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The prehistoric human geography of Brazil

by

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Abstract

The first humans entered South America during the Late Pleistocene, when the lowland tropics were less densely forested than now and sea level was lower. During subsequent millennia, they learned to accommodate to changing conditions and developed an exhaustive knowledge of the biota and their interactions that permitted them to maintain sustainable levels of long-term exploitation of the varying local resources. This attitude of accommodation contrasts with the predatory behavior of recent immigrants of European origin, which threatens not only the future of Amazonia, but of the planet as a whole.

Keywords: **Climate change, paleoindians, shell middens, rock art, cultural adaptation, Brazilian prehistory.**

Resumo

Os primeiros humanos chegaram na América do Sul durante o Pleistoceno tardio, quando as terras baixas nos trópicos apresentavam florestas menos densas do que agora, e o nível do mar era mais baixo. Durante os milênios subsequentes eles aprenderam a acomodar-se às condições mutantes e desenvolveram um conhecimento exaustivo sobre a biota e suas interações, permitindo-lhes manter níveis sustentáveis de uma exploração a longo prazo dos recursos variáveis locais. Esta atitude de acomodação contrastou com o comportamento predatório de colonizadores recentes de origem européia, o que não somente compromete o futuro da Amazônia, mas o planeta em geral.

*Dedicated to Prof. Dr. Harald Sioli on the occasion of his 90th anniversary.

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I dedicate the ideas and interpretations in this article to Harald Sioli, a scientist to whom Brazil in general and Amazonia in particular owes a great deal. Fortunate are those whose cultural and scientific passage through the 20th century is equally exemplary, productive, and coherent.

That archeologists concentrate their attention on the cultures of past human groups is understandable. However, the fact that prehistoric populations lived in a state of integration with and total dependence on the natural resources of their habitats offers the opportunity for resurrecting details of early human geography. To do this requires correlating the biological and cultural evidence from prehistoric sites with data on the physical and ecological characteristics of the paleo-environments in which the ancient groups lived. Among the clues left to us by the prehistoric protagonists are depictions on the walls of caverns, ceilings of rock shelters, and surfaces of escarpments of aspects of their daily activities, as well as components of the regional biodiversity. Radiocarbon dates, studies of the environmental context, and surviving lithic artifacts complete the record of our preliterate predecessors. Extracting information from these documents to reconstruct early human geography is our scientific and intellectual obligation.

Various kinds of evidence indicate that the earliest human groups began to disperse across South America from what is now Colombia and western Venezuela during the Würm VI-Late Wisconsin epoch, between 23,000 and 12,700 BP. One route may have led eastward along the coast of Venezuela and the Guianas; another passed southward along the Pacific coast and the Andes; a third extended southeastward across the lowlands via the open formations (savannas, woody caatingas, and cerrados) that fragmented the rainforest during Late Pleistocene when rainfall was lower. Assuming present distributional patterns, a 25 percent decline in rainfall would have created a band of open vegetation connecting the savannas of Roraima with the cerrados of Piauí; a 40 percent decline would have reduced the rainforest in the eastern lowlands to enclaves or "refugia" (AB'SÁBER 1994; HOOGHIEMSTRA & VAN DER HAMMEN 1998).

Rock shelters in Piauí, Minas Gerais, and Mato Grosso do Sul have produced radiocarbon dates suggesting human presence by 19,000 BP and the existence of numerous lithic workshops and camp sites in Roraima and Tocantins leave no doubt that hunter-gatherers had colonized eastern Amazonia at least as early as a 13,000 BP (PROUS 1992: 127-143; MILLER, E.T., pers. com.). Although savanna and cerrado probably predominated in these regions, a few stone projectile points have also been encountered in locations likely to have remained forested, suggesting that early hunter-gatherers also exploited rainforest resources, perhaps in a complementary manner similar to the behavior of the protohistoric inhabitants of the sertão (HILBERT 1998). The landscape they confronted would have differed from that of today in other respects. Until the sea reached its present level around 5000 BP, the Amazon and the lower courses of major tributaries would have flowed through deep channels and the varzea as we know it, with its varied and concentrated aquatic fauna, would not have existed. The association in rock shelters in Minas Gerais of lithic artifacts similar to those from Amazonian sites with fruits, tubers, and bones of small mammals provides direct evidence of a generalized foraging subsistence pattern that probably existed throughout Amazonia as well (AB'SÁBER 1982; PROUS & FOGAÇA 1999; KIPNIS 1998; OLIVEIRA & VIANA 2000; DIAS 1991).

During their wanderings across the extensive carst and sandstone formations of the

northeast, the hunter-gatherers discovered numerous caves and rock shelters. Knowledge of fire would have permitted them to evict dangerous animals and to take advantage of the existence of permanent storage facilities to preserve a limited amount of food. This, along with the accessibility of more concentrated subsistence resources, may have permitted them to become somewhat more sedentary. They covered the rock outcrops with animated depictions of humans, animals, and abstract figures individually or in combinations, as well as scenes of hunting, dancing, ritual, sexual behavior, and other activities (Figs. 1-2). Rock art has been recorded not only throughout the northeastern states, but sporadically farther south where suitable outcrops occur. Several regional styles have been recognized, but difficulties in dating obscure their chronological relationships and the rarity of associated cultural refuse impedes their correlation with the numerous habitation sites in the surroundings. Interpreting the significance of the assemblages is hampered by the juxtaposition of humans of uncertain sex and age in a variety of often lively positions with bipedal and quadrupedal animals, which may represent several independent episodes of execution by different artists and thus have little to do with one another (PROUS 1989; MARTIN 1996).

Climatic changes during the Pleistocene-Holocene transition created local habitats with different kinds of subsistence resources that are reflected in the emergence of regional and sub-regional lithic traditions between ca 8,000 and 5,500 BP (PROUS 1992: 145-198). In the south, sites of the Umbu Tradition, characterized by the presence of stone projectile points, predominated in open environments, whereas those of the Humaitá Tradition, characterized by large bifacial artifacts, predominated in forested regions (KERN 1991).

The rise in sea level along the coast and resulting network of lagoons, estuaries, and canals created a paradisiacal habitat for human exploitation that is reflected in the proliferation of sambaquis (shell middens). Although this adaptation may have begun during the Late Pleistocene, when the sea level was 100 meters lower, the initial radiocarbon dates extend only as far back as 7000 BP. When population density peaked between 5000 and 3000 BP, shell middens existed along most of the coast from Pará in the north to Rio Grande do Sul in the south, with notable concentrations around the lagoons of Santa Catarina and the shores of São Paulo and Rio de Janeiro (GASPAR 1996; AB'SÁBER & BESNARD 1953). Particularly in the south, accumulations were often huge, reaching elevations as much as 32 meters. Although mussels, oysters, crabs, and fish constituted the basic foods, they were complemented in varying degrees with other marine and terrestrial fauna and flora. Social differences are implied by variations in the size and composition of the middens, the presence or absence of burials and differences in their positions and offerings, the kinds of specialized stone and bone artifacts, domestic structures, and other features (KNEIP 1998; SCHMITZ 1998).

Beginning about 5000 BP, groups in many parts Brazil began to supplement their food supply with cultivated plants. Maize appears in rock shelters in Minas Gerais by ca 4500 BP and manioc was being cultivated in southern Rondônia somewhat earlier (DIAS 1993). Wild plants remained a major constituent of the diet throughout the lowlands, especially in Amazonia, where they provide essential vitamins and other nutrients under normal conditions and a cushion against famine during episodes of drought.

The earliest pottery appeared in shell middens of the Mina Tradition on the coast of Pará ca 5000 BP. The inceptions of the Una, Taquara, and Itararé traditions in the south

are more recent and their distinctive vessel shapes and decoration imply different antecedents. The similarity of the initial ceramics on Marajó, which appear about 3500 BP, to an earlier tradition in the northern Andes suggests a downriver introduction via headwaters in Colombia or Venezuela (PROUS 1992; MEGGERS 1997).

About 1500 BP, the resident populations of the south coast were disrupted by the arrival of the Tupi speakers, who had expanded from southwestern Amazonia across the pre-Andean depression of Bolivia and the Brazilian pantanal, as well as down the southern tributaries of the Amazon. During their dispersal over more than seven million square kilometers, they named the plants, animals, rivers, lakes, lagoons, mountain ranges, and hills they encountered and continuously increased their knowledge of the ecology and topography. The impetus for this migration is unknown, but their professed search for an earthly paradise where food could be obtained without labor suggests the forests of their homeland may have been degraded by drought. When they arrived on the south Atlantic coast, they brought with them a new ceramic tradition characterized by distinctive painted and plastic decoration and vessel shapes, and a new custom of burial in large pottery urns. These distinctive features allow archeologists to track their progress up the coast and inland until it was disrupted by the arrival of Europeans. They displaced the previous occupants from riverine and forested regions, but allowed them to persist in other kinds of habitats. Although linguistic and cultural diversification occurred as a consequence of decreased interaction and adaptation to different kinds of resources, sufficient similarity remained that their language became the medium of communication or "lengua geral" during the colonial period, not only throughout the coast but along the Amazon (DIAS 1994-95).

By the beginning of the Christian Era, a similar social and subsistence adaptation, characterized by small and impermanent villages, frequently moved gardens, and egalitarian social organization, had crystallized throughout the lowlands. Contrary to the general opinion, these features of surviving indigenous Amazonians are not the result of decimation since European contact. Rather, they constitute a sustainable adaptation to intrinsic ecological conditions and climatic fluctuations (MEGGERS 1996). However, they were not sufficient to cope with infrequent and unpredictable episodes of severe drought caused by mega-Niño events. Discontinuities in the archeological record indicate that these droughts reduced subsistence resources sufficiently to force the inhabitants to abandon their villages and to revert temporarily to a hunter-gatherer way of life. The magnitude of their repeated dispersals is reflected in the remarkably heterogeneous genetic and linguistic distributions that distinguish Amazonia from all other parts of the world (MEGGERS 1994; MEGGERS & DANON 1988).

The prehistoric human geography of Brazil is a unique and remarkable saga human adaptability. The earliest colonists encountered an environment very different from that of today. As the climate changed, new combinations of plants and animals emerged, offering new opportunities and requiring different subsistence strategies. Some groups persisted in isolated enclaves; others, like the Tupi speakers, expanded along with the habitats they favored. The challenge of surviving under fluctuating conditions encouraged the acquisition of detailed knowledge of the plants and animals and their interactions with one another and with the environment. By learning to work with the environment rather than against it, the indigenous inhabitants not only conserved the resources on which they depended, but often enhanced their distribution and abundance (AB'SÁBER 1996; MEGGERS 1985).

By contrast, the invaders of European origin have caused accelerating devastation. Unlike the initial immigrants, the goal of the newcomers was and continues to be exploitation rather than colonization, predation rather than accomodation. They have replaced bows and arrows with shot guns, stone axes with chain saws, paddles with outboard motors, trails with roads, and temporary villages with permanent towns. They have converted vast tracts of forest to cattle pasture or degraded them by timbering, creating conditions conducive to the spread of fire. They have degraded the headwaters of many tributaries by gold mining, destroying spawning grounds and polluting the rivers with mercury, killing fish or rendering them and the water unfit for consumption. Construction of roads has facilitated the arrival of immigrants from the caatingas and cerrados unfamiliar with the unique qualities of the rainforest ecology. The construction of hydroelectric dams has altered the local ecology and the composition of the aquatic biota. The indigenous inhabitants are increasingly depleted and demoralized.

Accelerating destruction has been accompanied by accelerating understanding of the genesis and functioning of the neotropical lowland ecosystem, its unique and remarkable complexity, and its vulnerability. We know that the millennial pace of climatic changes during the past allowed the biota to adapt to new conditions. By contrast, the decadal pace of human intervention dooms to extinction all but the fastest breeding organisms. The future not only of Amazonia, but of the planet, rests on our ability to recognize the danger and adopt sustainable methods of exploitation before it is too late.

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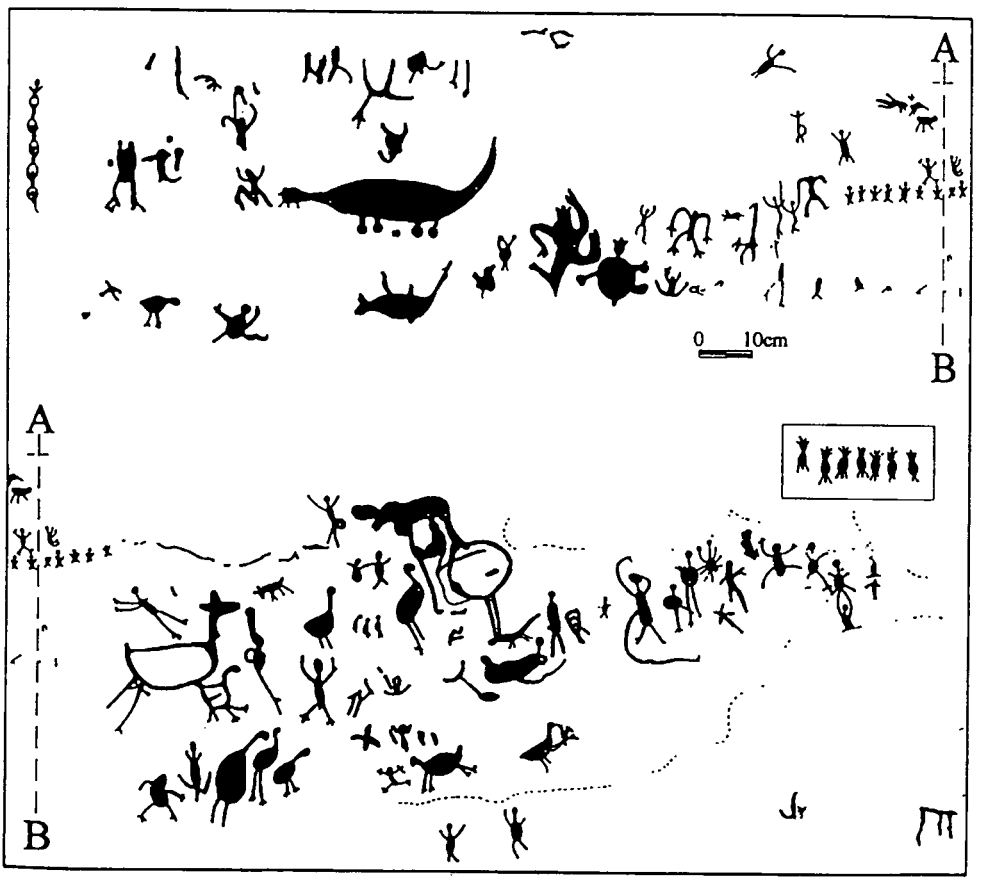

Fig. 1:
Painted mural of the Northeast Tradition from Baixão do Perna I, São Raimundo Nonato, Piauí dated 10,000-9,000 BP (after MARTIN 1996, Fig. 10).

Fig. 3:
The Sambaqui do Rio Comprido, Santa Catarina (courtesy of W. PIAZZA).