pumé (Gragson 1989, Greaves 1997), and many others. Some are from the Tupí-Guaraní family, such as the Héta (Kozák et al. 1979), Awa-Guajá (Balée 1994, Cormier 2003), Aché (Hill & Hurtado 1995; Clastres 1998), and the Siriono<sup>1</sup> (Califano 1999; Holmberg 1950; Rydén 1941). It has been proposed that

many of these hunter-gatherers, especially the Tupí-Guaraní groups, are the product of a process of “regression,” having had in the past an economy with a greater reliance on horticulture that they subsequently abandoned owing to the impact of Western colonization (Lathrap 1968; Lévi-Strauss 1963:109–10). Other authors include in this stage most of the tropical South American foragers, which are considered to perhaps represent a “secondary readaptation” (Lee 1999:825), or “new adaptations, not primeval ones” (Roosevelt 1998:206). Whether this hypothesis can be tested with the available data or not the horticultural past of most of these groups does not diminish their potential for understanding the hunter-gatherer way of life. Most of them live—or lived until recently—as foragers, with minimal or no horticulture, a lack of marked hierarchies, and a pattern of high residential mobility. They have maintained this dynamic for generations and are distinctively different in subsistence terms from their more settled, horticulturist and fisher neighbors. Moreover, the historical changes in their mode of life have a simple yet profound implication: among South American foragers the adoption of horticultural practices is reversible, and the incorporation of cultivated plants into their diet is not a linear process that once embarked on cannot be abandoned. These examples demonstrate that under specific conditions that make it difficult to subsist with a large horticultural subsistence component in the Amazon, indigenous groups can return to a forager way of life, or significantly increase hunting and gathering to ensure their survival.

This “horticultural regression” also has other significant implications. Such changes are not evolutionary events but rather are fundamentally political actions determined by the history of the colonization of the continent. Horticultural regression shows that these people made decisions throughout their history in which they privileged certain values, such as political autonomy and cultural integrity, at the expense of others, such as access to commodities or the supposed alimentary security that crops may provide (see also Viveiros de Castro 1996:194).

A further interesting point concerning the Nukak is that they demonstrate the laxity of the differences among Amazonian groups and the difficulty of encapsulating such groups within categories based solely on subsistence or mobility. Although the Nukak can be characterized as mobile hunter-gatherers, they also share many aspects in common with riverine horticulturists in terms of kinship system and ideology. This can be demonstrated by the similarities that exist between the Nukak and the Cubeo or the Puinave. These groups have a comparable cosmology, and activities such as hunting, fishing, and the gathering of forest products occupy an important position not only in their economy but also in their symbolic construction of reality. In the

same way, the supposed difference between Amazonian hunter-gatherers and those from the savannah is not as marked or categorical (see for example Wilbert and Simoneau 1992). In the case of the Nukak, their strong similarities with the Cuiva—the hunter-gatherer bands studied during the 1970s by Arcand (1972)—should be addressed.

A further important point is that beyond the variations through time in the wild and domestic components of diet there is another aspect that makes the differences between hunter-gatherers and horticulturists even more blurred: the strategy that enables the concentration of resources and the management of nondomesticated plants. In this sense, the Nukak cannot be considered ecologically passive, subsisting within a supposedly pristine rainforest. They modify the floral structure of the landscape, not only by the clearing of chagras but more importantly by behavioral patterns outside the category of horticulture/agriculture. Rainforest floral structure may be modified by long-term hunter-gatherer occupations. The impact of these populations could be the result of “accidental” or “unconscious” actions (in the sense of Chase 1989), also labeled “incidental domestication” by Rindos (1984), or they could be the effect of a carefully planned strategy to improve the food productivity of the forest. In either case, it seems clear that residential mobility among the Nukak cannot be seen exclusively as a consequence of avoiding the over-exploitation of an easily depleted environment. On the contrary, the Nukak are environmental managers, generating “wild orchards,” promoting some species over others, and thereby increasing the productivity of the forest.

The same process can be recognized among foragers in neighboring areas. Zent and Zent (2002 and 2004) recorded 254 folk botanical species eaten by the Hoti of Venezuelan Guayana and collected valuable information in this regard. They proposed that the Hoti modify the structure of the rainforest through three main types of activity: harvest and dispersal of edible fruit trees, exploitation and manipulation of palms, and gap cultivation. The first two of these activities are closely related to the way the Nukak manage the rainforest. Among the Hoti of the High Parucito River a process of selective and intensive gathering of great quantities of a very limited variety of wild palm fruits has been recorded (Politis & Jaimes Ms). Also, the consistent discard in specific locations in the residential camps of palms products (such as uneaten seeds, shells, peels, endocarps, and so on) was observed, especially of coroba palms (*Attalea macrolepis*, Zent & Zent 2004) and cucurito palm (*Attalea maripa*). Abnormal concentrations of these two species have been observed in the Hoti territory rainforest and in the form of small “forest islands” in the surrounding savannahs of the piedmont (Politis & Jaimes Ms). Similarly to the Nukak case, many seeds of these and other palms and trees remain in the residential camps

in very specific places close to the Hoti dwellings. Therefore, the potential for germination is much higher compared to when ripe fruit naturally falls in the forest and must compete with a wide variety of other palms and trees. Each of these camps is a potential source for concentrated edible palms, as has been seen with the Nukak.

A telling story that was recorded by Zent and Zent (2004:17) exemplified this process. They found numerous cucurito-dominant patches during a trek toward the headwaters of the Cuchivero River. Their Hoti informant explained that some of these patches were clearly the living remains of past garden or settlement sites, and in some cases he was able to recall who had lived there. In other cases, these patches were found on ridge tops, where gardens are not normally located. In these cases it is possible that some of the cucurito patches were the result of human-set fires.

Other indigenous groups have specific ways of concentrating edible plants without being involved in classic horticultural practices. Reid (1979:28) states, with regard to the Hupdu, that when they trek through their territories, “they often passed through patches of secondary forest, in various stages of regrowth from old settlement and garden sites.” Furthermore, Reid claimed he could identify these patches of secondary forest up to 40 years after their creation. For the Kakwa, who consider more than 54 species edible (although they consume far fewer), the easiest way of reaching fruit is to fell the tree. They explain that “there are so many young trees that will later bear fruit that the natural resources will never be exhausted” (Silverwood-Cope 1990:50). According to this information on Hupdu and Kakwa fruit gathering and (especially logistical) mobility, these groups are probably creating resource patches and modifying the natural density of plant species in ways similar to those described here for the Nukak. Laden (1992) observed that the Efe’s forest use pattern concentrates edible plants along the paths and around ancient camps. Among the Huaorani from the Ecuadorian Amazon the distribution of several species seems to be influenced by human activities (Rival 1998b). The case of seje is notable (mentioned by Rival under the synonym *Jessenia batauna*). This palm grows along ridge tops where people collect the fruit during gathering expeditions and bring them back to camp, encouraging germination and facilitating propagation (Rival 1998b:238). It has been observed that among Amazonian native people “managed plants would also include plants that grow in cultivated areas or around living sites from seeds discarded after snack” (Dufour & Wilson 1994:116). Hutterer (1983:175) also recognized the constant influence of human population with minimal or no horticultural

practices and concluded that, “certain aspects in the patchy distribution of plants in tropical forest may be an effect of long-range and continuous human presence.”

The interaction between plants and humans is as old as humankind and undoubtedly resulted in changes in the distribution of gathered species from the very beginning of such interaction (see discussion in Hayden 1995). Hence, hunter-gatherers in one way or another will have always affected the natural distribution of some species, although this effect may have been of low intensity. Nonetheless, in this case, and in others such as the Efe and Hoti, the processes identified result in complex actions—conscious or not—that intersect several behavioral spheres (mobility, settlement, gathering and discard patterns, and so on) and generate a concentration of resources that significantly favors human beings.

#### TERRITORY AND MOBILITY

The multiple dimensionality of Nukak territory highlights the practical problems that archaeologists face when reconstructing the territory of past hunter-gatherers. Most approaches to the subject involve an explicit and implicit reductionism: territory is equated with band territory, and the principle way of defining and analyzing it is understood to be through the study of the resource structure. In other words, knowing how and when resources are available and whether or not bands exploit them allows conjectures to be made about myriad cultural aspects, from mobility to postmarital residence (Bettinger 1991; Cashdan 1983; Dyson Hudson & Dyson Hudson 1980:29–30; Ember 1975; Hassan 1981:56; Hayden 1981:377; Stein Mandryk 1993:41). A few have gone further and have explored the social dimension of territory (Barnard 1992; Pickering 1994; Silberbauer 1994).

The Nukak case demonstrates the shortcomings of these assumptions; for the Nukak their territory is much more than resources, it is considered to comprise the four physical and one metaphysical juxtaposed dimensions of territory, all of which are perceived as real. From the immediate surroundings of the camp, to distant places occupied by ancestors generations ago but that can be visited by the Nukak at anytime, everything is considered to be in some way or other “their territory”: one closer and better known, the other more distant and less frequented. None is exclusive, yet none is alien. In this sense, the territoriality of the Nukak intersects the economic, the social, and the ideational. After recognizing this, a problem emerges, as usual. How can these interrelated dimensions be differentiated in the archaeological record?

If this cannot be done, is it then correct to assume that only one, usually the first (the band territory), represents “the” territory? What happens to the others and their significance in economic, social, and ideational terms?

Territoriality is without a doubt a varied behavior among hunter-gatherers. It varies with time, in space, and from one cultural group to another. While the Alaskan Eskimos have social and clearly defined spatial boundaries (presumably among bands), and territories were defended by force if required (Burch & Ellana 1994), the Nukak are lax in their band territory and fluid in the right of access to resources. They certainly will not fight among one another for land or resources. Boundaries are diffuse and dynamic, and territories are separated by buffer areas and permeable frontiers. Defense and control are practically nonexistent and are in some ways autoregulated by the members of the different bands. The Hoti provide an interesting case in point, as they too have lax territories and vague exclusivity. The sense of belonging to each territory is expressed by the relationship between hunters and supernatural beings called *čoaimo*, the invisible guardian spirits that accompany them on their foraging trips (Storrie 1999). Each territory has a specific community of *čoaimo* that protects only the Hoti hunters from this territory. To hunt beyond this area, without the protection of the *čoaimo*, is dangerous and can cause illness, death, or jaguar attacks (jaguar are the pets of *čoaimo*) (Storrie 1999:86–7). I too have traveled several times with the Hoti on hunting trips with men visiting from other territories. Even though they were fully armed with blowpipes and spears, and in spite of several opportunities, these hunters did not even attempt to hunt prey. Another interesting example is presented by Morphy (1995) of the Yolngu of Arnhem Land, Australia. On one occasion he witnessed a discussion among hunters who decided not to shoot a crocodile because it had moved from one water moiety to another, and this affected the health of the leader of one of the moieties in question. These examples illustrate ways of autoregulating the exploitation of resources of the band territories through mechanisms other than defense or repulse. They also exemplify how cosmologies are decisive in the way in which tropical forest resources are used. In short, these examples support the idea outlined by Guenther (1981) that territoriality is a cultural construct that should be approached ethnographically (to which I add historically and archaeologically) and comparatively, paying attention to the specificity of the cultural groups and without economic and materialist biased preconceived notions.

Although there have been several attempts to capture these different dimensions of territory (Andrew 1994; Binford 1980, 1983b; Casimir 1992; Ingold 2000; Lanata 1993) most such attempts fail to realize that the various levels—including the ideational—operate simultaneously and, along with other factors

(that is, social and economic), shape the territorial behavior and the mobility of hunter-gatherers. Most approaches to territory explored from archaeology have desacralized space and taken the physical components as the only ones necessary for an understanding of the concept of territory. Nonetheless, the way of conceiving space, and of generating territorial behavior, is part of a general strategy of the construction of reality and identity (see discussion in Hernando Gonzalo 1999) through which ideological and social factors have a central role (see, for example, Århem 1998; Silberbauer 1994). If one agrees that territoriality “exists in the context of a wider set of relations between man and the environment and between individuals” (Barnard 1992:138), the link with the supernatural sphere cannot be excluded from this set of relationships, since, in fact, this sphere strongly affects how hunter-gatherers conceive, perceive, and use the physical territory (Ingold 1996b). The Nukak example of the hole that extends to the subsurface level is similar to others that reveal how the cosmological dimension (for them not a metaphysical one) intersects the different dimensions of the physical territory. The case of the Nadöb, as related by Münzel (1969–1972:178), reflects a similar perception. When Münzel explained to the Nadöb that he lived far away, farther than the Manaus, a Nadöb man, whose songs Münzel had recorded, asked him to play the recording extremely loud when he returned home. From there the Nadöb man’s dead son would hear the song, because “the country of the dead” was also found beyond Manaus. Storrie (1999:99) relates a story in which a noted shaman Hoti had a dream foretelling the immanent end of the world. He announced his dream to his people, provoking widespread panic and a migration by him and several followers toward the east in search of the edge of the world and the path to the “House of Dead.” He and his followers traveled some 100 km eastward, to the middle of Yekuana territory, where they stayed for a while until the death of the shaman. These examples reinforce the idea that the supernatural dimension of territory, strongly rooted in indigenous Amazonian ontology and present among other indigenous groups throughout the world, has a direct influence on the territorial conduct of hunter-gatherers, and this is revealed in the material record and its properties (that is, distribution, density, and so on).

Compared to other foragers the Nukak have some of the highest mobility rates in the world in terms of number of moves per year (see, for example, Kelly 1995:112–15, Table 4.1), but the average distance between camps is low. Other groups that come closest to demonstrating a similar pattern are the high-latitude groups, the Selknam of Tierra del Fuego and the Baffinland Inuit, both with a residential mobility estimated at around 60 relocations per year. Other groups who live at a variety of latitudes and inhabit various different

environments also show high (greater than 50) residential moves. Such is the case, for example, with the Cuiva bands, which inhabit a mixture of savannah and scrub woodland penetrated by fingers of broadleaf evergreen gallery (Arcand 1972; Morey & Metzger 1974), or the Aché, who inhabit the Paraguayan tropical forest of the Eastern Brazilian Highlands (Hill & Hurtado 1995). In spite of the existence of exceptions, in broad terms the residential mobility value for the Nukak falls within the definition based on effective temperatures (ET) proposed by Binford (1980), who recognized that the higher residential mobility occurs among tropical forest and arctic hunter-gatherers. However, the fact that the number of Nukak residential relocations concurs with expectations based on the correlation between foragers and major environmental zones does not mean that environment determines mobility rates, although it does suggest that some environmental parameters affect mobility patterns. As has been shown, similar rates are demonstrated by groups that inhabit an array of major environmental zones presenting different ETs and primary biomasses. In the same way, the mobility of several hunter-gatherer groups from similar environments to the Nukak, such as the African equatorial rainforest, shows radically different patterns. In effect, the Mbuti and the Efe move residential camps five to seven times a year (Bahuchet 1992), each of which is on average a 5-km to 8-km displacement, a distance comparable to Nukak camps. The Aka relocate residentially on average six times yearly, with a distance of 6 km between camps (Bahuchet 1992).

The exploration of the causes of the high Nukak residential mobility rate must be approached from various angles. To begin with, the depletion of the foraging radius of the camp as the prime causal factor for explaining the high residential rate must be dismissed. The Nukak's well-balanced and varied diet indicates that no clear limitation on food resources exists that would prevent the existence of a longer-term residential camp or a higher population density (see discussion in Chapter 8). Of course, resource location and abundance is one of the leading—although not the only—causal factor affecting the decision about the location of new camps, but it does nothing to explain the high frequency of such moves. At least in the Nukak case residential camp moves are not made merely to avoid forest depletion, as has been postulated for the mobility of many hunter-gatherers (Bettinger 1991; Hayden 1981; Stein Mandryk 1993). Leaving aside this reason as a prime causal factor, I argue that the high residential mobility of the Nukak is related to a strategy aimed at managing and concentrating (through the creation of “wild orchards”) forest resources, as well as being the result of social and ideational factors. Factors that contribute to the Nukak moving residence with such frequency include the abandonment of a camp because of a death, moving to a particular

place to participate in a *baak wáadn*, the necessity of establishing contact with a distant relative, and the existence of *takwe'yi* enemies in the area.

The Nukak case has interesting implications for archaeology. In terms of archaeological visibility, the creation of “wild orchards,” meaning the generic reoccupation of the same area (so-called *tethered nomadism*), would also produce patches of resources that in turn would increase the attraction of certain geographical locations. Therefore, the process is the inverse of that which has been proposed. The settlements are not located in areas of high concentration of edible resources; the concentration of resources is the result of a virtuous circle in which the settlement pattern generates these “wild orchards.” If this, or similar processes, has occurred since the Late Pleistocene as the archaeological record suggests (see below) the implications for the distribution of certain palms and trees in the supposedly primary forest are tremendous.

#### THE USE OF PLANTS

As we have seen, gathering and management of wild plants is central to the Nukak as well as to all Amazonian indigenous peoples, the importance of which has been recorded in both the present and the past. If we turn to the archaeological record of the South American Tropical Lowlands, we can see that the use of palms and trees from the tropical rainforest has a long tradition, which allows us to explore the temporal depth of these processes.

A recent review of palms remains recorded at archaeological sites in the New World carried out by Morcote-Ríos and Bernal (2001) provides a starting point. Their review of 130 archaeological sites indicates that 29 genera and at least 50 species of palms have been identified. The best represented genera include *Acrocomia*, *Attalea*, *Bactris*, *Syagrus*, *Elaeis*, *Astrocaryum*, and *Oenocarpus*. Four of these genera are commonly used today by the Nukak. Some of the earliest evidence of plant use in Amazonia was recorded at the Monte Alegre site, in the north bank region of the lower Amazon. Roosevelt and colleagues (1996) argue that the arrival of humans at the cave is marked by a group of four dates ranging from 11,145 to 10,875 years BP. In the lowest level of the cave abundant plant remains have been recovered, indicating the intensive use of rainforest species as early as the Late Pleistocene. Some genera from earliest levels, such as *Astrocaryum*, *Attalea*, and *Hymenaea*, are used by the Nukak, other Makú, the Hotí, and many tropical lowland foragers. In addition, strong evidence comes from the Peña Roja site on the banks of the Caquetá River in the Amazon (Cavalier et al. 1995; Gnecco & Mora 1997). A forager occupational level has been identified and dated to around 9000 BP. The macrobotanical remains found in this level include several plant species, with palms

representing 68% of the total. Many of these palm species are the same as those the Nukak, other Makú, and the Hoti currently exploit, including *Oenocarpus bacaba*, *O. bataua* and *O. mapora*, *Mauritia flexuosa*, *Attalea maripa*, and *Atrocaryum*.

These examples, as well as others from the South America lowlands (see review in Morcote-Ríos & Bernal 2001) indicate the use and early subtle manipulation of rainforest plants, especially palms, as early as the Late Pleistocene. Although the archaeological evidence is meager with reference to how this early manipulation might have happened, some abnormal concentrations of plants have been noted in tropical rainforests and attributed to past human activity. For example, sites assigned to the Mabaruma and Koriabo phases in Coastal Guayana are associated with dense patches of large bamboo (Evans & Meggers 1960:72–73). Concentrations of babaçu (*Orbygnia phalerata*), chontaduro (*Bactris gasipaes*), and cumare (*Astrocaryum aculeatum*) occur at archaeological sites along the Jamarí River and the adjacent Upper Madeira. The seeds of these species have been found among habitation refuse, which indicates that they were exploited since the beginning of the site's occupation, c. 2500 years BP (Miller 1992).

However, beyond the economic dimension of plant exploitation, which is undeniable for Amazonian people, we also need to understand the crucial role of plants in the ideational and social spheres (Bloch 1998; Ellen 1998; Rival 1998a). Ethnographic accounts widely show how significant the spirits/ancestors/owners/masters that inhabit or control animate and inanimate components of the universe are for non-Western peoples. Nukak landscape is saturated with symbolic connotations. Trees are part of the way that Nukak build reality and connect the different levels of the universe. For the Nukak, chontaduro and achiote are solid metaphors that articulate two axes, between the past and the present, between cross-time relations with spirit-ancestors and the synchronicity of contemporary social relations (see Chapter 8). Chontaduro is also symbolically important for other Makú, such as the Nadöb (Schultz 1959:119), who also elaborate a ritual associated with this fruit. The Kakwa have a striking phrase that illuminates the ideational side of plants for the Makú, here explained in the words of Silverwood-Cope after having been with the Kakwa for about two years. In a vivid speech in front of a film camera he expressed his perspective on how they conceive of the forest: “it is like a warehouse. They find food in it, medicine in it . . . and they find a meaning” (Moser 1971).

Plant exploitation patterns are a consequence of both ecological and ideational factors, which must both be examined with equal intensity when we approach the study of present and past societies. Examples from other area

of the world demonstrate how ideational factors have significantly mitigated the transition to rice domestication in South East Asia (Higham 1995) and northern Australia (Jones & Meehan 1989). Such examples indicate the benefits of a complementary approach to the interpretation of the archeological record.

### TECHNOLOGY

Technology has been, and remains, a major concern for archaeologists and has recently become central to a growing line of research labeled as “material culture studies” (for example, Lemonnier 1992). In Chapter 7 I summarized the characteristics of Nukak material culture and technology and discussed the three dimensions of its meaning. The lesson to be learned from the Nukak, as well from other Amazonian societies, is that to understand better the behavior of foragers—in the present and the past—we should consider all these several layers of meaning in our analyses. It is patently obvious that Price’s (1982, 720) piercing statement that, “whatever else a material object may represent, it is directly the energy expended on it,” cannot lead to a proper understanding of how material culture and technology operate in a given society. It is not possible to maintain the separation between something supposedly objective and measurable, such as the “energy” expended on an artifact, and the social and ideational realms in which this artifact is also embedded, because this multidimensional integrity affects the production, the use, and the discard of artifacts. In other words, knowing the energy expended on an artifact and speculating how much energy could be captured during its use life tells us very little about how this artifact operated in a given society. If we split the practical and economical from the cultural and ideational, and prioritize the physical over the social or seemingly intangible symbolic dimensions, the range of factors taken into account in explaining past and present technologies from nonindustrial societies is dramatically reduced, simplified, and ultimately eliminated (see also Dobres 2000:38). Such a move is also methodologically incorrect because, as the ethnography and ethnoarchaeology of many nonindustrial societies show, artifacts operate simultaneously in different dimensions (Boivin 2004, Taçon 2004). To consider one only (the utilitarian) as if it were unique or determinant is a false starting point for any analysis. As has been suggested by Pfaffenberger (1992) and Lemonnier (1993), the economic, social, political, and ideational dimensions of the technological process cannot be meaningfully separated and put into discrete boxes (Tilley 1999:59). Of course, having been trained as an archaeologist, I am not challenging the feasibility of a starting point related to the physical properties of objects, or

that the instrumental side of artifacts is probably the most evident to us (to our form of rationality). But, at the same time, the fact that this can mislead and obscure a more complete understanding of the function and the meaning of material culture in any past or present society should be noted.

It could be argued, of course, that the ontology into which the “things with souls” are embedded, although not unique is specifically Nukak, or at most pertains to the indigenous peoples of the region and affords no grounds for generalization beyond the Amazon. However, in order to stress the genuine similarities in the ways foragers and nonindustrial people in general think about their artifacts, I will introduce some examples from other regions of the world that demonstrate similar phenomena worldwide. The Ayoreo of the Boreal Chaco of Paraguay and Bolivia use long wooden artifacts with a beveled end, called *porotadí*, daily to scrape the flesh of an edible root. These artifacts, which include clanic signs engraved on them, are continually worn down through use until they reach a point at which the Ayoreo say they have “grown old.” From this point forward only old men may use them, and the younger people must take extreme care when transporting them in their bags (Bórmida 1973:50–60). In 1994 I recorded that, until a few years earlier, the indigenous fishers of Tahiti had still used specific rocks to attract specific fish. These rocks, usually rounded porous volcanic rocks were, and still are, kept in the gardens of their houses. During certain times of the year, depending on the season for a particular fish, they were submerged in the water to attract and catch that fish. While in the garden they were regularly watered, “because they become thirsty and that should not happen. If that happens, they will never help us to fish again.” In this case it is clear that the rocks have a “living essence” that must be cared for as if it were a living organism. The way these rocks are used, treated, and kept in the gardens is determined by the attitude toward them and the belief that they are in some sense alive. Another interesting example is the iron manufacturing process in the Cameroon Grassfields of west Africa, discussed by Rowlands and Warnier (1993). The authors argue that rituals involved in iron production are not “inessential,” things that can be removed from more “rational” processes. Rather, they entail an alternative means of metaphorical thought in which alteration of both persons and things are elements of a single continuum, both equally animate and inanimate and reliant on circumstances and context. Final examples are the cases of the stone axes among the Lagdan of the New Guinea Highlands, which are considered to possess “souls,” a factor that strongly affects their discard location (see Toth, Clark, & Ligabue 1992), and the “namur” rock of the Shuar, stones that care for and protect hunters and are linked to their prey (Bianchi 1981).

In short, I believe there are important implications from this ethnoarchaeological study for archaeological interpretation, above all the impossibility—both practical and conceptual—of separating the various dimensions and different layers of significance of material culture. From a methodological point of view one can concur that the starting point for analysis should be the instrumental aspects and the formal characteristics of artifacts and their raw materials, but one cannot ignore that this implies an instrumental and ecological reductionism. Of course, there are material and ecological constraints that limit the technological options of nonindustrial societies, but these are strongly mediated by social and ideational factors. As such, ethnoarchaeology can contribute greatly to a more fruitful approach that endeavors to capture these multiple dimensions and meanings of material culture. To attempt a more holistic approach to the material culture of past societies is undoubtedly an extremely difficult task (but see, for example, Flegenheimer & Bayón 1999; Sinclair 1995; Taçon 1991, 2004) but is nevertheless a worthwhile challenge.

#### HUNTING AND FOOD TABOOS

What emerges from the data presented in Chapter 9 is a picture of taboo far more complex than hitherto recognized. Nukak attitudes and practices highlight the potential for misinterpreting the archaeological record by ignoring the ideological nature of taboo and its embeddedness within wider cosmological structures. In the case of Amazonian aboriginal people, food taboos are widespread (Cormier 2004; Descola 1994; Kensinger & Kracke 1981; Meggers 1996:190; Milton 1997) and are significant in the way these people represent their cosmological beliefs and the various dimensions of identity, suggesting a long tradition of such taboos. In his work on Amazonian taboos DeBoer (1987) arrived at the opposite conclusion. Having analyzed a sample composed of different Amazonian groups, he identified the existence of taboos among most. Although this abundance of taboos supports their importance, the apparently low percentages (between 31% and 8%, with the exception of the sloth that was recorded in 61% of cases) lead DeBoer to propose that, “. . . anthropologists should remember that in the case of general taboos in Amazonia, they are dealing with a minority phenomenon” (DeBoer 1987:48). However, it is reductionist to analyze taboos as percentages of one or several prohibited species in a given society. General taboos are only one part of a complex system of prohibitions and restrictions around animal consumption. Owing to the size and the quantity of proscribed animals (both total and partial) and their alimentary and symbolic and sacred value, animal taboos in these societies

cannot be understood as a “minor phenomenon” because they structure the exploitation of faunal resources and have a significant influence on diet. Acceptance of this argument has an important archaeological implication: it implies that we should expect, and look for, archaeological assemblages that reflect faunal exploitation performed within specific ideological frameworks in which food taboos played a key role.

Some would argue that food taboos are pragmatic and functional (Harris 1990; Ross 1978) or are part of a broader risk-reduction strategy for periods of infrequent but disastrous events (Meggers 1996:190–91). Or perhaps they exist only when societies are not influenced by strong food constraints. Several cases demonstrate that this is not true. The Nukak do not consume a significant portion of the available animal biomass (resources of high nutritional quality, such as tapirs and peccaries) for purely ideational reasons, not in order to preserve a resource for a supposed period of scarcity. In response to the same taboo among other Amazonian groups, Milton (1997:48) wrote: “if no one ever eats it, what’s the point? Who benefits except tapirs?” Neither does taboo appear to overlay a risk-reduction energy equation, or an economic or health reason, by depriving women and children of abundant animal protein, such as the peccary; especially bearing in mind that when one of these animals is hunted tens of kilos of meat are made available in a single event, a part of which rots because the men do not manage to eat it before it is ruined and because smoking is an imperfect preservation method. The Hoti example reinforces the weakness of the functional and materialist argument. The Hoti, who live in a nearby region, are comparable demographically and have a similar animal availability (in terms of both diversity and density) yet have an entirely opposite conception. They consider the terrestrial animals (agouti, peccary, tapir, and capybara) to be the best food, which should be eaten by everyone (Storrie 1999:168). This indicates that relatively similar societies that live in similar environments developed totally opposite food prohibitions and restrictions. These differences do not appear to be the result of distinct adaptive strategies developed through time. On the contrary the different taboo complexes, both total and specific, seem to be the result of cultural differences (especially in terms of symbolic referents used to conceptualize the world) in the way in which identity differences are exhibited and materialized (see also Milton 1997) and of particular historical trajectories. I am not denying the possibility that some taboos benefit the long-term subsistence of a given society. However, this does not seem to be the tendency, and, besides, the possible adaptive benefits of taboos ought not to be generalized to all—and not even the majority—of Amazonian groups.

Numerous examples from other parts of Amazonia and the world lead to the conclusion that food taboos have an existence independent of energy reasons and cannot be understood within ecologico-functional conceptual frameworks (Cormier 2003; Kensinger 1981; Milton 1997; Valeri 2000). The best and most clear-cut example I know is that of the Mapuche Indians of Ruca Choroy (Southern Argentina), who are confined to the Alumine National Park. Owing to strong restrictions from park authorities and the disintegration of their traditional economy, this group suffered long periods of starvation, especially during the winter. One of their members, Roberto Pellao, while complaining of food shortages, stated in his not fluent Spanish, in front of a film camera:

Of course, there are many fish in the lake [Alumine] and the *huincas* [white people], come and they eat them with all those spines they have. But we the Mapuche only eat animals with fur. No fish! (Preloran 1996)

Another interesting archaeological example was presented by Jones (1977:196), who showed that at a specific point in time (between ca. 3800 and 3500 BP) prehistoric Tasmanian hunter-gatherers made a conscious decision not to eat fish, despite its ready availability. Moreover, it had been a major food resource for four thousand years, and the decision to discontinue its consumption constituted a net loss of food (Jones 1978:45). This event appears to have had nothing to do with environmental change. As Jones (1978:44) pointed out, it was an intellectual event that caused a contraction in the resource availability and reduced significantly the food options (Politis & Saunders 2002).

These cases clearly illustrate the power of food taboos in everyday life and the persistence of such beliefs in spite of resource abundance or availability. Of course, many Amazonian groups have abandoned their traditional food restrictions and nowadays customarily consume animals that were sacred a few generations ago. However, this is not a consequence of the variation in food resources but of the result of the disintegration of traditional cultural patterns due to the massive impact of the West. I have seen many cases in the Amazon and in the Orinoquia that show how food taboos have been dismissed by the new generation while still being maintained by the older generations. For example, among the Piaroa and the Yabarana of the High Parucito River (Amazonas State, Venezuela) young people may kill and eventually eat formerly totally tabooed animals, such as river dolphins and freshwater otter, whereas their parents reject them emphatically. The same pattern can be seen in many Amazonian groups nowadays (Milton 1997).

Although the origin of taboos is multicausal, in the Nukak case the hypotheses I prefer explain these taboos as a result of specific ideological and mythical beliefs that have a long tradition among Amazonian indigenous peoples (see also Kensinger 1981). This body of belief has been conceptualized in various ways, from animism (see discussion in Bird-David 1999), totemism (Lévi-Strauss 1962), and ecosophy (Ärhem 1990) to cosmological perspectivism (Viveiros de Castro 1992), which all defend the existence of this type of taboo as part of an articulated body of beliefs. Leaving aside the differences in focus of these authors, within Amazonian ontology animals have a status similar to humans, and therefore their consumption is restricted and mediated by ritual complexes. Animals are considered to be related to one another and to humans in much the same way that humans are related to one another (Ärhem 1996; Rival 1996; Storrie 1999). That which animals and humans share is precisely their “humanity.” Within this ideational framework one can explain the existence of alimentary taboos, especially concerning animals, independently of adaptive reasons for their origin or maintenance. In consequence, I am more inclined toward an explanation in which these phenomena are understood as the result of historical and developmental trajectories. I have the sense that the food taboos and other restrictions around consumption developed together with the economic strategies that over time formed the diet of the different hunter-gatherer groups. Throughout this process multiple elements intersected—economic, social (especially those referring to the several dimensions of identity), and ideational—and resulted in particular compositions of diet in time and space. Such diets were not based exclusively on materialist considerations, although in many cases these were surely influential, and in specific cases they took apparently maladaptive courses.

All types of taboo have often been neglected by archaeologists on the basis that they can not be found “empirically.” Taboos can not be “seen” in the archaeological record. This neglect has not usually been explicit but rather basically implicit. It can be recognized in debate by a distinctive characteristic: its complete absence. With very few noteworthy exceptions (Jones 1984) food taboos have been ignored in the vast archaeological literature on the subsistence of hunter-gatherers. This is unfortunate given the widespread presence of food taboos among aboriginal (non-Western) societies around the world. I have confidence that the case presented in this book is a step toward acknowledging that ideological generative principles can be identified in a context-specific archaeological record. I hope that this case study promotes new ethnoarchaeological studies that will help to identify ideational and social casual factors in past societies.

## THE WESTERN VIEW OF AMAZONIAN HUNTER-GATHERERS

Several conclusions can be drawn based on the data presented. First, this research on the Nukak demonstrates, once again, how deeply influenced is the study of both past and present hunter-gatherers by Western views. Many examples in the literature clearly show that interpretations of hunter-gatherer behavioral patterns are basically a projection of the fears and concerns of Western society. A clear example is how the rainforest resources have been evaluated in economic terms, and how this has been considered to affect mobility. It has repeatedly been argued (for example Kelly 1995:121; Sponsel 1986; Whitelaw 1991:171) that tropical rainforest resources may be abundant but that they are difficult to reach (in the treetops or at the ends of branches), which reduces their potential for human exploitation. For the Nukak, who learn to climb before they can walk (they virtually hang from their mothers as babies) and who possess blowpipes, darts, and powerful poison, this statement could not be further from the truth. It is easier for them to procure canopy resources than any other. A further misconception is that, "fruit is widely scattered in space and time and seldom concentrates in any abundance" (in Sponsel 1986:74, cited in Beckerman 1979). As I have shown, the Nukak have available several nondomesticated species, especially palms such as *seje*, *popere*, *juiú*, and others, that provide abundant fruit with high nutritional value and low procurement costs, which are also highly productive and concentrated. Another trait that has been evaluated in a negative light is that in spite of having a high biomass approximately 98% of the rainforest is trunks and branches, which human digestive tracts cannot process. This is true, but the existence of palm grubs that grow in trunks has not been taken into account. The archeological data summarized above enable similar forms of life to be inferred from the end of the Pleistocene to the present. These are not just more cautionary tales; they are examples that warn against tainting our understanding of present and past nonindustrial societies with our Western worldview. We should pay more attention to the different means developed by indigenous American groups of utilizing the environment. A great effort must also be made to understand other cultures on their own terms.

Another area in which the projection of Western thought has had a crucial impact is in understanding the adaptation of hunter-gatherers to the tropical rainforest. The anthropogenic nature of some ecosystems in the contemporary Amazonian rainforest has been a subject of intense debate in recent years (see Balée 1994; Meggers 1996, 2003; Morán 1993; Posey 1994; Roosevelt 1998; see review in Stahl 2002). In the same vein, the viability of hunter-gatherers in these environments in the total absence of domesticated plants

has also been a central issue in the last two decades (see summary in Chapter 8). The idea that there are “limiting” factors to the human occupation of the Amazonian rainforest has had a long tradition. Following *The Handbook of South American Indians* (Steward 1946–1950), the Amazonian environment has been “cited by cultural ecologists as a prime example of how the environment determines and limits sociocultural evolution” (Hames & Vickers 1983:7). As we have seen, the Nukak demonstrate that the situation is quite different and that the so-called limiting factors are more a Western thought projection than a reality (see also Morán 1993; Roosevelt 1998). Certainly, the environment in which the Nukak live out their lives can support densities of hunter-gatherer populations far greater than those that they support at present or have done in the recent past. Although until recently domesticated plants were consumed only in small quantities, they are still not a critical or “keystone” resource (in the sense of Stearman 1991). Nukak keystone resources are the patches of wild edible plants that are created throughout the foraging circuit. These patches supply not only food but also raw materials essential for tools and shelter construction. Other key resources are fish, honey, palm grubs, and a small group of hunted animals, among which monkeys, birds, and tortoises stand out. I do not deny the importance of cultivated gardens, especially in more recent times, but they are important only in terms of food yield and not for raw materials (with the exception of achiote for painting). In addition, they provide no exclusive nutritional elements, either quantitatively or qualitatively. In this context, I believe that the incorporation of horticulture by the Nukak, and possibly other Amazon hunter-gatherers, should be understood as the consequence of an historic process more than as a necessity for maintaining viable populations, or the result of the evolution of subsistence strategies toward an optimum adaptation. Finally, the characterization of distinct ecological environments in Nukak territory (see Chapter 1), as well as the exploitation of these different environments by the Nukak (Chapter 8), indicates once again that supposed resource scarcity and the nonviability of hunter-gatherer populations in the Amazon are not supported by the data.

Some indirect evidence from the region also contradicts the nonviability of tropical rainforests for hunter-gatherer habitation. The Cuiva of the Llanos Orientales are an interesting case. They are typically considered a savannah group, with correspondingly greater resource availability than the forest groups. However, Arcand (1972:5) notes that, “roughly 85% of the meat consumed is obtained from the immediate vicinity of the rivers [there is a “gallery” forest that fringes the river banks, as previously explained]. In contrast, the savannahs, which are by far the largest ecological zone of the area, offer very little food

and are only rarely visited by the Cuiva.” This reference calls attention to the fact that given the choice of two distinct ecological environments the Cuiva prefer the rainforest.

I agree with the conclusions reached by Viveiros de Castro who argued that, “adaptationist theories take for granted the marginalist postulates of resource scarcity and optimization of yield-to-effort ratios and assume an immanent rationality of an evolutionary kind, governed by thermodynamic parameters” (Viveiros de Castro 1996:184). Viveiros de Castro’s critique is oriented toward a type of ecological approach known as “evolutionary ecology” (Winterhalder & Smith 1992). Although it is true that many practitioners of this approach within archaeology conceive of it not as dogma but as a structured form of inquiry (Winterhalder 1987:313), it is equally true that some of the assumptions made in pursuing this research program are largely untested or simply wrong, and the application of the proposed models does not leave room for alternative, nonecological explanations. I hope that this book has provided examples that demonstrate the inadequacy of some of the assumptions in question as well as the limitations of the models employed.

#### FINAL WORDS

The Nukak present us with a fascinating case of hunter-gatherers managing their environment, conceptualizing their territory, and daily negotiating their existence with the various supernatural beings and spirit-ancestors of the distinct planes of the universe. The absolute belief that, “what is seen is the shadow of what is not seen,” of what is considered real, reflects an ontology that permeates all aspects of life in this society and that without doubt conditions their daily conduct. This is not an epiphenomenon; it is the core that governs their behavior. The Nukak also demonstrate an interesting characteristic—an attitude of solidarity that reveals a level of social resistance to political centralization. This is a clear-cut example of a society all the behavioral patterns of which are oriented toward preventing the development of rank and social complexity: from Yukdaa “blowing the *chicha*” at a successful hunter because he did not appropriately share his game to the striking lack of accumulation of food and objects.

The observations and ideas presented in this book are neither designed to add a further “cautionary tale” to the long list of unexpected behaviors of hunter-gatherers nor to produce an anecdotal-type statement. On the contrary, they aim to broaden the range of variability of the forms of production of material culture and displacement of residue by hunter-gatherers and how these are reflected in the archaeological record. This range of variation brings

to light the different ways that any (ethnographically and historically recorded) human activity can be accomplished. The archaeological record should be compared against this variation in order to argue, through analogy, which model corresponds to the case under study, bearing in mind the properties and characteristics of the sample in question.

As I expressed at the beginning of the book, my goal has been to contribute both data concerning the socioideational dimension (and explore methodological means of interpreting them) and information directly related to ecological and technoutilitarian aspects of material culture. Data on the former were the least obvious, the most difficult to record, and probably the least represented in this book. Nonetheless, I believe that the data and information that I was able to gather on the socioideational realm opens a small window on the wealth and variety of causal factors that contribute to the formation of the archaeological record. Finally, subordinating the symbolic and ideological aspects to economic/energy-related factors assumes that non-Western people share our logic and motivations, our pattern of rationality, our ontology. The Nukak, and many other indigenous peoples around the world, demonstrate that this is not the case.

## Note

1. Although for the Siriono alternative explanations have been proposed. They could be nomadic hunter-gatherers who were “guaranized” through relatively recent contact with Guaraní tribes (Rydén 1941:125–27).