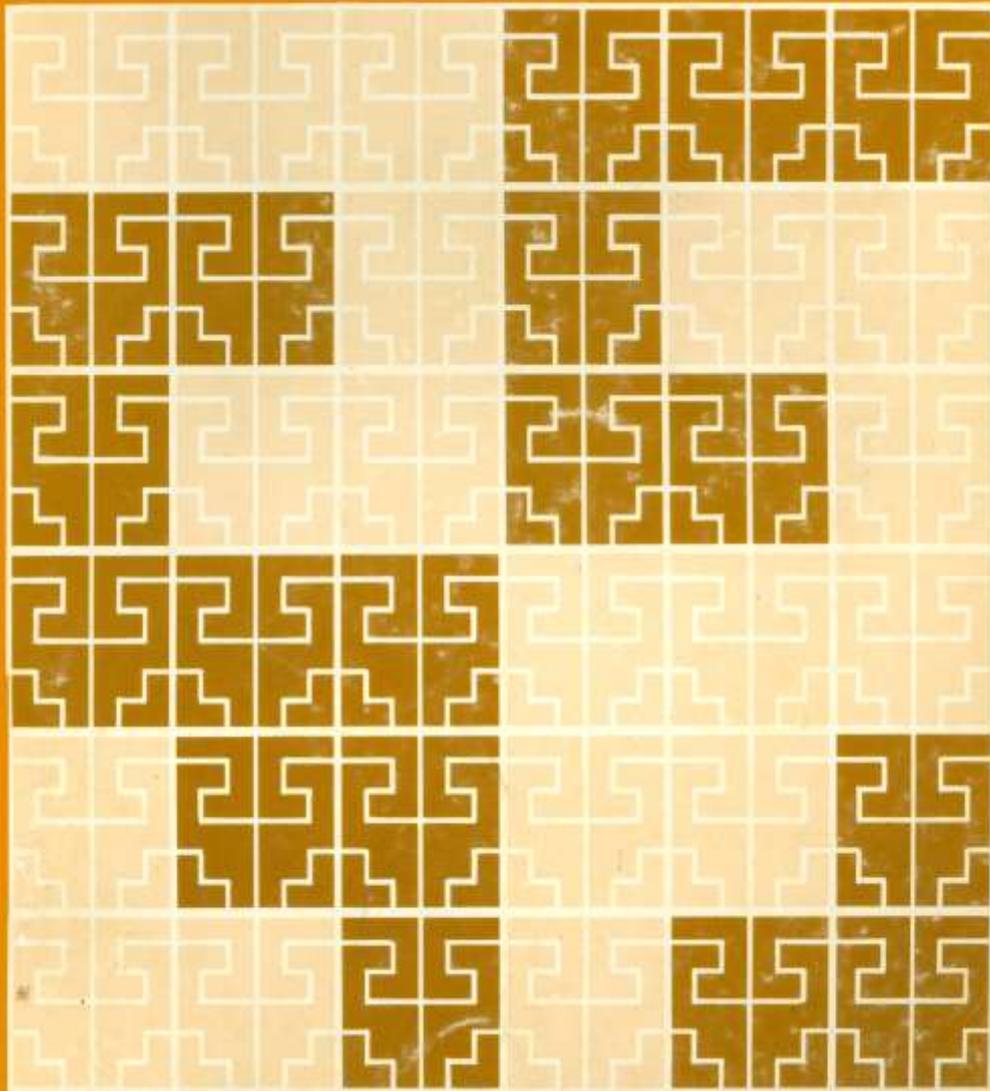


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Historia
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selva sudamericana

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Los últimos diez años han significado para la etnología y arqueología de la montaña peruana un reencuentro de intereses y una nueva perspectiva en la problemática de los orígenes de la alta cultura americana. Después de los primeros intentos enciclopedistas de Günter Tessman, de las investigaciones de Erland Nordenskiöld y de los ensayos etnográficos de Rafael Karsten y William C. Farabee, la región amazónica quedó totalmente descuidada en provecho de otras zonas y otros problemas, pese a que se daba por sentado el hecho que ella reservaba sorpresas al panorama etnohistórico de América del Sur.

Sin embargo, a partir de 1960, a raíz de los trabajos de Donald W. Lathrap y sus alumnos, estos temas nuevamente despiertan el interés de los antropólogos, especialmente norteamericanos, quienes, al replantear viejos y nuevos problemas sobre la evidencia de sus recientes investigaciones, abren el camino a un nuevo intento de interpretación de la historia cultural de los Andes, en un modelo y un cuadro histórico que revive los postulados de Nordenskiöld en lo que respecta a los orígenes de las civilizaciones agrícolas de los Andes.

El presente volumen es en parte muestra de este renovado interés por la floresta sudamericana. En el conjunto un tanto heterogéneo de estos trabajos y ponencias queda el mérito de William Denevan y Stefano Varese, coordinadores del Simposio 13 del XXXIX Congreso Internacional de Americanistas, gracias a cuyos esfuerzos fue posible reunir un número importante de especialistas que desde 1965 intentan sumarizar todos los datos disponibles para relacionarlos con las características ecológicas de la cuenca amazónica y ofrecerlos en un volumen antológico que permita una visión de conjunto.

En este tomo se percibe claramente que el mosaico está en sus inicios y que las piezas puestas esbozan apenas una figura cuya forma deberá definirse en el futuro. El mérito de este volumen reside en ser una suerte de balance y una invitación a llenar los vacíos que quedan.

El bosque tropical

ALTERNATIVE MODELS OF POPULATIONS MOVEMENTS IN THE TROPICAL LOWLANDS OF SOUTH AMERICA

Donald W. LATHRAP

Archaeologists studying the New World have frequently debated the relative power of migration versus diffusion as explanatory principles for understanding patterns of cultural development. In general, they have played down the significance of migration; but this tendency has not characterized those of us studying the Amazon Basin. Meggers and Evans, working at the mouth of the Amazon and on the Río Napo at the western edge of the Amazon Basin, have used multiple waves of migration as a basic mechanism for explanation. In my own work on the Central Ucayali of Eastern Perú, I, also, have invoked migrations to explain both discontinuities in the cultural sequence and particular developmental trends (1958; 1962; 1963; 1965; 1967; 1968; 1970). Hilbert in his studies of the Central Amazon has been equally free with suggestions that even minor shifts in ceramic technology were the result of long distance population movements (1968: 66-68; 255-269).

This obsession with migration seems fully justified on grounds other than purely archaeological data. Repeated distribution studies analyzing the situation at the time of the first European contacts have convinced such astute students as Lowie (1948: 1), Steward (1948a: 507; 1948b: 883), and Nordenskiöld (1924; 1930) of the overwhelming importance of migrations. Migrations remarkable both for the numbers of people involved and for the great distances covered were observed by the earliest European explorers in several parts of South America (Métraux 1948a: 97; 1948b: 465-467; 1948c: 689-690). Most important of all, the tremendous geographical range of closely related languages, especially those in the Maipuran branch of Arawakan (Noble 1965) and in Tupi-Guaranían (Rodrigues 1958), is proof positive of continuous population displacements in the past.

The question, then, is not whether migrations were a crucial process in the culture history of Lowland South America, but the direction

in which such migrations were moving, and the demographic and ecological forces which were impelling them.

In numerous publications Meggers and Evans (1956; 1957; 1958; 1961; Evans and Meggers 1968) have discussed a series of downstream migrations moving out of the north-western quadrant of South America into the Amazon Basin. The most clearcut exposition of this model dates from 1961, when four waves were posited. Recent discussions have upped the number of migrations, but the general characteristics have been little modified from one publication to the next (Evans and Meggers 1968: 106). They repeatedly designate the Andes of Southern Colombia, particularly the Upper Cauca and Magdalena Basins, as the motherlode out of which these surplus populations were spilled and washed down stream (1957: 418; 1961; Evans and Meggers 1968: Fig. 68, 104-106).

I have tended to organize my data mainly in terms of a series of migratory waves emanating from the flood plain of the Middle and/or Lower Amazon and moving outward along all available waterways in search of other ecologically similar flood plains (1962; 1968a; 1970: 20-21). From the vantage point of the Upper Amazon where my work has been centered these migrations seem to have been moving in an *upstream* direction. My model of population movement is to a large degree compatible with ideas presented by such scholars as Tello (1943); Sauer (1952); and Nordenskiöld (1924), but in the sharpest conflict with the model expounded by Meggers and Evans, and reiterated by Hilbert (1968).

I am in complete sympathy with the complaint of Harner (1970: 67) that anthropologists have made insufficient use of the concept of population pressure as a basic factor underlying cultural evolution. I would also argue that any model of population movement ultimately must be validated in terms of the adequacy of the model of population growth which would necessitate the outward movements of people. I have indicated (1962; 1968; 1970: 45-67, 128-129, 160) how a combination of efficient root crop agriculture practiced on the good to excellent soils of the flood plains of the Amazon and its tributaries and an efficient exploitation of the prodigious protein resources of these huge rivers provided a basis for rapid population growth. The extremely limited area of flood plain, as opposed to the vast areas of intervening *Terra firma*, meant that population pressures built up rapidly. Outward migration in search of other areas of flood plain, and continual conflict among ethnic groups for the possession of that very scarce resource were the logical result (Harner 1970). That the soils and faunal resources of the *Terra firma*, is a point emphasized by all professionally competent scholars from Marbut and Manifold (1925; 1926) (Gilmore 1950) to Stemberg (1964; 1966) to Hilbert (1968: 14-15); there is not, "a rela-

tively high degree of uniformity in soils, vegetation, and fauna" over the whole Amazon lowlands as Evans and Meggers would have us believe (1968: 108)!

It seems reasonable to require of Meggers and Evans a detailed accounting of the precise relationship between specific economic patterns and the ecological features peculiar to the southern Andes of Colombia which would lead to so consistent a production of surplus populations. The economic system involved must have been one which was adaptable to the tropical lowland with relative ease, since even by the reckoning of Meggers and Evans the migrant into the Amazon Basin managed to survive for several generations, with cultural vigor and complexity diminishing only gradually. While awaiting with interest the definitive version of their model, I will continue to be impressed by Duque's summary of the early colonial history of the Upper Magdalena Basin, especially the region of San Augustin. From this account it is clear that the inhabitants of the more elevated basins were constantly being harassed and partially over-run by the Andaquies, a large group of Tropical Forest Indians centered in the tropical lowlands on the Upper Caquetá (Duque 1964: 19-23).

While Meggers and Evans are vague about the environmental and cultural factors spawning migrations into the Amazon Basin, they are consistent about the deleterious effects of the tropical forest on any group unfortunate enough to enter it. In their view, cultural processes other than dissolution and decline are impossible within the tropical forest (Evans and Meggers 1950: 7; 1968: 107-110; Meggers and Evans 1956; 1957; 1958; 1961; Meggers 1954; 1957a; 1957b); and their summary statements on this alleged environmental limitation change little from one publication to the next. I quote their 1950 version:

"The land flooded in winter and parched in summer, did not permit the kind of agriculture needed to assure a constant food supply for the maintenance of such a highly developed culture. Fish in abundance and a variety of small game were available, but to secure them required the expenditure of many more man-hours that are needed to produce an equal return from agriculture. With its new subsistence pattern, the Marajoara culture gradually declined and the last remnants either moved away or were absorbed by the Aruã..." (Evans and Meggers 1950: 7).

This is a pronouncement scarcely surpassed either in clarity or in pathos by their later reiterations.

Though these sharply contrasting models of population movement ultimately must be evaluated in terms of their demographic and ecological plausibility, they can also be tested in terms of the dated distribution of the cultural deposits of the several constituent migrations.

There is much disagreement among us as to which groupings of ceramic complexes can be taken as indicative of migration. It is only with regard to the Napo and Marajoara materials that I find myself in total agreement with the conger of ceramic styles offered by Meggers and Evans as proof of a population movement. The stylistic and iconographic similarities shared by the Napo Phase and the Marajoara phase at the Mouth of the Amazon are so close as to be explicable only in terms of a massive migration of people moving from one of the two areas into the other (Meggers and Evans 1958; Evans and Meggers 1968: 104-107). On the basis of my work on the Central Ucayali it is equally clear that the Caimito complex recovered from a number of sites in that region is almost identical to Napo and slightly less closely related to Marajoara (Lathrap 1967; 1970: 145-151). I now wish to consider the various lines of evidence relating to the nature, direction, and dating of the wave of migration connecting these three complexes.

The possibility of identifying Napo and Caimito ceramics with particular ethnic or linguistic groups surviving into the historic times is of the greatest significance. There are several approaches to the problem of ethnic identification. One can, for instance, note the basic congruence between the two pronged upstream migration of the closely related Napo and Caimito complexes and the two pronged upstream migration of the closely related Omagua and Cocama, the first going up the Napo and the second up the Ucayali. One could observe, as Bischoff has recently done, that the localities involved in the 17th and 18th century peregrinations of the Onagua-yeté have a remarkably familiar ring to anyone cogniscent of the distribution of Napo phase sites (Bischoff 1970: 123). These comparisons are made easy by Oberem's recent compilation of sources on the Omagua of the Río Napa (1968), in which such localities as the Río Aguarico and the Río Tiputini keep popping up with great frequency and there are mentions of occasional spillages onto the Putumayo. Or one can, as I have recently done (Lathrap 1970: 151-154), show a complete stylistic and iconographic continuity from the Napo-Caimito style to the style of the fully historic or even recent Cocama. All of these lines of reasoning take time to develop, but all leave one with the strong conviction that the Napo and Caimito are the leavings of the Omagua and Cocama.

An even more direct approach is possible. One can reopen the question of the historical identification of the Napo phase sites excavated by Evans and Meggers. Evans and Meggers in their interpretation of the Carvajal chronicle assume that the state, kingdom, confederacy, or what you will of Aparia the Lesser was well down stream from the Ecuador-Peru border and that the zone where they worked was uninhabited at the time when Orellana and his party went by (1968: 106-

107). Palmatary, who over the years has demonstrated excellent scholarship in handling the early chronicles, suggests otherwise and centers this political unit of the confluence of the Napo and Aguarico, just the area where Evans and Meggers worked (Palmatary 1965: 24). If one re-examines the chronicles themselves, one finds that there are several reasons for preferring Palmatary's point of view.

The only shred of evidence favoring the Evans-Meggers interpretation hinges on the identification of the tributary which Orellana's party encountered a short distance below the where the 2000 nails were manufactured. Orellana attempted to ascend this tributary in order to visit a particularly powerful political figure, but was prevented from doing so by its very swift current, its whirl-pools, and the massive log jam around its mouth (Heaton 1934: 179, 411-412). The reason Carvajal mentions the river is not because it was a major geographic feature, but because of the party's failure to pay this important courtesy call (Heaton 1934: 411-412). It is clear from Carvajal's description that this tributary, entering the Napo from the South was in peak flood on February 3 or 4 when Orellana tried to go up it. Evans and Meggers insist that this river must be the Río Curray (Heaton 1934: 179) an opinion which they derive from Medina (Heaton 1934: 61). The reason for this identification is that the Curray is by far the largest of the right hand tributaries of the Napo, and is a huge river in its own right, with a watershed nearly as large as that of the Napo. But Carvajal is quite specific that the river he is describing is not large, "no muy grande", (Medina 1942: 8) and was narrow; the logs and canoes were buffeted back and forth from one bank to the other (Medina 1942: 9). The Curray is 300 meters wide at its mouth (Faura Gaig 1964: 410). Furthermore it is next to impossible that the Curray could have been in full flood during the first couple of days of February, since its period of lowest water extends from December through January (Faura Gaig 1964: 411). The smaller right hand tributaries such as the Tiputini and Yasuní, with their modest sized watershed, would rise far more rapidly in response to the onset of heavy rainfall or even to a single isolated thunderstorm. There is yet another middling sized right hand tributary about half way downstream between the Yasuní and the Curray. It is my opinion that the characteristics of the river described by Carvajal make the Curray the least likely candidate of all the right hand tributaries of the Napo.

All other lines of reasoning suggest that the kingdom of Aparia the Lesser, though it was extensive (Heaton 1934: 411), centered more or less on the region around the mouth of the Aguarico. Orellana's party separated from Pizarro on December 26 at some point well up the Río Coca (Heaton 1934: 407): three days later they reached the mouth of the Coca at which point there was a lengthy palaver as to what to

do next (Heaton 1934: 408). Raving decided to proceed downstream, they were picked up on the early warning system, two toned signal gongs, of the kingdom of Aparia the Lesser on January 1, 1542, suggesting that three days after leaving the mouth of the Coca they were already within the boundaries maintained by that political unit (Heaton 1934: 409). Very early on January 3 they reached a major settlement of the kingdom of Aparia the Lesser (Heaton 1934: 173, 409). This means that this part of the trip on the Napo took just over 5 days. If one uses half the length of the Río Coca as the modular unit for a three day trip, the five day journey would bring them just about to Tiputini, at the center of the archaeological activities of Evans and Meggers.

The next leg of the journey to the junction of the Napo with the Amazon took 10 days steady traveling, February 2 through February 12 with one day out for resting (Heaton 1934: 413-414). The Spaniards perceived the distance from the middle Coca to the area where they passed the month of January as 150 leagues (Medina 1942: 8). They perceived the distance from the place where they made the 2000 nails to a town well *above* the junction with the Amazon as 200 leagues (Medina 1942: 9). All of these data indicated that the Orellana party felt that the Kingdom of Aparia the Lesser centered about one third of the distance from the mouth of the Coca to the juncture with the Amazon. The cluster of settlements from which the Orellana party drew its sustenance from January 3 to February 2 was centered somewhere close to the mouth of the Aguarico and well could have included some of the sites examined by Evans and Meggers.

If we accept that the cluster of Napo phase archaeological sites around the mouth of the Aguarico are the leavings of the kingdom of Aparia the Lesser, it is very easy to coordinate the archaeological data with the picture of population movement described in all of the ethno-historical sources summarized by Oberem (1968: 158: 160-161). According to their own traditional histories, the Omagua were consistent in claiming to have moved up the Napo, the Kingdom of Aparia the Greater on the Amazon near the mouth of the Napo giving rise to the kingdom of Aparia the Lesser through a process of fission and upstream migration, and the kingdom of Aparia the Lesser later calving off the large and vigorous Omagua state on the middle Coca encountered by Pizarro and Orellana. It is clear that an three groups spoke the same language; since Orellana having picked up a command of basic Omagua during the long stay on the middle Coca, was able to communicate adequately with the people of both the larger downstream states (Heaton 1934: 415-416).

Adding the available C 14 dates we can achieve an even clearer picture of this massive demographic phenomena. The kingdom of Aparia the Greater was established after A. D. 800 (based on a pre-Omagua date from Cushillococha, A. D. 800 \pm 110 [N-311], Harris 1967), but well before A. D. 110. By A. D. 110 population pressures had become so extreme that a daughter colony was established well up the Napo. This state, the kingdom of Aparia the Lesser, was flourishing by A. D. 1150 and continued to prosper and expand until the visit of Orellana. It did not wither away under the baleful influence of the tropical forest. Later than 1100 but well before A. D. 1500, the population pressures in the kingdom of Aparia became so intense that it, in turn, established the daughter colony which Gonzalo Pizarro found on the Río Coca.

On linguistic grounds alone it is clear that the migration which brought the closely related Cocama-Omagua languages to the Upper Amazon originated far downstream in the Amazon Basin. All of the other closely related Tupí-Guaraní languages occur in the Central to Lower Amazon Basin or far to the South and East along the Brazilian Coast in the Paraná Basin (Rodriguez, 1958)

All of the above considerations lead one to the conclusion that if Marajoara and Napo-Caimito do in fact stand in a close historical relationship and are part of the same tradition, then Marajoara or something very like it must be ancestral to Napo-Caimito rather than the reverse. The cluster of dates on Napo ranges from A. D. 1168 to A. D. 1480 (A. D. 1168 \pm 53 [P-347], A. D. 1179 \pm 53 [P-269], A. D. 1480 \pm 180 [SI-299], Evans and Meggers 1968: 81). The two dates on Caimito are in the 14th century (A. D. 1320 \pm 60 [Y-1544], A. D. 1375 \pm 105 [N-310], Lathrap 1970: 145); but all of the above reasoning indicates that the culture ancestral to Napo and Caimito must have been at the confluence of the Río Napo and the Río Amazon by A. D. 1000. If Marajoara or a closely related culture at, or near, the mouth of the Amazon does not predate A. D. 100 by a considerable margin then there must be serious flaws in the above argument. In spite of Meggers and Evans repeated affirmations that the Marajoara phase was of recent date and short duration (Evans and Meggers 1950; Meggers and Evans 1957: 422). I have long suspected that it was both relatively ancient and of long duration. The three recently published dates on Marajoara ranging from A. D. 480 to A. D. 690 (A. D. 480 \pm 200 [SI-386], [SI-387], A. D. 690 \pm 200 [SI-199], PRONAPA 1970: 19) admirably confirm my supposition, and I understand that there is a fourth date, SI-201, which would push the beginnings of Marajoara even further back in time. Thus all available data, historical, ethnographic, linguistic, archaeological, hydrographic, and radiocarbon assays support the hypothesis that it was an upstream migration which explains the

obvious similarities between the Napo and Caimito styles on the one hand and Marajoara on the other; a wave of migration which left the Lower Amazon well before A. D. 1000 and which was still pushing against the peoples of the Andean foothills when Gonzalo Pizarro arrived in 1541.

I have placed myself in the position of having to explain such a violent population explosion in terms of a reasonable relationship between economic system and ecological setting. A full explanation must wait on more detailed archaeological and ecological studies of Marajó, but there are interesting hints in the available literature. While consistently denying the agricultural potential of the annually flooded grasslands which cover so much of Marajó (Evans and Meggers 1950: 7; Meggers and Evans 1957: 411, 424), Meggers and Evans have also noted that the distribution of Marajoara sites suggests a strong preference for the grassland environment rather than the gallery forest favored by the earlier Tropical Forest peoples (Meggers and Evans 1956: 162; 1957: 406). Meggers and Evans attempt to explain this pattern in terms of aesthetic preference (Meggers and Evans 1956: 162), but I would prefer an economically rational explanation.

Working in the Llanos de Mojos Denevan has demonstrated that the Tropical Forest Indians were perfectly capable of adapting their agricultural system to annually flooding grassland ecologically identical to those of Marajó (Denevan 1966a, 1966b, Parsons and Denevan 1967). Such adaptations were labor intensive, but once established such systems were highly productive. I would argue that because the inhabitants of Marajó were able to adapt the Tropical Forest system of agriculture to the challenging conditions offered by the annually flooding grasslands, they were able to maintain their brilliant and aesthetically complex art style over a long period of time; because the Marajoarans were so successful as agronomists, their populations rapidly increased and ultimately exceeded the carrying capacity of Marajó; because their agricultural system was labor intensive and required some overall planning, complex patterns of social, political, and military organization developed which permitted the ever more numerous descendants to overrun much of lowland South America in the period from A. D. 500 to A. D. 1540.

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**SARAYACU:
ARCHAEOLOGICAL INVESTIGATIONS
AT A 19TH CENTURY FRANCISCAN MISSION
IN THE PERUVIAN MONTAÑA**

Thomas P. MYERS

The task of relating modern peoples to the historic and prehistoric past has been largely the province of the cultural anthropologist and of the ethnohistorian who deal with the spoken or written word. No doubt, this is largely due to the wealth of detail that can be derived from these sources, but which can never be obtained from the archaeological record. As a result, the archaeology of modern peoples and their immediate ancestors has been largely neglected in spite of obvious continuities from the prehistoric period. To be sure, archaeologists have used historic and ethnographic resources to develop fairly detailed analogies which shed considerable light on the scattered evidence of prehistory, but the theoretical potential of the archaeology of modern or historic peoples has been largely neglected. Seemingly important archaeological distinctions may mean little or nothing to the people who make the artifacts. The latter point was brought sharply to our attention by Gertrude Dole at the recent Symposium on Panoan Linguistics and Ceramics held in Mexico City in May, 1970.

The cultural anthropologist can also use archaeological evidence to account for the seeming anomalies that he finds in the social organization of modern people. Traditional histories are of some help, but they have limited time depth and are notoriously unreliable in their treatment of historic facts although such treatment may be of great sociological significance. Ethnographic and linguistic distributions and reconstructions are also of some help, but as yet no one has developed an acceptable means of dating the developments that are suggested by such sources. Of course, numerous other problems are also raised by such distributional studies. Only the archaeologist deals directly with materials which are from the past and which can be dated within fairly narrow limits.

In the Peruvian *montaña* there are still a number of tribes that live in a traditional fashion and continue to produce ceramics which are derived from indigenous rather than Spanish sources. There is also an ample, and ever expanding, prehistoric record that reaches back some 4000 years. The problem is to link the past with the present. My excavations at Sarayacu in 1964 have produced the first archaeological data for the historic period, but only for the nineteenth century, and only for some tribes. However, in the Franciscan and Jesuit accounts numerous other missions are mentioned, as well as their ethnic composition at various periods. When these are located, excavated and analyzed we may expect to be able to trace the past of the modern *montaña* tribes well into prehistory.

Ethnohistoric sketch of Sarayacu

The mission at Sarayacu was founded in 1791 by Fr. Narciso Girbal y Barcelo who reopened the Ucayali to the Franciscans after it had been abandoned with the martyrdom of 14 missionaries at the hands of the Shipibo in 1767 (Izaguirre VIII: 104; 144).

Girbal left Laguna, the former Jesuit mission now in the hands of the Franciscans, on August 30, 1790, accompanied by a group of Cocama who were the principle inhabitants of that mission. The party proceeded down the Huallaga to the Marañon where they stopped at San Regis, then at Omaguas which was downstream from the mouth of the Ucayali. At Omaguas, Girbal released his Cocama in favor of a group of Omagua who were familiar with the lower Ucayali. They ascended the river to the mouth of the Río Tapiche in four days. During this time, they saw evidence of human habitation only once, when they stopped on a sand bar where a group of Conibo had camped a few days before. Beyond the Tapiche, the Omagua were in unknown and dangerous territory controlled by the unpredictable and ever dangerous Conibo whose principie territory was said to be around the mouth of the Río Pachitea.

Above the Río Tapiche, Girbal notes scattered human habitations with increasing frequency, but fails to note what tribes might have resided in this area. After a week, they encountered some Conibo who were traveling to Omaguas where they hoped to trade for some tools. There was a cautious but friendly encounter before the Conibo continued downstream, accompanied by their Mayoruna, Amahuaca and Shipibo slaves (Izaguirre VIII: 129-133). Finally, after two weeks of traveling through unknown territory above the Tapiche, Girbal encountered a band of Panos (Setebos) who lived on a lake near the mouth of the Santa Catalina River, somewhat removed from the Ucayali where they were protected from their enemies (*Ibid*: 139).

After staying for two days in the Pano village, later called Uxiabatay, Girbal was guided up the Ucayali by the Panos their second village at Sarayacu, which was also somewhat removed from the mainstream. At Sarayacu, Girbal found that the Pano, and some Conibo who lived nearby, were eager to have a mission. Having accomplished the purpose of this journey, Girbal was eager to return to Laguna by the quickest possible route. Since the Pano assured him that they knew an overland route to the Huallaga, he sent the Omagua back to their village and, accompanied by a group of Panos and Conibos, set off for the Río Manoa (or Cuxibatay) which they ascended for several days, passing various Pano villages on the way. The last Pano village on the Manoa had been the site of an earlier Franciscan mission where the missionaries had been killed by the Shipibo in 1767. However, Girbal was unable to find a trace of that ill-fated mission (*Ibid*: 154).

But the Panos could not find their way from the headwaters of the Manoa to a tributary of the Huallaga. Instead, after several days in the forest, and a few more on the river, they found themselves back on the Río Manoa. As a result, Girbal was forced to retrace his steps down the Ucayali, up the Marañon, and up the Huallaga to Laguna where he arrived on December 11, 1790 (*Ibid*: 178).

This travelogue has several important demographic implications. In the first place, the lower Ucayali which had formerly been the province of the Cocama was no longer inhabited. The Cocama who had moved to Laguna retained no memory of the Ucayali; and those who occupied the headwaters of the Río Tapiche were afraid to venture downstream. Further, the Omagua who had formerly been great river pirates, had been reduced to impotence by the late 18th century. A short distance up the Ucayali, they were in fear for their lives.

Meanwhile, the Shetebo lived on the smaller tributaries to the west of the Ucayali. They were still a riverine people, but not powerful enough to control the mainstream; and although they remembered a land route to the Huallaga, probably developed by the Franciscans, they did not know it themselves.

Likewise, the Shipibo occupied territories to the west of the Ucayali, principally the Aguaitia and the Pisqui, south of the Shetebo, and were not a factor on the mainstream until the late 19th or early 20th century.

The next year, Girbal, two other Franciscans and a lay brother returned to the Ucayali: where they established the mission of Sarayacu in November of 1791. The inhabitants of the mission were principally Conibos and Panos of which there were some 800 in the mission itself, and many more in the surrounding area, as well as some Piros and Remos (Izaguirre VIII: 225).

The mission was eminently successful in its early days. The missionaries quickly ran through the supplies that they had brought with them, and Girbal estimated that for the following year (1793) he would need:

- 400 axes
- 600 machetes
- 2000 knives
- 1000 penknives (navajas corvas)
- 500 rosaries (eslabones)
- 3000 brass crosses
- 1000 varas of cloth to dress the naked
 - 4 gross of scissors
 - 2 gross of rings
 - 4 hundred weight of iron
 - 1 box of glass beads
 - 2 jugs of wine
 - paint for the cross and chapel (Izaguirre VIII: 228)

The natives had learned that Christianity had something to offer.

But the Conibo were not long content to reside with the Panos. So, a few years later they moved their settlement to the Ucayali near the mouth of the Río Sarayacu where some 315 families gathered. At the same time, Sarayacu contained 645 families of Panos, including a few of other nations.

The Franciscan missionization effort continued to prosper in the early nineteenth century. Many new missions were founded on the central Ucayali for a number of tribes, some of which had to move considerable distances to be served. For example, the location of the former Piro mission is still indicated by the lake which bears their name (Pirococha), between Orellana and Contamana. However, during the early Republican period the Franciscans lost much of their support from abroad. As a result, most of the missions were closed, and Sarayacu itself was staffed by a single missionary who was left largely to his own devices. He even had to organize the production of Sarayacu so that it would produce goods that could be traded to the Portuguese for tools, food, cloth and other products required by the mission.

Throughout this period, Sarayacu continued to be principally a mission for the Pano tribe although a few others were always present. In 1835, it was reported that there were a number of Sensis and Conibos in addition to the Pano; but there were also small numbers of Remo, Capanahua, Campa, Puinahua and a rare Cashibo—all these had been slaves, purchased by the missionaries (Izaguirre IX: 87).

Herndon (1854: 201-204) and Raimondi (1942: 344) agree that in the 1840's and 1850's, the mission was still principally for the Pano, but that the Omagua and Yameo were also important. Raimondi adds that smaller numbers of Shipibo, Conibo and Amahuaca were also present, as well as some Shetebo who are usually identified with the Pano tribe. The presence of the Omagua and Yameo at this time is probably a reflection of the increasing commercialization and exploitation of the Amazon tribes who did their best to escape it.

In 1863, Peruvianization was reaching toward Sarayacu, and the Indians seemed to feel that their friars were powerless to protect them from the threat. Therefore, the Franciscans reluctantly moved their headquarters to the Galleria colony near the mouth of the river of the name, leaving Sarayacu to the Pano who formed the largest and healthiest part of the mission (Izaguirre IX: 259-260).

When I visited Sarayacu in 1964, there was a mestizo community on the site; and back in the woods I was shown the limestone foundations of the ancient mission. The people were said to be Cocama, but they did not admit their tribal affiliation although one man was very proud of the fact that he spoke "Quechua". They also had one of the bells from the chapel suspended in front of the public house. When I left, they asked me to tell the Franciscans that they hoped that a missionary would soon be able to visit. I passed on the word, but received no promises.

The problem which confronts the archaeologist is to segregate the archaeological remains according to the tribe which made them. By sheer bulk, it would seem reasonable that most of the materials should be Pano, but there is no single group of materials that is sufficiently dominant to be readily identified in this fashion.

The Mission Period Pottery at Sarayacu

The majority of the mission period pottery at Sarayacu may be divided into three wares on the basis of thickness and paste characteristics. Among the Shipibo-Conibo who now inhabit the central Ucayali, these ware distinctions correspond to intended use for cooking, serving or storing liquid. Like the wares of the modern tribes, each of the wares at Sarayacu is tempered with cariape, the silicious ash of certain kinds of bark, and with finely ground sherd temper which is usually almost invisible in both mission and modern ceramics. However, the wares may be distinguished by the fineness with which the temper was ground, by surface finish, and by modal thickness. For the most part, there is little confusion among them.

Culinay Ware:

The cooking vessels at Sarayacu have a modal thickness of 7.5 mm. Temper is the least finely ground of any of the wares so that chunks of bark several millimeters across can often be seen. Sherd temper fragments are often clearly visible as well. None of the cooking vessels bear painted decoration, but plastic decoration is common. Four basic vessel forms can be identified.

I. The most common vessel form is a restricted mouth vessel with an everted rim. On most examples, short vertical incisions have been cut across the lip. These vary in thickness from rather thin lines which might have been made by a finger nail to gouges removed by the tip of the finger, while the clay was still wet. Still other such incisions appear to have been made with a thin stick. Decoration of the upper vessel wall is rare. When it occurs, it is simply overlapping coil decoration such as might result from an imperfect smoothing of the vessel surface. On a single example, the overlapping coil marks were sharp and the highest point had been cross-incised with a sharpened stick.

Below the mouth of the vessel, two upper wall variations can be identified on large sherds: a) a straight wall which slopes outward a distinct shoulder which may also be marked with short vertical incisions, and b) a convex wall with no marked shoulder angle. The modal mouth diameter of Culinay Form Ia is 31 cm.; that of Form Ib is 34 cm. The mean mouth diameter for Form Ia is 32 cm.; and for Form Ib, 30 cm.

II. The other common culinary form at Sarayacu is a restricted mouth globular vessel with a direct rim. For the most part, the vessel lips are not embellished, but a very few had short vertical incisions cut across the lip. However, many rims of this form do have some sort of corrugated decoration, either as thumb impressions on an exteriorly thickened rim, or as a band of corrugation a short distance below the rim, but never below the point of maximum diameter. Mouth diameters range from 24 cm. to 54 cm. with 35 cm. and a mean of 36 cm. It may be that rim nicks on the direct rim vessels and corrugated decoration on the everted rim vessels are indicative of acculturation that was taking place at the mission.

III. The third form of cooking vessel is much less common than either of the other two. Like Form I, it has an everted rim often marked with short vertical incisions, but Form III is an open bowl. Mouth diameters of four examples range from 30 cm. to 44 cm.

IV. The fourth form of cooking vessel is known from a single example. It is a broad necked vessel with an everted rim with Shi-

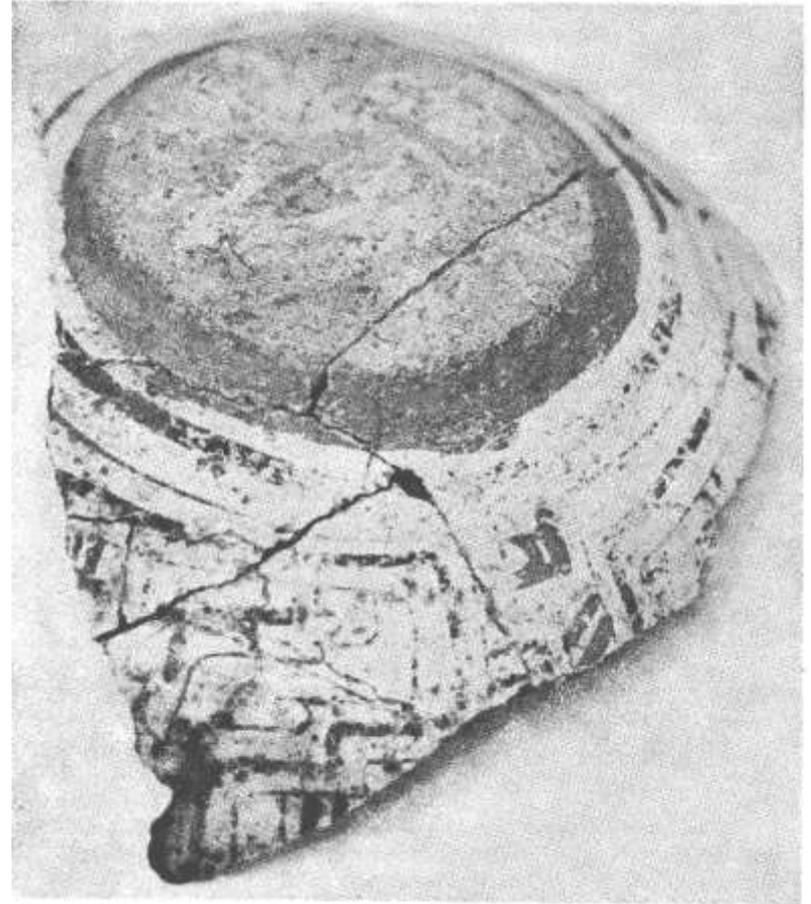


Fig. 1. Sarayacu Polychrome Style

pibo fine-line incised decoration on the neck, the earliest evidence that we have of Shipibo designs.

Liquid Storage Ware:

Pottery created to store liquids at Sarayacu tends to have a much finer paste than that intended for cooking, although the walls of the vessel may well have been as thick if it was very large. Further, liquid storage jugs were always painted. Like culinary Form I, the rims of the liquid storage jugs were always everted, with extreme examples being close to horizontal. Like Culinary Form Ia, the upper walls of these vessels sloped down and out from the mouth of the vessel, but instead of a marked shoulder angle, the point of maximum diameter was marked by a short radius curve, after which the lower walls sloped quickly to a narrow flat base. Sometimes these lower walls were marked by a step shoulder. Although there was some variation in form, there appears to have been a single standard. However, at least two major decorative variations are found. These appear to correspond to differences in mouth diameter.

I. Red slip rim; red slip neck. Mouth diameters range from 12 to 18 cm. with a mean at 15 cm. There is no evidence of overpaint, and the workmanship appears to have been somewhat cruder than that of the other.

II. Red slip rim; white slip neck. Mouth diameters range from 16 to 34 cm. with a mean at 24 cm. Below the neck, the body of the vessel was red slipped, a cover which sometimes extended all the way to the base of the vessel. In other cases, there was another band of white slip decoration at the base of the vessel. In one instance, there is evidence of decorative painting in red and black over white slip neck (Fig. 1). The painting is in the same style as that designated as sub-style A on the service wares.

Service Wares:

The service wares, for eating or drinking, are readily divisible into red-slipped wares and white-slipped wares, each with a number of form variations which largely overlap one another. In each, the paste tends to be finer than that of either the culinary ware or liquid storage ware, and greater care was taken with the surface finish. But, as in any community, some potters were less careful than others so some examples do have poorly smoothed surfaces and poorly ground temper.

Vessels with red-slipped exterior surfaces seem to be less common than those with white slips. To date, white-on-red decoration has been identified on only one sherd, but the decoration on other vessels

has probably been removed by leaching. Few, if any, modern tribes in the area make very many red slip bowls without overpaint. Certainly the Setebo typically apply white painted decoration over the red slip, as do other Ucayali tribes such as the Shipibo. But, when Lathrap excavated at the modern Shipibo village of San Francisco de Yarinacocha, he found little evidence of white-on red painted decoration (Lathrap 1962). The white overpaint simply disappeared within a few years of manufacture. No doubt, this was also the case with Sarayacu red slip pottery.

Red slip bowls most frequently are unrestricted with mouth diameters that range from 18 to 28 cm., with a mode of 24 cm. For the most part, walls are slightly convex and there is usually a step shoulder just above the base. Straight side walls are a rare alternative. Interiors are usually an unslipped buff, but other are smoked, red slipped or white slipped. Rounded lips are most common, but flat lips are also known.

Closed bowls also have convex side walls, and probably a step shoulder just above the base. Mouth diameters range from 20 cm. to 26 cm. Interiors are usually unslipped, but red slip and white slipped interiors are also known. Both rounded and flattened lips occur.

White slip bowls seem to have about the same range of form and size variation as those with red slips. Step shoulders are also common but not universal on both. But, in addition to the two basic forms discussed for the red slip bowls, there is also a white slipped form with a broad channel rim which appears frequently enough to be considered part of the basic form vocabulary at Sarayacu.

For some reason, paint seems to have stuck better on the white slip bowls than on those with red slips. Therefore, when the designs are fully reconstructed and analyzed it should be possible to say a good deal about the styles of painted decoration present at Sarayacu. Further, it should be possible to assign these styles to particular tribes with some degree of confidence.

On a low level, a distinction can be made between Red-on-White bichromes from Black and Red-on-White polychromes. Interestingly, design motifs and modal thicknesses seem to follow this elementary distinction.

The bichromes have a circumferential band of red painted decoration at the rim and at the base. Between these bands, the designs have a vertical orientation. Lines vary in width from 4 to 7 mm., sometimes combined in a single panel in which case the narrower lines are subsidiary to the broader ones. However, none of the lines approach the narrowness of the fine lines in the polychrome styles. Both red slip and natural buff interiors are found.

Several styles of polychrome painting can be distinguished. A first level distinction can be made between those which contrast broad line painting with fine painting, and those which employ only the fine lines.

The several substyles of the first group have a number of characteristics in common. The top of the lip has a red slip. A short distance below the lip there is a broad circumferential line of black or dark brown paint, which is followed by a narrow circumferential line of the same color. This pattern appears to be standard. At the base, the pattern is reversed. The base itself is red, followed by a broad circumferential line of black to dark brown paint, then a narrow line. Between these mirror image bands there are at least three major stylistic modes: a) a combination of vertical and horizontal lines, b) diagonal lines, plus vertical and horizontal lines, combined with a good deal of unfilled space; and c) curvilinear lines which appear to form panels between the narrow circumferential lines.

The fine line style alone is found on only a few sherds, and on a vessel which is one-half complete. Like the previous style, there is a band of red slipped decoration at the lip, but in this case it also extends slightly down the side of the vessel. The red line is followed by a narrow circumferential line of black to dark brown paint, then by another .. The base of the vessel is not red slipped, but just above the base there is a narrow circumferential line, followed by another one. Between the second circumferential lines at the base and at the rim is a broad band of rectilinear painted decoration. On the half vessel, there appear to have been four vertical panels around the vessel, alternating black fine line designs with red and black fine line designs, the black designs being subsidiary to the red ones, the black panels are composed of short diagonal lines, the red and black panel of vertical and horizontal lines is similar to the sherd illustrated in Figure 3.

The above descriptions do not exhaust the ceramic variations at Sarayacu, but they do cover the vast majority of the sherds. There are also rather crude bowls, similar to those made by the modern Isconahua, and a water jug that bears little resemblance to those made by tribal peoples on the Ucayali. Since many of these sherds came from surface collections, it is possible that this piece is a product of mestizoized modern potters of Sarayacu.

Comparisons and Conclusions

Although it is not yet possible to identify the pottery styles of Sarayacu with those of any particular modern tribe, future research may enable us to do so. There are many ethnographic pottery collections in

Europe and in the United States that have not been described. Also, new pottery can still be collected from many *montaña* tribes, and it would be useful to have comparative material from Brazil, Colombia and Ecuador.

However, the ceramics of Sarayacu do have a number of similarities to modern products with which I am familiar and also with archaeological pottery from the Ucayali, the Peruvian Amazon and the Rio Napo, Ecuador. Since it is not yet possible to associate portions of the wares with particular tribes, it will be necessary to consider the stylistic relationships of each ware independently.

Basically, there were two principle forms of undecorated vessel, probably intended for cooking: the everted rim vessel and the direct rim vessel. Both of these vessel types could be direct developments of Ucayali prehistory. The everted rim form appears first in the Nueva Esperanza Phase at Yarinacocha, dated to 770 ± 105 A. D. (N-312), but it was almost universal in the succeeding Cumancaya Phase for which there is a date of 810 ± 80 A. D. (Y-1545). Prior to the Nueva Esperanza Phase, direct rims had been almost universal on cooking vessels (Myers 1970).

Corrugated decoration also has a respectable antiquity on the Ucayali, beginning with a band of corrugated decoration at or near the rim of direct rimmed vessels in the late Cashibocañño Phase. Later, in the Nueva Esperanza Phase, corrugation was extended all over the exterior of the vessel, and this pattern continued through the middle Cumancaya Phase when it was associated with everted rim vessels. In the late Cumancaya Phase, corrugated decoration appears to have been banded, and so it is today on a minority of the Shipibo *cuntí*. But, at Sarayacu, corrugated decoration was almost never associated with everted rim vessels although it is commonly found on direct rimmed ones. Rim nicks are occasionally found on the everted rims of the Cumancaya Phase; they are almost universal at Sarayacu on vessels of this form, but almost never are they found on direct rimmed vessels. They are also common on Shipibo cooking vessels which have everted rims.

Everted rim vessels are also reported from the Rio Napo, Ecuador for the Tivacundo Phase and for the Cotacocha Phase. Curiously, they are not important in the Napo Phase, except as "trade" items (Evans and Meggers 1968: 78). Again, such rims are found in the Cushillococha Phase on the Peruvian Amazon (Harris 1967). Corrugation is not found on the Rio Napo, except on trade sherds of the Napo Phase, but corrugation was a rare variant of decoration in the Cushillococha Phase.

On the other hand, Ucayali prehistory produces no evidence of similar polychrome painted decoration until the Caimito Complex which is

closely related to the Napo Phase and to other members of the Polychrome Tradition. While there are a number of significant similarities between the products of the Polychrome Tradition and the polychromes at Sarayacu, notably in the contrast of broad lines with narrow lines, there are a number of differences as well. In part, these differences might be attributable to the differences in the zone decorated. Most of the polychrome decorations of the Napo Phase are applied to the surfaces of large urns, whereas in the Sarayacu pottery the decorated area is merely a band on the side of a shallow bowl. However, some of the Napo Phase excised and incised pieces do have band designs, some of which utilize the undulating curve between the top and bottoms of the band to mark separate panels as with Sarayacu polychrome subtype c. In general, I would say that Sarayacu polychromes are closer to the Napo Phase incised and excised wares than to the Napa Phase polychromes.

There is another sharp distinction between Napo Phase bowls and those of Sarayacu: the Napo Phase bowls almost always have thick, flattened lips while those from Sarayacu are generally tapered and rounded. Modern Cocama pottery also has a thick flattened lip whereas that of the Shipibo-Conibo is tapered and rounded, as was that of the Cumancaya Phase.

Cocama potters also contrast broad with narrow lines in a band around the side of the bowl similar to that of the Napo Phase, as do the Pano, Panobo or Shetebo who also employ the undulating panels and a diagonal line of Sarayacu. But they do not paint the base of the vessel red, while the Cocama do (Tessman 1930: Bunt II, III, VI).

The water jug form also has antecedents as early as the Nueva Esperanza Phase on the Ucayali, but is not characteristic of the Napo Phase or other members of the Polychrome Tradition. All of the modern potters of the central Ucayali—Shipibo-Conibo, Piro, Cocama, and even the Omagua—use it today.

In short, the ceramic styles of Sarayacu are clearly within the upper Amazon Polychrome Tradition. But, the precise relationships of all these styles still remain undetermined.

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**ARAWAK, CARIB, GE, TUPI:
CULTURAL ADAPTACION AND CULTURE HISTORY
IN THE TROPICAL FOREST, SOUTH AMERICA**

Karl H. SCHWERIN

Since the researches of von den Steinen and Ehrenreich at the end of the 19th century there has been a growing interest in elucidating the culture history of the Tropical Forest region of South America. Beginning with Ehrenreich many scholars have identified the Arawakans as important bearers of cultural ideas throughout the lowland region. Later scholars added the Caribans and Tupians. In the *Handbook of South American Indians* Steward more or less concurred with these interpretations, but maintained that most distinctive cultural traits of the zone had originated ultimately in the Círcum-Caribbean or Andean regions.

Research conducted in the last two decades has thrown new light on these questions and modified our perspective considerably. I should like to consider the data provided by this research in formulating a hypothesis of the origin and spread of the major features of Tropical Forest culture, with the hope that it will also serve to point up those areas most critical for future investigation. This hypothesis proposes that the culture history of the Tropical Forest peoples has been relatively independent in both origins and later influences. If anything, it has had more influence on adjacent areas than the latter have had on it. Not three, but four widespread linguistic groups have played a major role in the spread and diversification of these patterns.

Arawak

Carl Sauer (1952: 40-46) has long pointed to northwestern South America as the most likely hearth for vegetative root crop horticulture in the New World. This is a pattern which is essentially tropical in character, although it has also extended into the Andean highlands.

Climatic changes in this area created a dramatic modification in the subsistence patterns of the inhabitants sometime between 7000-5000 B. C. Former hunters of big game became dependent on littoral and riparian sources of protein-fish, aquatic reptiles and mammals, and especially shellfish. Habitation sites from this period are invariably marked by large shellmounds. This life style apparently permitted a semi-sedentary to fully sedentary settlement pattern (Reichel-Dolmatoff 1959: 156). Increased sedentarism provided the opportunity to develop a more intensive knowledge of local floral resources and permitted the experimentation which, in some places, led to domestication and purposeful cultivation of the more rewarding plants.

Manioc was certainly a part of this early horticulture and may have been among the first plants to be domesticated. Archeological evidence has now been unearthed to indicate that manioc was being cultivated at Rancho Peludo in the Lake Maracaibo basin by 2700 B. C. (Rouse y Cruxent s. f. 58-60). This interpretation is based on the finding of manioc griddle sherds among the archeological remains.

The curious thing about Rancho Peludo culture is that it seems to have had a limited influence in northwestern South America. The descendant Dabajuroid series remained confined in the Lake Maracaibo basin until after 1000 A. D., when it spread widely along the Venezuelan coast. Yet the Rancho Peludo people shared a number of traits, such as plant cultivation, pottery, burial urns, etc., which occur far beyond the confines of this region. This suggests that, far from being cultural innovators at 2700 B. c., the Rancho Peludo people were borrowing ideas from more advanced neighbors who had already possessed these traits for some time prior to that date, and whose presence in adjacent territories effectively prevented expansion of the former.

It is, of course, possible that there was more direct communication between the Rancho Peludo people of the Lake Maracaibo basin and the inhabitants of the western Llanos by means of, the relatively low Cúcuta-San Cristobal pass. The western Llanos are, unfortunately, poorly known archeologically, but it is certainly possible that Rancho Peludo influences were there blended with traits from other areas (such as Puerto Hormiga or Zambrano).

Archeological proof of manioc cultivation rests on the finding of griddle fragments. Preparation of manioc for toasting on these griddles is a complex process, probably developed after long experience in preparing the root for food. Manioc can be satisfactorily prepared in other ways, and it certainly seems likely that it was being roasted, steamed, grilled and/or boiled long before the technique was perfected of preparing it on a griddle (Reichel-Dolmatoff 1959: 156; Sauer 1959: 221; Schwerin 1970: 24).

Thus, at Puerto Hormiga, which had a well-developed pottery by 3000 B.C., griddles are lacking (Reichel-Dolmatoff 1965b: 6, 45, 49-50). "...the poor quality of the pottery together with the lack of soot-blackened, heavily fired basal sherds suggests that neither at Puerto Hormiga nor among the later shell-mound dwellers was pottery used directly on the fire" (Reichel-Dolmatoff 1965a: 59). But manioc and other crops might well have been stone-boiled as carbohydrate supplements to the predominantly protein diet of shellfish (Sauer 1959: 221). Unfortunately the same sort of pot serves equally well for boiling manioc and boiling shellfish. Consequently the archeological data can neither support nor disprove the use of manioc.

It may also be that there was a seasonal cycle alternating between shellfish near rivers, swamps and shorelines in the dry season when waters were low, and root crops in areas more suited to their cultivation in the wet season, particularly since Reichel-Dolmatoff (1965b: 45) identifies the Puerto Hormiga people as "groups of nomadic gatherers."

An interesting feature of Puerto Hormiga ceramics is that there are numerous resemblances to the Barranroid style, widespread in central and eastern Venezuela from ca. 1000 B. C. – 1000 A. D., or even later on the central coast (Rouse y Cruxent s. f. 102-03). Yet, recent excavations at the Malambo site on the lower Magdalena, have revealed a ceramic tradition closely related to the Venezuelan Barranroid style and contemporaneous with the first millennium of the latter's existence (Angulo Valdés 1962; Reichel-Dolmatoff 1965a: 66).

This evidence suggests to me that communities which were very similar culturally and linguistically were already occupying much of the Caribbean coastland. With the development of a simple horticulture, pottery and the like, there was rapid and widespread movement of both ideas and groups of humans out of this cultural hearth in northern Colombia and northwestern Venezuela. The orientation to rivers, swamps and ocean shores suggests the possession of water craft –probably dugout canoes– which would have facilitated rapid long-distance travel.

These people probably moved up the Magdalena into the interior of Colombia. Gradual subsidence of the land along the Magdalena Valley has probably put many of these sites under water, but early sherds in the Puerto Hormiga style and dating from the 3rd millennium B. C. have been found in the vicinity of Zambrano on the lower Magdalena. Zambrano is "almost to the fringes of the mountains", some 150 kilometers upriver from the sea (Reichel-Dolmatoff 1965a: 59-60). From here these peoples could have crossed the Cordillera Oriental into the Llanos, from whence they moved downstream onto the shores of the Orinoco. Alternatively there could have been movement along the Caribbean coast, into the Lake Valencia basin and from

there across the Llanos to the Orinoco. Or, they may have followed both routes ¹.

For such people the rivers and shorelines were highways as well as sources of fish and game. Alluvial silts on the shores and islands were rich, easy to cultivate, probably because of periodic inundation relatively free of heavy growth, and perpetually moist. Adaptation to these environmental conditions made possible a comfortable life. But appropriate sites would have been limited and as population grew it was necessary to move along the streams in search of new settlement sites. At the same time stream travel facilitated continued contact with the inhabitants of the original community. Lathrap (1968a) emphasizes that this is precisely the kind of adaptation which characterized the most important and widespread "Tropical Forest" tribes in the Amazon basin, particularly those belonging to Arawakan and Tupian linguistic stocks.

Lathrap (1968b: 28) traces origin of the earliest ceramic tradition On the central Ucayali, Early Tutishcainyo (dated conservatively ca. 2000 B.C.), to the flood plains of the central Amazon. Related styles are found distributed in a broad band along the fluvial zones throughout the Montaña from the Rio Napo in the north, southward at least as far as the central Ucayali (Lathrap 1968b: 25-26) and perhaps even further south.

On the contrary, I believe that the central Amazon served merely as a secondary staging area for cultural movements which originated much further away. On the basis of the data and inferences so far presented, I suggest that the cultivation of root crops (principally manioc) and the manufacture of ceramics were first mastered by several groups of closely-related Arawakan speakers in northwestern South America. These were people oriented also to the protein resources of rivers, lakes and coastline, who possessed canoes and were accustomed to travel considerable distances by water. As population grew these people were stimulated to spread. Their riparian-horticultural subsistence pattern gave them a significant adaptive advantage over other groups and they spread rapidly. Some pursued the coastline. Some followed the rivers of the interior. They entered the Orinoco basin and spread along the major affluent wherever alluvial deposits were suitable for agriculture. The *principal* movement, however, I believe to have been *upstream* along the Orinoco, across the Casiquiare canal and into the Rio Negro drainage. From this point the whole Amazon basin is opened up to travel, settlement and exploitation. It is easy to understand how a

1. It is unlikely that they continued along the coast to the mouth of the Orinoco, or if they did they never established settlements in that stretch and avoided contact with local peoples, for the archeological evidence shows this area remained in the hands of essentially non-horticultural shell fishermen until quite late (Rouse y Cruxent s. f. 69-72).

riverine people could spread rapidly downstream along the Río Negro to the Amazon. From there upstream travel along the Purús, Juruá, Ucayali, Marañón, Napo, Putumayo, Caquetá and smaller affluent would have been natural and it is only a short distance downstream from the confluence of the Negro and the Amazon to the mouth of the Madeira which opens up yet another extensive area leading to the slopes of the Bolivian plateau.

If it is true, as frequently suggested, that the tropical forest was essentially uninhabited prior to the horticultural peoples, dispersal into this cultural vacuum would have been even more natural, *and* more rapid.

It is unlikely that *all* of the suggested routes were traveled at this time, but the archeological evidence indicates that *many* of them were. I further suggest that this initial spread contributed to the primary division of the Arawakan stock into its major linguistic branches. In addition it is probable that this movement carried with it such traits as the dugout canoe, urn burial, the rubber ball game and the hammock.

I am fully aware of the problems inherent in glottochronological dating of language divergence, but nonetheless the data on Arawakan are suggestive. According to the percentage of cognate pairs counted among various Arawakan languages, Noble (1965: 110-11) places the differentiation of the main branches of Arawakan at around 1300 B. C. Careful inspection of his figures, however, suggests that the Apolistan and Chamicuran branches separated from Maipurán at a later date, perhaps 500 years later. Maipurán itself may have broken up 500 years later than that. If we take this relative chronology, but try to associate it with the archeological record, we will have to push it back at least a millenium. Thus the initial spread of Arawakan speakers out of northwestern South America appears to have occurred between 3000-2000 B. C. (Complete linguistic separation may not have occurred until 2300 B. C.).

These peoples moved into the western Llanos of Venezuela and Colombia and the Arauán and Amueshan branches continued into the Rio Negro and Amazonian drainages. It is probably this group which spread as far as western Amazonia by circa 2000 B. C. introducing such ceramic complexes as early Tutishcainyo and related styles known from various parts of the Montaña. From these settlements cultural influences (and perhaps even groups of immigrants) reached the Andean highlands and the Peruvian coast (cf. Uhle 1920: 44; Tello 1942; Carrión 1958; Lathrap 1963, 1965, 1968b) ².

2. The exact relationship of the Andean Uru-Chipayan speakers to the Arawakan stock is not at all clear. Nor is much known of the prehistoric cultural achievements of this group, but it is worth noting that to this day they are intimately associated with lakes, boats, fishing and other lacustrine resources (Métraux 1934a: 189-90; 1934b; Posnansky 1934).

If the Arawakans spread so far south by water, it seems strange there were no movements to the north. Lothrop (1937: 27, 203; 1940: 425; Kidder 1940: 446, 448) has identified what he believes were Arawakan elements in Coclé and suggests these were carried as far north as the Maya area. Primary among these were manioc, the rubber ball game, the hammock and secondary urn burial-all features which were distributed widely throughout the Amazon and Orinoco drainages as well. Is it possible that introduction of manioc in Mesoamerica contributed to the rise of the Olmec cultures around 1200 B. C. in southern Veracruz? ³ Obviously, whatever Arawakan speakers occupied the Isthmus and Mesoamerica, they had all been absorbed or become extinct by the time of Spanish conquest ⁴.

Between 2000-1500 B. C. the Maipuran, Apolistan and Chamicuran branches separated and at least the latter two groups moved away from the putative center on the western Llanos to the shores of the upper Orinoco, Casiquiare and upper Rio Negro where they remained for several centuries.

There is reason to think that the Barranoid tradition was also carried by Arawakan speakers-I suggest of the Maipuran branch. As we have seen the Barranoid tradition was widespread along the Colombian and Venezuelan coasts, in central Venezuela and on the lower Orinoco. Puerto Hormiga or Zambrano would seem to have been the original center of dispersal for this tradition. At the same time it is probable that an important secondary center of dispersal was located somewhere in the western Llanos, perhaps along the Apure, Meta or one or several of the other rivers which flow across those plains (Rouse y Cruxent s. f. 108). This location is consistent with the suggestion, made above, that Puerto Hormiga peoples traveled up the Magdalena and crossed over the Cordillera Oriental to the western Llanos. From there the Barrancas people then traveled downstream the Orinoco while several other branches of Arawakans moved into the Amazon basin.

Adjacent spatially and slightly earlier, but overlapping the appearance of Barrancas ceramics on the lower Orinoco is the Saladero style, quite distinctive from the former. It shows a close relationship to the earliest ceramic remains from the Antilles. It seems safe to assume, as have Reuse, Cruxent and Goggin (1959: 509) that the makers of Saladero style ceramics were speakers of Arawakan languages of the Taino branch. Rouse and Cruxent (s. f. 141) believe that the arrival of Bar-

3. This northward spread of Arawakan influences may also have contributed to some of the similarities cited by Ford (1969) in his recent study of New World Formative cultures, although I am in strong disagreement with the general interpretations presented therein.
4. Absorption of the Nahuatl-speaking Toltec conquerors by various Mayan groups at a later date proves this a not unlikely occurrence.

rancoid peoples on the lower Orinoco caused the Saladero people to move in two directions. One group migrated to the coast and thence, about 1 A. D. out into the Antilles. The other group moved up the Orinoco. The former survived until arrival of the Spanish, but the latter appears to have become extinct by the end of "Period III" (ca. 1000 A. D.) (Rouse y Cruxent s. f. 150-52).

About 1000-900 B. C. the Maipuran branch broke up into several groups. Some may have remained on the western Llanos. Others moved downstream to the lower Orinoco where their arrival may be identified with the appearance of Barrancas ceramics. Still others moved northward into the Valencia basin and the coast, as indicated by the occurrence of Barranoid style ceramics there.

We may guess that the same expansion of Maipuran groups which brought the Barranoid peoples to coastal Venezuela and the lower Orinoco, led closely related groups into the upper Orinoco, Casiquiare canal and upper Rio Negro, pushing the Apolistan and Chamicuran groups further downstream to the Amazon from whence they gradually moved upstream to their contact period locations in the Montaña.

A majority of the Maipuran Groups remained in the Orinoco and Rio Negro drainages, but a few apparently moved quickly beyond the Amazon, following it and a number of its major tributaries upstream to the Montaña where Hupa-ya ceramics, showing a clear link to the Barranoid series of Venezuela, appears on the central Ucayali by 500 A.D.

What was it that stimulated the Maipuran peoples to expand at this time, moving in several directions and even entering the Amazon Basin at the expense of their linguistic relatives? They obviously possessed some cultural advantage, and I suspect that this was related to development of a distinctive technique of ridged-field agriculture, causeways and raised habitation mounds. This enabled them to cultivate seasonally flooded lowland areas such as the western Llanos of Venezuela-Colombia. In this region, unfortunately, flooding and associated alluviation seem to have buried much of the evidence for these early developments, but William Denevan (personal communication) has recently obtained aerial photographs which show what appear to be ridged fields along the Apure river east of San Fernando de Apure in the Venezuelan Llanos.

Similar earth constructions are found in many of the areas known to have been inhabited by Maipuran peoples at the time of contact, viz. Llanos de Mojós, Guayana coast, the Orinoco delta, the island of Marajó at the mouth of the Amazon (Parsons & Denevan 1967: 96-97), in the Paressí country of the Mato Grosso (Denevan 1966: 129), and perhaps in the Casiquiare canal region between the Orinoco and Río Negro drainages.

Carib

Unfortunately there is little archeology which can be linked, even tentatively, to occupation of lowland areas by Cariban tribes. Nonetheless, we do have sufficient cultural and linguistic evidence to suggest a reconstruction of this stock's culture history.

Manioc is clearly older than the Cariban expansion, yet it must have been obtained by the proto-Cariban groups prior to their dispersal, since of ten Cariban groups reviewed, nine showed cognate terms referring either to bitter or sweet manioc. Distribution of the terms occurs in such a way as to suggest that originally no distinction was made between the bitter and sweet types.

The term for maize is also clearly cognate in eight of the ten tribes (the Yupa term *mayisa* may be disregarded as a post-contact Spanish loan word). Only Makiritare is aberrant. Consequently it seems safe to assume that the Caribans did not begin to expand until *after* obtaining maize. Although maize appears in north coastal Peru by 1500-1400 B. C. (Lanning 1967: 66-67), it does not reach southern Colombia until ca. 500 B. C. (Reichel-Dolmatoff 1965: 84-85).

Sometime during the next 500 years it must have reached the proto-Cariban tribes who were, I suggest, occupying the eastern slopes of the Cordillera Oriental, probably somewhere north of the Guaviare river. The cultivation of maize, with its seasonal cycle (in contrast to manioc which is cultivated the year round) provided some sort of advantage that enabled the Caribans to move down out of the flanks of the Cordillera, expanding into most of the Orinoco drainage and interior Guayana. Perhaps it was the storability of maize and its utility as a travel ration which made this possible, maize kernels are light and easily transported (Chagnon 1968: 36). However, cassava (manioc cakes) is also storable and can be used in travel so long as it is kept dry. Perhaps maize was more useful as rations for warriors. It is doubtful that the higher protein content of maize over manioc was significant here, for almost all of the lowland riverine tribes depend on riparian sources of fish and game for the protein complement of their diet.

Their superiority, however, was apparently less than that of the neighboring Maipuran Arawakas, for almost all the Cariban tribes remained north of the principal area of occupation of Maipuran groups south of the Meta and the upper Orinoco. Even so, the Caribans must have had to cross Arawakan territory in order to reach the middle Orinoco. Perhaps it was hostile encounters during this traverse which drove the Arara, Palmella, Bakairí and upper Xingú Caribans into the Amazon basin, down the Rio Negro, and up the Madeira from whence they dispersed to their contact period locations.

In addition to maize and manioc, these Cariban groups undoubtedly carried with them pineapple, the papaya, perhaps the New World yam (*Dioscorea trifida*, cotton, squash (*Cucurbita moschata*) and tobacco⁵.

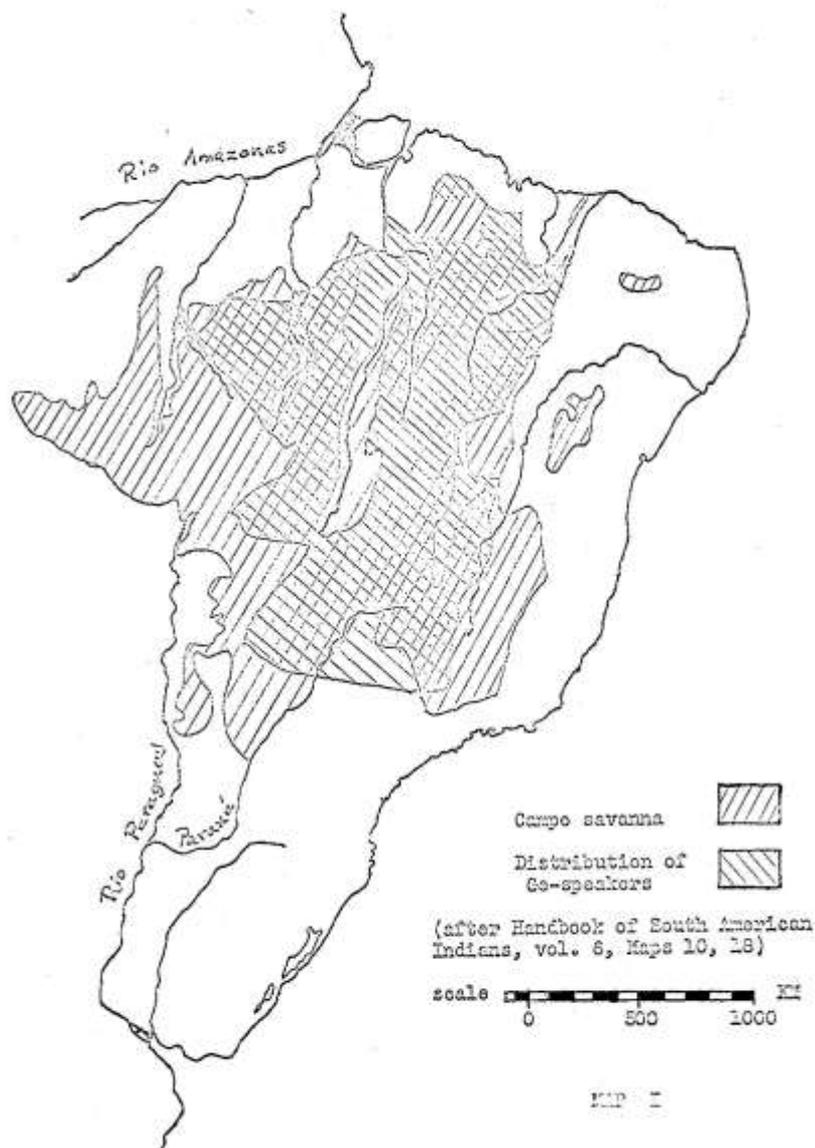
It is interesting to note the relative lack of ceremonialism associated with agricultural practices among the Caribans. But then agriculture is a relatively certain, non-stressful activity. Tropical Forest agriculture is productive with a minimum of care, and failure is practically unknown. There is no need for the psychic reassurance of ritual.

Non-agricultural ritual did, however, develop within one branch of the Cariban peoples, probably ca. 1000 A. D. or thereafter. This was a ceremonialism related to warfare, trophy taking and ritual cannibalism. Trade in such items as bixa, arrow poisons, turtle oil⁶ may also have been involved. At least, Raleigh's late 16th century description (1928: 57) of a well-organized *Canibal* market town near the lower Orinoco suggests that trade was a well-established pattern among these people prior to European contact. Trade, warfare and ritual cannibalism all led these Cannibal Caribs to travel widely, to conquer and to settle all along the Orinoco river, as well as the Caribbean coast of Venezuela, the Atlantic coast of the Guyanas and the lesser Antilles. Whether it was hostile contacts made by trading parties or the desire for sacrificial victims which led to warfare, or booty' taken in war that led to trade with friendlier tribes, I cannot say at the present. For the moment it must suffice to indicate the relationship among these three activities.

Ge

The Ge-speaking tribes (*sensu stricto*) have long been improperly classified as "marginal tribes" or: "incipient horticulturists". One reason has been that historically they were viewed through the eyes of Tupí-nambá and other coastal Tupians who indiscriminately lumped them with other non-Tupian enemy tribes as "Tapuya". Examination of the ethnographic data shows, however, that this includes both truly marginal peoples pushed back from the coast into the coastal highlands by the expansion of Tupian peoples, and the Ge proper of the central Brazilian *campo*. Ge occupation of savanna rather than tropical forest and their practice of extended hunting expeditions further contribute to the popular misconception that these peoples are "marginal".

5. Tobacco was probably chewed or drunk as an infusion, for the smoking of tobacco appears to be a later introduction associated with the term *kawai*.
6. After European contact, slaves, tobacco; metal tools, cloth, firearms and trinkets were also incorporated into Cariban trade networks.



Again, pertinent archeological investigation is almost non-existent. But there is considerable circumstantial evidence to belie the popular classification.

One glance at a linguistic map of South America should raise questions on this point (see Map 1). Most of the peoples classed as marginal are either pushed off to the far margins of the continent or are to be found as small groups speaking isolated languages in scattered spots all through the tropical forest region. Not so the Ge. They are clustered together in the center of the continent over an area which compares favorably in extent with that occupied by Cariban or Tupian speaking tribes, and far larger than that inhabited by Panoan or Tucanoan speakers. This certainly does not look like a Marginal feature.

If one compares a climatic map of South America with a linguistic map it becomes clear that the extent of Ge speakers (*sensu stricto*) is almost exactly congruent with the campo-savanna of central Brazil (see Map, 1). Where there are Ge there is *campo*. Where there is no *campo* there are no Ge.

This strongly suggests that Ge cultures, with all their attendant peculiarities, represent not Marginal survivals, but rather cultural adaptation to a distinctive and perhaps difficult ecological zone. The Ge tribes were all engaged in extensive farming at the time of first contact (Nimuendajú 1939: 87-91; Lowie 1946: 480). Lévi-Strauss (1950: 468-69) finds no major differences of technique in the horticulture of any of the tribes of the tropical lowlands, whether they inhabit the tropical forest or the savanna. In point of fact, the Ge who inhabit the savanna also attempt to maintain a Tropical Forest horticulture since they invariably turn to the strips of gallery forest which occur along savanna streams for the cultivation of crops. Most non-European crop plants have cognate names in the different Ge tribes, which is a strong argument for their having had horticulture before they became linguistically separated.

But the savanna climate is a seasonal climate. This and other environmental differences from the tropical forest have led to emphasis on crop other than manioc and maize (though these are also grown) such as sweet potatoes, *Dioscorea* sp. and *Cissus* sp. (Lowie 1946: 480). Scarcity of game on the savannas may necessitate extensive travel during the nongrowing season in order to survive.

The Ge are noted for their complex social organization and their relative development of ritual. I suggest that at least in a general way these patterns are also adaptations to the rigors of savanna living. Savanna weather is less predictable, crops are more likely to fail, and game is scarcer than in the tropical forest. The cross-cutting and interlocking linkages of Ge social organization facilitate, may ensure, coopera-

tion among a maximum number of individuals. Ritual celebrations undoubtedly ease the anxieties which arise from the uncertainties of the environment and make more bearable continued existence in the savanna.

Ge crops are all Tropical Forest in origin, and, as indicated above, so are their horticultural techniques. I believe, therefore, that sometime during the period 1 A. D. – 1000 A. D. the proto-Ge groups received horticulture from the Tropical Forest tribes (Arawakan?) adjacent to the northwestern section of the *campo*. The crops which were introduced at that time probably included the sweet potato, maize, cotton, tobacco, gourds, and perhaps *Dioscorea trifida* and *bixa* (*Bixa orellana*) (cf. Wilbert 1964). The Ge were unable to enter the tropical forest proper because that region was already occupied well-established horticulturists. Consequently the only route of expansion open was to the east and south. The Ge peoples therefore moved to fill that vacuum until they occupied the whole of the *campo*. At the same time their culture evolved and adapted to the exigencies of that environment, which perhaps discouraged the Ge from moving beyond into the *caatinga* and upland forests of eastern Brazil. It would appear, however, that some distantly related peoples on their margins (perhaps pushed ahead of the expanding Ge proper) such as the Caingang learned about horticulture from them (Maniser 1930: 774).

Tupi

At the time of European discovery the Tupians made up the fourth linguistic group that was widespread in lowland tropical South America. Métraux (1927) in his classical study of Tupian migration details their movements from the time of European contact up to the end of the 19th century.

He also indicates, however, that Chiriguano movement up the Paraná into Paraguay and eastern Bolivia had occurred early in the 16th century, with definitive relocation probably taking place with the expedition of Alejo García in 1522 (Métraux 1927: 18-20). There is reason to believe further that the Guaraní had not occupied the lower Paraná for long before the arrival of Europeans, although it is extremely difficult to put any sort of time depth on it. Nonetheless, I would guess that they had not been in the region for more than a couple centuries.

A comparable time depth may be assigned to the Tupians of the Brazilian coast. At the time of Portuguese discovery the Tupinambá and their linguistic congeners were still in the process of driving out the older inhabitants of the coast, referred to generically by the former as "Tapuya" (Métraux 1927: 2-6)

These tribes apparently arrived on the coast from the São Francisco drainage, but their original point of departure must have been further within the interior. The most logical center for Tupian dispersal is the area south of the Amazon between the Madeira and the Xingú rivers, bounded linguistically by the Arawakans on the west and the Ge on the east. Some dispersal followed the Amazon, ascending its southern tributaries. But the available evidence also suggests that the coast was not reached by following the great river to the Atlantic and then moving down the coast. Rather, it would appear that there was movement overland from the lower Amazon to the São Francisco drainage and thence to the coast, crossing territory occupied by Ge-speakers between the Amazon and the São Francisco.

In historic times the majority of Tupian migration has been fomented by the search for the land of Ñanderuvuçu, a terrestrial paradise at the shores of, or beyond, the sea. Influential shamans, driven by mystical visions have played a central role in these migrations. (Métraux 1927: 12-15). Hostilities arising out of incursion into alien territory have encouraged bellicosity among the Tupians, almost all of whom were extremely warlike at the time of discovery.

I suggest here that this is a cultural pattern of some antiquity among the Tupian speakers, and that it was central to dispersal of at least the Guaraní branch of Tupi from their ancestral homeland in south central Amazonia. Migrations in search of the terrestrial paradise may have begun as early as 1000 A. D. and Tupian groups must have reached the Brazilian coast by 1300-1400. Continuing migration brought ever increasing numbers eastward, pushing out or annihilating the ancient inhabitants of that region.

Arrival of Europeans with their trade, cane plantations and demand for slaves created new pressures and stimulated migrations in other directions, but as documented by Métraux the main thrust of Tupian movement continued eastward right up to the present century.

No doubt the separation of the Tupi-Guaraní "language" into eleven dialects (as defined by Rodrigues 1958: 234) occurred early in this dispersal, for these groups were separate at the time of Portuguese discovery. Nonetheless, such migration does not seem to have been limited to this group, for the Oyampi and Emerillon entered Guayana after European contact, and the Omagua were moving about in the upper Amazon for several centuries. These are peoples whose languages have been separated from Tupi-Guaraní proper for more than a millennium. Yet they must have either a) shared a common basic culture with the latter, or b) received strong cultural influences from them. In neither case does this negate the probability that the Tupians were occupying a relatively compact area in southern Amazonia prior to their later pre-

TABLE I
Caribbean Lexical Terms for Basic Crop Plants

| Tribe | Bitter Manioc | Sweet Manioc | Maize | Pineapple | Papaya |
|------------|-----------------|--------------|----------|-------------|-------------|
| Cumanagoto | kičarapo | kačite | anyaze | anore, nana | |
| Cachama | kerre | dup, po | abaši | anaʔi | kepada |
| Mamo | küdere | dupw'o | abaši | anaʔi, nana | kepada |
| Burama | kiédi | | awaši | anai-i | paku pai ya |
| Macusi | kitsire, kisera | | anal | | mapa-a |
| Kamarskoto | kösira | | anaʔ | anadeke | mapada |
| Makiritare | k'éde, siéde | | oennyá | nans | mahaya |
| Apafai | vut' | | awačj | | mamau |
| Yupa | | po | mayisa * | | mapaya |
| Bakairi | opa | taše | anjí | | |

probably a Spanish loan word

TABLE II
Major Cultural Movements in Tropical Lowland South America

| Linguistic Group | Center of Dispersal | Destination | Cause of Dispersal | Time Depth |
|-------------------------|-------------------------------|---|------------------------------------|---------------------|
| I. Arawakan | NW Venezuela - N Colombia | Caribbean Coast, Llanos, Amazon Basin, Mesoamerica? | horticulture | 3000 - 2000 B. C. |
| II. Arawakan (Maipuran) | Llanos | Lower Orinoco, Rio Negro, Montaña, Antilles, Middle Orinoco | ridged fields? | 1000 - 900 B. C. |
| III. Arawakan (Tainan) | Lower Orinoco | Antilles, Middle Orinoco | Maipuran expansion | ca. 1 A. D. |
| IV. Cariban | Colombian Cordillera Oriental | Orinoco, Guayana, Amazonia | maize? | 500 B. C. - 1 A. D. |
| V. Ge | NW campo | whole of central Brazilian campo | horticulture | 1 - 1000 A. D. |
| VI. Cariban (Caribai) | middle Orinoco? | Orinoco, northern coastal South America, Antilles | trade, warfare, ritual cannibalism | ca. 1000 A. D. |
| IV. Tupian | southern Amazonia | Atlantic coast, Paraná drainage | Grandfather cult | 1000 - 1900 A. D. |

contact expansion, in spite of the fact that their languages were relatively well differentiated. The great differentiation of dialects within the Tupi-Guaraní "language" in contrast to the one or two *languages* in most other subdivisions of the Tupian stock (Rodrigues 1958) indicates that the focus of dispersal was among the Tupi-Guaraní and that movement by other Tupían peoples must have been stimulated by them.

Conclusion

Four major linguistic stocks have played key roles in the spread and development of Tropical Forest culture. Movement of both peoples and culture traits has been generally from north-west to southeast and upstream along the rivers, occupying more territory through time. The striking rapidity of movement during certain periods was facilitated by a travel along the great rivers of the Orinoco and Amazon basins as well as along the Caribbean and Atlantic coasts. Although of some regional importance in the western Amazon, the Panoan, Tucanoan, and other smaller linguistic groups have been of relatively little importance in the culture history of the region as a whole.

The major points of the hypothesis presented here are summarized in Table II. The hypothesis is based on the present state of knowledge, but it is obvious that there are giant lacunae, particularly in the archeological data. Verification of the hypothesis depends on continued research in many critical areas-northeastern Colombia, the Venezuelan Llanos, the central Amazon, the Madeira drainage. But most critical of all, and the area where most intensive research is indicated, is the upper Rio Negro – Casiquiare canal. A thorough archeological survey should be mounted there, with intensive follow up excavation of selected sites. It may even be possible to show definitively whether that anomalous geographical phenomenon, the Casiquiare canal which connects two major rivers and carries a part of the Orinoco's flow into the Río Negro, is really a natural phenomenon or, as is sometimes suggested, is a man-made feature (Bennett 1949: 57). A continuous aquatic highway linking the Orinoco and Amazon basins would have been desirable for any of the riparian peoples who passed that way over the millenia, but perhaps most desirable of all to the early Arawakans as they passed back and forth between the two river drainages. Only time and continued culture-historical research can provide the answers to these intriguing questions.

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WARFARE PATTERNS OF THE COLOMBIAN GUAHIBO ¹

Robert V. MOREY Jr.

The Guahibo occupy the lowland savanna, or llanos, of eastern Colombia and western Venezuela. They represent the largest surviving indigenous population of an area centered in the Comisaría of Vichada, Colombia, and form an isolated linguistic enclave of approximately 10,000 to 15,000 speakers. Although uniform in language and similar in general features of social organization, Guahibo populations are differentiated by three diverse subsistence patterns: (1) nomadic hunting and gathering; (2) semi-nomadic or semi-sedentary cultivation; and (3) sedentary cultivation.

Along the major rivers where Guahibo population tends to be sparse and where Criollo settlement is concentrated, sedentary horticultural villages predominate (occupation the entire year for a period of from three to five years); smaller tributary streams are occupied by semi-nomadic horticultural villages that practice seasonal cultivation (occupation for a similar period but only during the rainy season of each year), and the interfluvial zones are inhabited by the non-cultivating nomadic hunters and gatherers, who seldom occupy one specific locality for more than a few days or weeks at a time.

Sikuani is the Guahibo term employed to designate the hunting populations which occupy the interfluvial savanna regions bordering the gallery forest-covered zones adjacent to the rivers and streams. The semi-nomadic Guahibo occupy village communities part of the year and are less migratory than the Sikuani hunting communities. There is no

1. Field work in Colombia was carried out from June, 1965, to October, 1966, with the support of a Fulbright Fellowship and National Science Foundation Grant. I am grateful to the Wenner-Gren Foundation for financial aid to attend this congress.

special term in Guahibo which identifies this category of subsistence. Such a population may or may not be designated as Sikuaní, depending upon the subsistence activities engaged in by the group of the speaker.

Factors such as seasonal fluctuation in rainfall, drainage, poor soils and the activity of man in destroying forested zones, contribute to the development of grassland vegetation and the corresponding distinction between savanna and forest-flood plain. The savanna soil predominantly supports tall bunch grass. The river and smaller stream valleys which criss-cross the grasslands are bordered by gallery or marsh forest. Cultivation is only possible in the restricted alluvial land along the rivers. The fauna of the savanna is also poor. There are only a few collected plants, small animals and insects. Although the forest-covered stream banks are restricted, they are clearly the most productive zones for horticultural, hunting, collecting and fishing pursuits.

Guahibo populations, regardless of subsistence base, are, by necessity, oriented toward the resources of the rivers and the gallery forests which flank them. The Guahibo are singularly dependent upon this small total area of forest which fringes the many rivers and streams and upon the fluctuating animal and plant resources found within these delimited zones.

Given the simple technology of the Guahibo, life is focused upon these environmental features, the most evident being the seasonal fluctuation in precipitation. The amount and distribution of water heavily influences the distribution of plant and animal life and the land areas which are suitable for human habitation during certain periods of the year.

During the dry season mobility is at a maximum. Animals tend to cluster near the streams and group movement is directed toward the beaches where hunting, gathering (turtle eggs), and fishing provide abundant return. At this time the dry grasses of the savanna are also fired, yielding the carbonized remains of numerous small animals and insects. The onset of the rains in early April signals a return to higher ground and more restricted movement as the wet season brings heavy rains and flooding rivers which in many areas cover large sections of the savanna. Nomadic populations seek out elevations of favorable height near sources of collected products and curtail their travels to monthly intervals between these localities. The Guahibo cultivators return to their villages before the onset of the rains to prepare their gardens for planting.

A number of individuals (Sauer 1952: 42-9; Reichel-Dolmatoff 1959: 157; Goldman 1963: 44; Lathrap 1968a: 62; 1968b: 26-7) have stressed that the societies of lowland tropical forest South America represent adaptations to the riverine environment within the forest and not the forest per se. Lévi-Strauss (1963: 108-11) has specifically detailed the

more favorable environmental conditions presented by the riverine zone as opposed to the grass-covered savanna. These observations also apply to the indigenous societies in the llanos of eastern Colombia. If the river and its flood plain are rich and the interfluvial uplands poor in natural resources in the tropical forest, then the distinction is even more pronounced in the llanos where the gallery forest-flood plain is restricted in extent and the savanna unproductive in flora and fauna. Briefly, the variation in subsistence patterns among the Guahibo illustrates the adaptation of populations to at least two-well-defined environmental niches: savanna and forest-flood plain.

The majority of early and recent reports on the Guahibo by travelers, explorers, and missionaries, as well as anthropologists, have depicted them as either extremely war-like nomadic hunters and gatherers or as peaceful horticulturalists.

Historic reports indicate frequent involvement of Guahibo nomads (Sikuaní-Cuiba-Chiricoa) in raiding for goods and slaves and, with the Carib, their activities precluded missionization along the banks of the Orinoco River for several decades.

Aboriginal warfare patterns in lowland South America have frequently been explained as having religious or supernatural motives (Métraux 1949: 384-87; Steward and Faron 1959: 304-05). Both Vayda (1961) and Sahlins (1961) have suggested that warfare in many regions of the world may have had an ecological basis. Leeds (1964: 167-68) indicates a subsistence foundation for extensive warfare in the llanos, that in fact it reflects the maximization of food resources "in ways appropriate to... socio-ecological environments". Lathrap (1968a: 28) has noted that ecological conditions may explain warfare in tropical forest South America; the conflict reflecting ecologically based population pressure on the flood plains of the major rivers.

The numerous Carib raids directed against the Colombian banks of the Orinoco River may have represented pre-contact population pressures accentuated by European settlement on the coast and major streams. At the same time heavy missionization in the llanos of Colombia created competition for control of the productive flood plains. The warfare and raiding carried out by many groups in the llanos, including the Guahibo and Carib, may well represent attempts at access to and control of the more favorable river banks. In short, historic reports of Guahibo warfare patterns can be interpreted as reflecting competition for the available and limited ecological niche represented by the gallery forest and its riverine resources. Historically, the Achagua and other Arawak-speakers occupied the major rivers of the llanos. The active participation of the Chiricoa-Sikuaní-Cuahibo in slave raiding and warfare upon these Tropical Forest horticultural groups, possessors of the river

banks, as well as the missions, would tend to support this hypothesis. Acosta (1961: 67) has reported that not only did the Carib direct their attacks against the inhabitants of the riverine zones, but some populations served to provide particular products (crops?).

The fact that sedentary Guahibo villages today are found on the major rivers suggests that these zones are economically more productive in terms of cultivation and hunting and gathering. Although this may well have been true in the past, it does not now appear to be the case. Centuries of European exploitation has made serious inroads into the native flora and fauna. Indigenous sedentary communities are supported by a market system which provides much-desired Western goods.

Differential patterns of warfare, conflict intensity and resolution among the Guahibo correspond in large part to the varied subsistence bases of the populations involved. Before discussing contemporary Guahibo warfare patterns, it will be necessary to briefly summarize certain aspects of social organization.

While composite band organization is characteristic of all Guahibo populations, local community organization is of the three distinct types previously mentioned: the hunting camp, the semi-nomadic horticultural village and the sedentary horticultural village. Following the work of Helm (1965; 1968) among the Canadian Athabascans it is convenient to differentiate between the local and the regional Guahibo band.

The inhabitants of the Guahibo community, camp or village, are kinsmen, related in varying degrees, and united at least temporarily by a common bond of propinquity. The local band, corresponding to all the members of a single community, is an agamous, informal and loosely structured body. The Guahibo local band and the units which compose it are extremely mobile and fluid. At any one time a single family or closely related families may leave the band to hunt or collect wild plant foods for periods varying from a few days to several weeks. They may attach themselves to other local bands for temporary periods or permanently, without immediate concern, as long as kinship ties are present or can be fictitiously established. The establishment of relationships in this context is facilitated by the existence of the regional band.

There are twenty-six regional bands which cross-cut the major subsistence divisions. The regional band consists of several local bands occupying the same riverine sector and sharing the same animal ancestor or associate. The uneven distribution of resources, especially in relation to the wet-dry season cycle, results in the movement of local bands and/or families which compose them throughout the river region. The rights to particular resources in any area are not regarded as exclusive.

In fact, there are no clearly defined boundaries either on the local or regional band level. Regional bands overlap and movement across regional band sectors occurs frequently. Propinquity is the key factor linking the local bands, local units of different regional bands residing near one another will have established more intimate relationships with one another than with member bands of the same region living at greater distance. However, because of the clustering of local bands within a particular area, they tend to be of the same subsistence type and multiple kinship ties and peaceful relationships do tend to occur largely within the regional band context.

Peace among the local groups of the regional band is maintained through the extension of kinship ties by marriage and the fluidity of the familial units which move between the various communities. In addition, socio-economic activities such as trade and drinking parties are means by which potential affiliations with nearby local bands, of the same or of a different regional band, are strengthened and activated.

The *walapu* or drinking party may be viewed as a particularly important formalized mechanism by which hostile relationships within horticultural regional bands are stopped short of outright warfare. The drinking party allows for the overt expression and resolution of inter-band conflicts. Sorcery (especially by the shaman of an opposing band) is the most frequent source of trouble within and between bands; adultery, and at times theft from the gardens of another, are also factors which bring about conflict. These problems are most likely to be solved on an inter-personal or familial basis, but may spread to inter-band hostilities. The *walapu* serves as the stage for these hostilities. Individual or family disputes which may lead to the rupture of band ties are placed within the context of inter-band rivalry.

The drinking party may be held by a family or a village to celebrate such as birth, death, harvest or almost any other occasion. *Walapu* is a mildly intoxicating drink made from fermented sugar cane (termed *guarapo* by the local Criollos). Traditional inter-band invitational dances and the reciprocal exchange of fish and cassava between the men and women of opposite bands *do not* take place if the party is to be the occasion for hostilities. The local band invites its rival to the drinking party for the explicit purpose of fighting. The rival band will always accept the invitation and drink without moderation; although they are aware of the intention behind the party, not to do so, would be regarded as disgraceful and shameful. Those in charge of preparing the drink will keep a strict diet to ensure its potency. The shaman, in addition to reciting magical formulas over the men, will also recite appropriate formulas over the drink so that it will not affect the individuals of his community. This gives them an advantage over their enemies which is consciously reinforced by drinking as little as possi-

ble. Initially such drinking parties proceed as if they were normal, festive occasions, but after a few hours of "friendly" singing and dancing, insults and accusations follow and the hosts will fall upon their guests with flailing fists and attempt to beat them into submission. Weapons should not be used; however, they inevitably appear, but death or serious injuries occur infrequently. The women stand on the sidelines and with shouts and screams encourage the general melee. The battle ends with one or the other group retreating from the site.

It is obvious that these drinking parties satisfy the requirements of revenge and serve to suppress all-out warfare between two related groups. The absence of traditional invitational dances and reciprocal exchange between the sexes symbolizes the rupture of normal, affable relations. These are restored through the formalized conflict of the drinking party. Trade, visiting and interaction between individuals and families of the opposing bands are restored.

Although neither verbalized nor visualized by the Guahibo, it appears that the drinking party is the characteristic means to resolve conflict within the regional band and, above all, between horticultural bands. Despite the fact that regional band affiliation cross-cuts subsistence patterns, the sedentary Guahibo cultivators state that the semi-nomadic cultivators and the nomadic Sikuani hunters are "not civilized" and "do not fight in a civilized manner", i. e. they do not have the drinking party². Warfare, raiding and sorcery are the characteristic methods of revenge-conflict where kinship ties are almost wholly lacking with groups outside the regional band and similar subsistence context.

The institution of the drinking party is absent among the nomadic Guahibo-Sikuani, who instead engage in raiding of one another and of their horticultural relatives. Warfare-raiding today is infrequent and largely confined to the area north of the Meta River in Arauca and Boyacá, although intermittent raiding also occurs in the Tomo and Tuparro River regions. The Guahibo state that the objective of most attacks by the nomadic Sikuani upon the villages is to obtain garden produce (crops), Western material goods, and women. Hostilities between Sikuani bands are explained as a result of territorial encroachment and to obtain booty and women. Friendly nomadic bands are usually located near one another and on rare occasions may cooperate to combat an aggressor or raid a village. The cultivators greatly fear the Sikuani, and in no case will they enter a camp alone or leave their women unprotected when the hunters and gatherers are in the vicinity of the village. The Sikuani prefer the surprise night attack. It is carried out by a

2. The sedentary cultivating Guahibo tend to lump the semi-nomadic cultivators and the nomadic Sikuani together; however, the former also employ the drinking party as a conflict resolving institution.

small group of males and combat is hand-to-hand with special war clubs. These are fairly lethal weapons made from hard, heavy wood and although varying in size, approximate the same length and width as a baseball bat. In the raid, all males and the elder females are normally killed; the young girls are taken for wives. Conflict on this scale is now infrequent, but recurrent rumors and stories of past raids are common in many villages (particularly among the semi-nomadic villagers who reside along the smaller streams and are more susceptible to attack).³ Today, theft from the gardens is more frequent than outright confrontation.

Peaceful exchange and kinship ties supersede the necessity for raiding in many cases. Exchange between the sedentary cultivating Guahibo, the semi-nomadic cultivating Guahibo-Sikuani and the nomadic hunting and gathering Sikuani is based primarily upon kinship. The Guahibo villagers serve as middlemen for their Sikuani kinsmen to whom they trade garden produce, tools, fishhooks, utensils and clothing, for game, wild plant foods, paricá, and hammocks. In regions such as the Tomo and Tuparro Rivers, kinship ties between hunting band and semi-nomadic village are extensive. Families easily interchange band or village affiliation depending upon the dictates of seasonal activities.

It is evident that warfare and trade in the past formed a vast network throughout the llanos and was based upon such factors as unequal spatial and temporal distribution of, and restricted access to, natural resources. This uneven access to game, wild fruits, garden produce and Western trade goods, not only influences Guahibo subsistence patterns but also accounts, in part, for both warfare and trading patterns. Control of the narrow zones of land suitable for cultivation along the river banks by the horticultural Guahibo restricts the foraging populations to the unproductive savannas and, in the absence of peaceful relations, also blocks these groups from the acquisition of the highly desirable Western trade goods. This current situation reinforces the depiction of the favored ecological niche represented by the riverine flood plain. Contemporary warfare patterns then, can be interpreted as reflecting continued pressure and competition for the river banks.

As expected, indigenous conflict with the local Criollo population also reflects these subsistence-oriented problems. The more efficient technology of the Criollo population in terms of guns, outboard motors, etc. accentuates the problems of the poverty of the native flora and fauna. Hostilities are, of course, compounded by the local attitudes of the Criollos toward the Indians.

3. One informant, the member of a recently victimized village, reported the slaughter of several of his fellow members. In the Tuparro region the *Homoinawi* band is infamous and widely feared for their ferocity in such raids.

During my field work in the llanos I became acquainted with numerous llaneros. They are open, friendly people not dissimilar to the often-painted pictures of the Argentinian Gaucho or the cowboy of the early western United States. Unfortunately, many share the attitude of the frontier that, "the only good Indian is a dead Indian". The Guahibo-Sikuani, or Cuiba, as the hunters and gatherers are termed by the Criollos, are infamous throughout the llanos for slaughtering the cattle which roam freely over the large unfenced ranches and for stealing agricultural produce. When their predations become too serious or too annoying, several ranchers may decide to band together to *cuiviar*. *Cuiviar* is a colloquial term employed in the llanos; it is a combination of *Cuiva* or *Cuiba* and the Spanish-*ar* verb ending, meaning, "to hunt *Cuiva*"⁴. These events are not daily occurrences, but they do happen occasionally, which is not surprising where governmental control and communication are still largely absent. Since my return from the field in 1966 two newspaper articles (partially quoted here) related to Guahibo warfare have attracted my attention:

The Cuibas have been provoked into war. For years they have been hunted and mercilessly slain by cattle rancheres who consider them vermin.

Rancher Luis Enrique Morín, who is awaiting trial here /Bogotá/ for leading a massacre of Cuibas several months ago, described them as "animals, like deer." "But", said Morín, "the little deer do not damage our crops or kill our pigs". Morín and his companions admitted slaying three Cuiba men, six women and seven children in a trap baited with food. In retaliation, Cuiba tribesmen attacked an isolated farm-house recently in the Arauca district. (*The Times of the Americas*, Vol. XIII, N° 1, p. 3, January 1, 1969).

An uprising of armed Indians in the eastern province of Meta is causing concern...

It is estimated that about 400 Indians are involved, but reports thus far are confused. Authorities have been informed that the group is armed and that it is apparently led by a former police inspector, who has been in charge of food distribution programs in this area. Some 60 families near the town of Planas have reportedly organized their own defense groups. Most houses are deserted and families are concentrated in central barricaded farms.

The area was settled about 15 years ago. Prior to that time Indians were the only inhabitants. The lack of communications

4. Much of this information is based upon an account of a ranch hand who had direct experience with these "hunting parties" in the Casanare region.

and the tremendous distances between farms makes the obtaining of accurate information difficult.

Rafael Jaramillo, reported leader of the rebels, apparently has the complete confidence of the guahibo Indians. (*The Times of the Americas*, Vol. XIV, N° 10, p. 8, March 11, 1970).

The *Times of the Americas* is an English language newspaper which translates and publishes articles originally appearing in Latin American newspapers. My knowledge concerning these two recent events related to Guahibo warfare is thus confined to this secondary source. Nevertheless, these restricted reports of uprisings I believe can be interpreted to substantiate the contention that warfare in this region has had, and *continues to have*, a subsistence basis. Both events appears to have been precipitated by, or at least were indirectly related to, food acquisition or shortage: "... damage our crops or kill our pigs... a trap baited with food"; "... apparently led by a former police inspector, who has been in charge of food distribution programs in this area". The regions of Arauca and Meta, when compared to Vichada, have substantially greater Criollo populations, Although the Criollo treatment and negative view of the Indian (Guahibo) are undoubtedly important factors, it seems clear from the evidence of historical sources and our knowledge of contemporary Guahibo warfare patterns that these recent conflicts represent renewed or continued pressure upon the traditionally limited resources of the Guahibo. This would appear to be particularly true in relation to the nomadic foraging Sikuani populations who, being denied access to the more productive river banks, have turned to the more easily obtained domesticated livestock.

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HUNTING AND FISHING PRODUCTIVITY OF THE MISKITO INDIANS, EASTERN NICARAGUA ¹

Bernard NIETSCHMANN

Introduction

For many people in Latin America, hunting and fishing still play an important role in subsistence. In addition to the numerous groups of lowland tropical Amerinds in South America, there are various native tribes in Middle America who still depend on hunting and fishing as their major source of animal protein. Many peasant groups also get at least some of their food from hunting and fishing.

Carneiro (1960, 1961, 1964) has shown that most tropical forest agricultural systems are capable of producing vegetable food far in surplus of what is needed by existing populations. It may not be the agricultural potential nor the size of the area available for agriculture which alone influence population size and location, and the area's carrying capacity, but other factors such as protein-rich fish and game resources. Denevan (1966), Lathrap (1968), and Carneiro (n. d.) have all commented on the possible importance of protein obtained from hunting and fishing in terms of population distribution and settlement location, especially for people whose crop staples are roots and tubers and who have few or no domesticated animals.

Despite the suspected importance of native animals in Amerind diets, their possible affect on human carrying capacity and settlement location, and the growing list of over-exploited, endangered species, we know almost nothing about the amounts and types of fish and game animals taken by a specific group over a period of time. In reviewing

1. Research for this article was carried out in 1968-1969 while conducting a field study on the ecology of Miskito subsistence under a grant from the Foreign Area Fellowship Program. I would like to thank the University of Michigan and the Wenner-Gren Foundation for travel support to Lima.

ecological research in Middle America, Bennett (1967: 18) noted that "we have only vague ideas about the quantitative aspects of hunting and fishing success under different environmental and technological conditions." This is really an understatement of the situation, as few published studies exist for any one group where hunting and fishing yields were measured.² Bennett (1970: 25-26) later remarked:

The exploitation of the wild animal resources base as a food source by Amerinds has received inadequate attention from scholars who have studied Amerind societies. Too often a list of animals said to be eaten by the group under investigation is felt to supply all needed information... One is generally told nothing about quantities taken of a given species, seasonal aspects of hunting and fishing, the nutritional contribution made by this dietary input (we know there are fats and proteins but how much and what percentage of the total intake is accounted for by this source?)...

The present paper deals with hunting and fishing yields and time and distance factors in a coastal Miskito village in eastern Nicaragua. Daily records were kept for one year from October 1968 through September 1969 of game meat and fish brought into the village of Tasbapauni by hunters and fishermen. The weights of these animals were taken both of the field dressed and butchered meat. The exact location at which the meat was taken was also recorded, as well as the distance and time involved. This was done in order to get at the meat yields of respective biotopes (microenvironments)³ and the relative success in different biotopes, as expressed by amounts of meat taken relative to time and distance expended. The time, distance, yields, and type of biotope provided a core of measurable data, along with dietary samples.

The Miskito and the Miskito Coast

The Miskito Indians are the dominant cultural group in eastern Nicaragua and they are the second most widely distributed Indian

2. In his study of diet and livelihood of the Bayano Cuna Indians of Panama, Bennett (1962) presented virtually the only available detailed information on hunting and fishing catches based on 14 days of recorded species, numbers, and weights.
3. Biotopes are ecological units wherein primary habitat conditions, and the fauna and flora adapted to them, are uniform. "Various habitats, or biotopes, can be distinguished, according to soil, vegetation, climatic conditions, each inhabited by a definite and well-characterized animal community" (Allee and Schmidt 1951:4). Each biotope is differentiated by distinctive physical features and biota such as a mangrove swamp, a *Thalassia* turtle bank, or a river sand bar where various reptiles lay their eggs.

people in Central America, after the Maya. The Miskito are scattered along 400 miles of Caribbean Coast from Cabo Camarón in Honduras to Haulover, at the southern end of Pearl Lagoon in Nicaragua, and almost 400 miles up the Río Coco to Yakalpanai, the last Miskito settlement. Their present-day population in Nicaragua is approximately 35,000, the majority divided between coastal villages (10,000-11,000 total population) and Río Coco riverine villages (14,000-15,000 total population) (Nietschmann 1970b: 60-65). The study village of Tasbapauni with a population of 997 is one of the largest Miskito settlements.

The Miskito were one of the many aboriginal groups which inhabited the east coast of Nicaragua before early seventeenth century European contact whose cultures and languages were derived principally from lowland tropical South America (Adams 1965: 897-899; Kirchhoff 1948). Probably numbering no more than 2,000 individuals the Miskito population was centered on the northeast coast of Nicaragua at Sandy Bay and Cape Gracias a Dios (Nietschmann n. d., 1970b: 35-48). Their emergence as the major native group and their diffusion into very different environments has come about since European contact, principally through territory and population gained by warfare from neighboring Sumu Indians.

The Miskito Coast is the wettest section in Middle America receiving between 100 and 250 inches of precipitation annually. A period of relative dryness occurs from February to mid-May and at the end of September. These months are characterized by much reduced precipitation totals, generally under five inches, long periods of hot, rainless days, often 10 to 15 days or more, and short rainfalls, lasting only a few hours. Heavy rains fall between June and August, with July usually recording over 30 inches. The rest of the year is generally wet, most months receiving at least 10 inches in the Tasbapauni area.

The study village lies on a narrow haulover⁴ separating Pearl Lagoon from the sea, approximately 40 miles north of Bluefields, the major town on the coast. The Tasbapauni area is a complex of varied environments with different associations of fauna and flora offering numerous combinations of hunting and fishing opportunities in terms of species, site, and season (Figure 1). To the west of the village, across the lagoon, are large expanses of tropical rainforest, scattered palm swamp, and gallery forests inhabited largely by Neotropical fauna. An extensive marine shelf extends far out into the Caribbean Sea off Tasbapauni. The marine fauna of the shallow offshore waters correspond to most species found throughout Caribbean waters. This area has the largest sea turtle feeding grounds in the Western Hemisphere (Carr 1967: 98),

4. A haulover is a narrow neck of land separating two bodies of water such as a lagoon and the sea or two lagoons where a dugout canoe can be dragged across.

manatee, shrimp, and different fish. The major piece of equipment needed for turtling and for journeying to hunting grounds is a dugout canoe (*dori* in Miskito) fitted for sailing. Most hunting is done with 22 rifles and 12 and 16 gauge shotguns. Fish are taken with a variety of lances, harpoons, and nets. Most turtles are harpooned, some are taken with turtle nets during the February to May and September "dry season" when the sea is calm.

Hunting and fishing focus

Miskito hunting and fishing efforts are concentrated on large animals in localized areas and on small animals having high population densities. Many animals are considered culturally unavailable for food⁶ and others are accessible for limited periods only and, even then, in diverse places. The most esteemed fish and game animals in Tasbapauni include green turtle, white-lipped peccary (*Tayassu pecari*), white-tail deer (*Odocoileus virginiana*), hicatee fresh-water turtle (*Pseudomys* sp.), manatee (*Trichechus* sp.), and fish of many kinds, but principally catfish (*Arius melanopus*, *Bagre marinus*), mojarra (*Cichlasoma* sp.), stingray (various genera), and coppermouth (*Cynoscion* sp.). Dietary preference of specific fish and game animals determines to a large degree the intensity and frequency of exploitation efforts.

The most common game animals and their average live and butchered weights are listed in Figure 2. The butchered weights represent "clean meat" portions after the animal has been gutted, cut up, and most of the non-edible parts removed. Bones were included in butchered weights as they are not removed for the sale of meat or for cooking.

The approximate amount of meat consumed in Tasbapauni during a twelve month period is presented in Figure 3. Almost the entire total (92 percent) was obtained by hunting and fishing. These totals do not include shrimp and green turtles sold outside the village, animals used to bait deadfall traps (used to catch jaguars and ocelots), nor cats and river otters taken for skins⁷. Of the total 110,600 pounds of meat, 6,244 (five percent) were obtained by trade or purchase from outside the village; domesticated animals butchered in Tasbapauni contributed 2,490 (two percent); 101,866 pounds came from hunting and fishing efforts of the men of Tasbapauni.

6. These include, for example, trunkback (*Dermochelys* sp.) and loggerhead (*Caretta* sp.) turtles, many fish, and howler monkey (*Alouatta*). Food restrictions also exist for hawksbill turtle (*Eretmochelys imbricata*), collared peccary (*Pecari tajacu*), shrimp (*Penaeus*), jack fish (*Caranx*), tarpon (*Megalops atlanticus*), and lobster (*Panulirus argus*) among others.

7. Approximately 40,000 pounds of fresh shrimp and 82 green turtles were sold.

Figure 2. Average live and butchered weights (in pounds) of important game animals, Tasbapauni.

| | In Pounds | |
|---|------------------|-----------------|
| | Butchered Weight | Live Weight |
| Tapir (<i>Tapirella</i> sp.) | 250 | 525 |
| Manatee (<i>Trichechus</i> sp.) | 200 ^a | 500 |
| Green Turtle (<i>Chelonia mydas</i> ssp.) | 90-100 | 190-210 |
| Whitetail Deer (<i>Odocoileus virginiana</i> ssp.) | 60- 65 | 85- 90 |
| White-lipped Peccary (<i>Tayassu pecari</i> ssp.) | 50 | 73 ^b |
| Hawksbill Turtle (<i>Eretmochelys</i> sp.) | 40- 50 | 105 |
| Brocket Deer (<i>Mazama americana</i> ssp.) | 40 | 60 ^b |
| Collared Peccary (<i>Pecari tajacu</i> ssp.) | 40 | 55 ^b |
| Paca (<i>Cuniculus paca</i> ssp.) | 15 | 21 |
| Spider Monkey (<i>Ateles geoffroyi</i> ssp.) | 12 | 20 |
| Armadillo (<i>Dasypus novemcinctus</i> ssp.) | 7 | 13 |
| Agouti (<i>Dasprocta punctata</i> ssp.) | 6 | 9 |
| Iguana (<i>Iguana</i> sp.) | 6 | 10 |
| White-face Monkey (<i>Cebus capucinus</i> ssp.) | 5 | 8 |
| Hicatee Fresh-water Turtle (<i>Pseudomys</i> sp.) | 5 ^c | 15 |

^a plus oil made from fat

^b said to be large

^c including immature eggs

Figure 3. Annual pounds of butchered fish, game, and domesticated animals consumed in Tasbapauni, October 1968 to September 1969.

| | | |
|---|-------|--------------|
| Green Turtle | 70% | 76,860 lbs. |
| White-lipped Peccary | 7% | 7,245 lbs. |
| Fish | 6% | 7,100 lbs. |
| Whitetail Deer | 5% | 5,800 lbs. |
| Shrimp | 3% | 3,670 lbs. |
| Collared Peccary, Brocket Deer, Iguana, Manatee, Tapir, Paca, Agouti, Monkeys, Armadillo, Birds, Shellfish, Coati | 3% | 2,800 lbs. |
| Pigs, Goats, Cattle, Fowl | 2% | 2,490 lbs. |
| Hicatee Turtle | 2% | 2,380 lbs. |
| Hawksbill Turtle | 2% | 2,055 lbs. |
| | <hr/> | <hr/> |
| | 100% | 110,600 lbs. |

The most important animals are green turtle, white-lipped peccary, fish, and whitetail deer. The high percentage of green turtles in the Tasbapauni diet indicates how important this animal is to the villagers. The coastal Miskito have adapted much of their technology, lifeways, and internal and external economic patterns to the predictable behavior patterns and relatively dependable catches of green turtles. By focusing on the green turtle a great deal of pressure has been taken off terrestrial animal populations which under other conditions would receive more hunting attention. Along the Río Coco, in contrast to Tasbapauni, there is less game meat in the diet and river fishing is the dominant source of animal protein.

The Tasbapauni population exploits less of the terrestrial environment than do the riverine Miskito. Hunting along the Río Coco is focused much more on small game animals (pacas, agoutis, brocket deer, monkeys, parrots and other birds, with only occasional white-lipped peccary taken). In hunting and fishing each kill is composed of a complex set of techno-environmental relationships. If the hunter or fisherman can base his quest on large animals, then each stalk, each shot, each trip has more of a chance for a large amount of meat. Therefore, a Miskito on the Río Coco may have to make five or ten separate stalks and shots for every one or two by a Tasbapauni hunter or turtleman.

The preponderance of green turtles in meat yields and in Tasbapauni's subsistence system can be shown graphically by depicting the number of the most important species taken monthly (Figure 4). Eight hundred and nineteen green turtles, 133 white-lipped peccary, and 95 whitetail deer were taken during this period.

Variability of meat yields

A close relationship exists between changes in weather and sea conditions, local and extra-regional faunal movement, and the variability of meat yields. Both the types and amounts of meat taken in hunting and fishing fluctuate throughout the year. The line indicating monthly rainfall totals in Figure 5 also reflects other environmental changes. Periods of heavy or light rainfall are accompanied by differences in the velocity of offshore currents, changes in wind directions and intensities, and rearrangements of fish and game populations, most markedly the migration of green turtles. Equally as important as the environmental and biological processes affecting the availability and accessibility of fish and game resources is whether or not they are "in phase" with work demands in other spheres of the subsistence system. Thus the February to May dry season, when green turtles are the most plentiful and easily caught, is the period when agricultural work (clearing, burning, planting) has to be done.

Figure 4. Number of green turtle, white-lipped peccary, and whitetail deer taken monthly; and total number of the most important animals taken, Tasbapauni, October 1968 to September 1969.

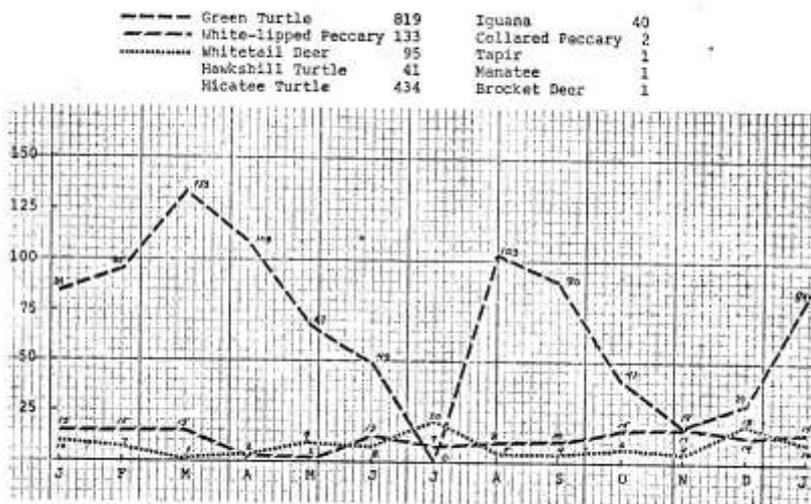
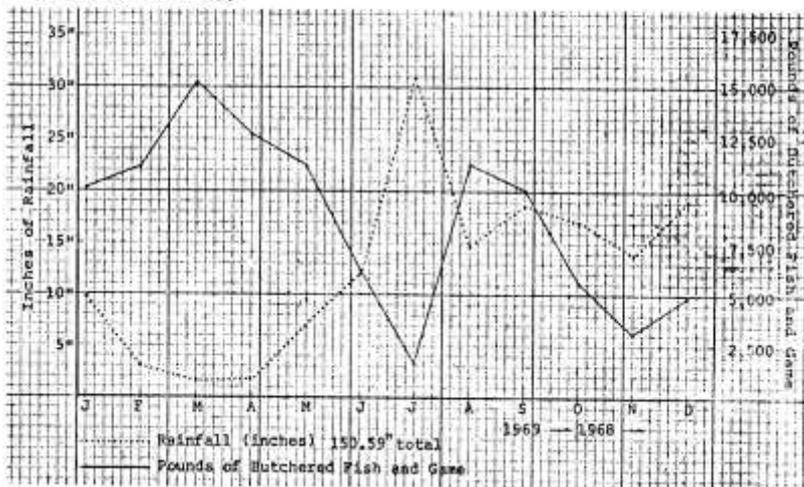


Figure 5. Variability of meat yields from hunting and fishing, Tasbapauni, 1968-1969. Monthly totals of butchered fish and game (in pounds) and rainfall totals (in inches; recordings are for Bluefields, 40 miles south of Tasbapauni) are shown. Amounts of rainfall also reflect the strength and intensity of currents and winds.



Much of the seasonality of meat supplies revolves around green turtle migration patterns. Starting in early April the first group of turtles is said to leave for Tortuguero, Costa Rica nesting beach. Turtles continue to leave the feeding grounds May through early June. From June to the first part of August turtling activities also diminish because of adverse weather conditions, primarily strong currents and winds. The turtles begin to return from nesting in late July and continue arriving until most are back by September. During their absence meat yields drop off greatly and are only ameliorated by hunting returns.

Meat consumed in the village reaches its highest volume during the dry season months of February, March, and April when weather and turtling conditions are optimum. A drastic difference in meat totals occurs in mid-May and intensifies through June, July, and August as the turtles migrate southward and the rains begin. Meat returns increase in the latter part of August and September during the short dry period. From September to the end of November, total monthly amounts of meat in Tasbapauni decrease as a result of labor demands for the rice harvest, contrary winds in October and strong north winds in November.

The variability of meat yields points out one of the most important ecological relationships between the Miskito and their environment, that of the interaction of weather and sea conditions, turtle migration patterns, and the amphibian life of the turtlemen. The timing and success of turtling is largely dependent on these two major environmental factors. Turtlemen act as the adjustive link between the village's desire for meat and the vagaries and certainties of the sea and turtles.

Meat yields of biotopes

An attempt was made to measure the amount of meat taken from the different biotopes utilized by the Miskito. Biotope meat yields presented in Figure 6 represent meat taken for consumption within the village. However, many animals were also taken only for their skins. An estimated 40,000 pounds of shrimp were caught by Tasbapauni fishermen, but only 3,000 pounds were kept for food, the remainder being sold to Bluefields buyers.

The Miskito recognize many biotopes, mostly in terms of structural composition. They perceive the relation of specific animal species to certain biotopes and direct their meat-getting activities accordingly. Certain biotopes were more productive than others because they contained the desired animal species and were accessible, and because hunting and fishing were dependable.

Within the shallow offshore water area, shoals, turtle banks, and "mudset" (close to shore mud-bottomed zone) areas were the most pro-

ductive, yielding 79 percent of the total annual catch. On land, palm swamps, old and new plantations (milpas or swiddens), and secondary forest had the highest return of meat. In the lagoon-river resource sphere, the shallow water shrimp banks, grass flats, and shallow water borders provided most of the meat. In all approximately 87 percent of the meat was obtained from the water, and 13 percent from land.

Distances in hunting and fishing

In compiling data on hunting and fishing yields round trip distances to the "kill site" were noted. Since 87 percent of the meat was taken in a dugout canoe, the round trip distances shown in Figure 7 are mostly direct water distances. Meat yields relative to distance are not on an even ascending or descending gradient. Instead the pattern is one of alternating highs and lows corresponding to the location of productive and unproductive biotopes, Marine and terrestrial faunas are not distributed evenly throughout an area. Rather, they commonly occur in restricted areas, under specific ecological conditions, and at certain times of the year (Nietschmann 1970a).

The long distance journeyed for hunting and fishing by the Miskito of Tasbapauni are similar to the situations in other coastal villages. The turtlemen in the Sandy Bay communities of the northern coast go 50 to 60 miles round trip to turtling grounds and 10 to 15 miles up the Ulang River for hunting. Just north of Tasbapauni in the villages of Río Grande Bar and Little Sandy Bay, turtlemen travel 12 to 15 miles out to Man O'War Cays and hunters go 10 to 20 miles up the Río Grande. It is not uncommon for some coastal Miskito to have to go one and two days by dugout to upriver hunting areas.

Time inputs

Estimating the amount of time involved in hunting and fishing was extremely difficult. Time inputs and meat returns varied tremendously from individual to individual and from season to season, much more so than in agriculture. In Figure 8, inputs of time and meat yield outputs are examined for a hunter and a turtleman. Both of these men obtained approximately the same amount of meat during the twelve month study period. Each split the total meat take with a partner. The turtleman made fewer trips, but each of longer duration, than did the hunter. Both spent a great deal of time in travel: the turtleman 241 hours (53 percent) and the hunter 305 (57 percent). The turtleman had a slightly higher return of meat for every hour invested (1.78: 1 versus 1.62: 1) and considerably more grams of protein per hour (173 versus 136) than did the hunter. On the other hand, hunting

Figure 6. Meat yields per biotope (in pounds of butchered meat). Tasbapauni, October 1968 through September 1969.

| | W-L | Pec | WT | Deer | Green | Hawks- | Iguana | Fish | Shrimp | Hicatee | Misc. | (lbs.) | Total |
|-----------------------------|-------|-------|---------------------|---------------------|-------|--------|--------------------|--------------------|--------|---------|-------|----------------------|---------|
| | | | | Turtle ¹ | bill | | | | | | | | |
| Ocean | | | | | | | | | | | | | |
| shoals-("sleeping grounds") | | | | 27,150 | ,100 | | | 300 | | | | whelks, conch | 28,530 |
| banks (feeding grounds) | | | | 43,205 | 855 | | | | | | | lobster ³ | 44,060 |
| "mudset" | | | | 6,250 | 50 | | | 450 | 400 | | | | 7,150 |
| surf zone | | | | | | | | 1,150 | | | | | 1,150 |
| intertidal | | | | | | | | | | | | | 1,700 |
| cays | | | | | | | | | | | | | |
| Land | | | | | | | | | | | | | |
| beach | | | 120 | | | | | | | | | | |
| old plantations | 800 | | 820 | | | | 201 | | | | | | 321 |
| new plantations | 150 | | 1600 | | | | | | | | | | 1,620 |
| ridge and swamp | 50 | | 250 | | | | | | | | | | 1,790 |
| marsh | | | 300 | | | | | | | | | | 300 |
| palm swamp | 3050 | | 1080 | | | | | | | | | | 4,130 |
| scrub thicket | 100 | | | | | | | | | | | | 100 |
| secondary | 2000 | | 600 | | | | | | | | | | 2,640 |
| mature rainforest | 300 | | | | | | | | | | | | 300 |
| gallery forest | 180 | | 360 | | | | | | | | | | 2,640 |
| bankside ("vega") | | | 520 | | | | | | | | | | 596 |
| Fresh-water | | | | | | | | | | | | | 764 |
| lagoon | | | | | | | | | | | | | |
| creek mouths | | | | | | | | 400 | | | | | 400 |
| shallow borders | | | | | | | | 300 | 400 | | | | 700 |
| "banks" | | | | | | | | 600 | 350 | | | | 1,750 |
| sandbars | | | | | | | | 700 | 1,850 | | | | 2,750 |
| creeks | | | | | | | | | | | | | |
| grass flats | | | | | | | | 200 | | | | | 200 |
| TOTALS | 6,630 | 5,650 | 76,605 ¹ | 2,005 | 301 | 4,100 | 3,000 ² | 1,220 ³ | 1,355 | | | | 101,866 |

¹82 turtles (approx. 7,660 lbs. of meat) sold ²an estimated 40,000 lbs. sold ³not measured

Figure 7. Meat yields (in pounds of butchered meat) relative to round trip distance from Tasbapauni, October 1968 through September 1969.

| Round Trip in miles | White-lipped Peccary | Whitetail Deer | Green a Hawks- Turtle ^a | Iguana | Fish | Shrimp | Hicatee | Misc. (lbs.) | Total | |
|------------------------|-------------------------|-------------------|---------------------------------------|--------|-------|--------|---------|-----------------|--------------|----------------|
| 0-4 | | 120 | 95 | 35 | 1,500 | 400 | 700 | ahí | 2,850 27% | |
| 5-8 | | 500 | | 104 | 300 | | | | 904 .8% | |
| 9-12 | 450 | .880 | 4,275 | 15 | 800 | | 40 | collared pec. | 6,460 6.3% | |
| 13-16 | 1,100 | 1,050 | 2,280 | 50 | | 100 | | | 4,596 4.4% | |
| 17-20 | | 820 | 2,660 | 100 | 13 | 250 | 45 | collared pec | 3,928 3.8% | |
| 21-24 | 1,080 | 760 | 3,230 | 200 | 46 | 400 | 125 | 40 brocket deer | 6,281 6.1% | |
| 25-28 | 1,000 | 300 | 14,095 | 330 | | 200 | 775 | 200 manatee | 18,120 18.0% | |
| 29-32 | 300 | 120 | 20,330 | 550 | 24 | 650 | 400 | 50 | 22,424 22.3% | |
| 33-36 | 700 | 200 | 11,780 | 355 | 30 | 250 | 250 | 55 | 13,620 13.5% | |
| 37-40 | | | 5,795 | 100 | 18 | | 140 | 200 tapir | 6,253 6.1% | |
| 41-44 | 1,250 | 180 | 2,945 | | | | 990 | | 5,365 5.2% | |
| 45-48 | 750 | 720 | 1,900 | 100 | | | 175 | | 3,645 3.5% | |
| 49-52 | | | 7,220 | 200 | | | | | 7,420 7.3% | |
| TOTALS | 6,630 | 5,650 | 76,605 ^b | 2,005 | 301 | 4,100 | 3,000 | 2,355 | 1,220 | 101,866 100.0% |

^a approximately 7660 lbs. of this sold

provided more calories per hour of time (1251 versus 956) than did turtling, due in large part to the high fat composition of white-lipped peccary. The Mískito's liking for fatty meat prompts hunting efforts toward white-lipped peccary. This animal made up 70 percent of the total meat yield for the hunter in this example, while deer provided most of the balance.

The most significant difference, and the major reason there are more turtlemen than hunters, is that the percentage of successful trips⁸ was much higher for the turtlemen (73 percent versus 55 percent). Thus the turtleman went out from the village fewer times and had a greater chance of getting meat than did the hunter. In short, turtle fishing reduces the subsistence risk of meat-getting. It is not how much time or effort is expended to get a particular species that is important to a Mískito, but the degree of certainty in getting it.

In addition to the importance of turtles in the village market economy and the low subsistence risk of turtle fishing compared with hunting, another reason for the dominance of turtling is the high protein return. Hunting is generally more productive in calorie returns than turtling but agricultural calorie productivity is so overshadowing that their margin of difference is almost meaningless. On the other hand, the protein return (grams of protein yield per hour/calories expended per hour) for turtling (.99) is 20 percent higher than for hunting (.78). Added to this the fact that the protein return is also almost 20 percent more dependable in turtling than hunting, it is evident that Mískito meatgetting strategy has considerably reduced subsistence risk and increased protein productivity by concentrating on turtle: fishing. Therefore, even though the Tasbapauni Mískito are on the edge of a still game-rich tropical environment, more than 65 percent of the active adult men concentrate their meat-getting efforts only on turtling.

Contribution of hunting and fishing to diet

Of the diets sampled in Tasbapauni 9 the average daily caloric intake for an adult male ranged from 2,000 in July when all foods are scarce, to 2,400 in May when crops are scarce and turtle abundant, to 2,800 in September when the first manioc crop is ready and green turtles return from nesting. The daily average for a one year period

- A "successful trip" is somewhat difficult to define. A Mískito may bring a couple of hicatee turtle and believe he had bad luck hunting. I considered a hunting or turtling trip to be successful if the men brought back more calories in meat than they expended.
- Intensive dietary measurement was done during two 14 day periods (one in May and the other in July) and intermittently at other times of the year for three sample families.

was approximately 2,500 calories. Calorie intake was extremely variable; some days a man would barely consume 1,000 calories. When food became plentiful, daily consumption levels rose to 4,000 or 5,000 calories. The present percentages of calories secured by the Tasbapauni Miskito by different means of food procurement roughly are: agriculture 74 percent, purchased store foods 18 percent, hunting and fishing 7 percent, and gathering 1 percent.

Men are the major procurers of protein, basing their activities on the calorie surplus supplied largely by women in agriculture. In this respect, Alland (1970: 78) observes:

The calorie output from the products of hunting may frequently fall below the investment, but an essential element is added to the diet... hunters should hunt enough to meet amino acid requirements but not so much that they strain the overall caloric supply.

Protein returns from hunting and fishing are fairly high and the amount of daily protein intake averaged 50 to 60 grams (mostly of animal origin). Large amounts of essential aminoacids are supplied in animal organs and muscle tissues and the Miskito's consumption of almost all parts of an animal greatly improves the utilization of the intake of proteins.

The approximate daily consumption of calories and protein for men, women, children, and for the village of Tasbapauni are shown in Figure 9. These figures were derived from three sample families, extrapolating for the village totals. Based on these data an average family of seven, including an adult man and woman, adolescent girl and boy, one child six to ten years old, and two children two to five years old would consume approximately 12,000 calories per day, and about 4,500,000 per year; 138 grams of animal protein or about 1 1/2 pounds of meat per day, and 548 pounds per year. Average daily consumption rates for the village of 997 people work out to 19,869 grams of animal protein (roughly 220 pounds of meat). In other words, the current rate of meat consumption can be satisfied with two medium size green turtles per day.

Outlook

The combined number of green turtles taken by Miskito Indians in Nicaraguan waters probably does not exceed 5,000 head annually and is more likely closer to 4,000. I know of no published estimate of the present-day size of the Nicaraguan green turtle population. There is no doubt, however, that the turtle herds are being depleted as a result of the long-term exploitation of the Tortuguero nesting beach

Figure 8. Time and yield data for hunting and turtle fishing, Tasbapauni, October 1968 to September 1969. Composition of turtle, deer, and white-lipped peccary meats was adjusted from Bowes and Church (1966) and Wu Leung (1961) to allow for Miskito consumption of "mixed meat" and fat.

| | Founds of meat (share) | Total Hours | Hours Traveling | Hours hunting and fishing |
|-----------|---------------------------|-------------------------------|-------------------------------------|------------------------------|
| Hunter | 875 | 533 | 305 | 288 |
| Turtleman | 812 | 455 | 241 | 214 |
| | | Calories | Protein (gm) | Fat (gm) |
| Hunter | 1.62:1 | 677,044 | 73,317 | 41,496 |
| Turtleman | 1.78:1 | 437,500 | 78,750 | 7,875 |
| | | Cal/hr. | Prot./hr (gm) | Fat/hr (gm) |
| Hunter | 1251 | 136 | 74 | |
| Turtleman | 956 | 173 | 17 | |
| | Number of trips | Number of successful trips | Percentage of success- ful trips | |
| Hunter | 26 | 14 | 55% | |
| Turtleman | 15 | 11 | 73% | |

Figure 9. Estimated daily consumption of calories and protein for individuals, and for Tasbapauni, October 1968 to September 1969.

| | Tasbapauni | | | | | | |
|--------------------------|------------|----------------------|-------------------------|---------------|-----------|----------------------|-------------------------|
| | Individual | Animal Protein Grams | Vegetable Protein Grams | No. of Indiv. | Calories | Animal Protein Grams | Vegetable Protein Grams |
| Adult males | 2,500 | 30 | 23.2 | 178 | 445,000 | 5,340 | 4,130 |
| Adult females | 2,200 | 26.4 | 20.9 | 165 | 363,000 | 4,356 | 3,449 |
| Adolescent males | 2,000 | 24.0 | 18.6 | 112 | 224,000 | 2,668 | 2,085 |
| Adolescent females | 1,900 | 22.8 | 17.6 | 143 | 271,700 | 3,260 | 2,521 |
| Children 6-10 | 1,250 | 15.0 | 11.6 | 183 | 228,750 | 2,745 | 2,123 |
| Children 2-5 | 1,000 | 10.0 | 11.3 | 150 | 150,000 | 1,500 | 1,695 |
| Children 1 yr. | 800 | - | 7. | 35 | 28,000 | - | 245 |
| Children less than 1 yr. | ? | - | - | 31 | ? | ? | ? |
| | | | | 997 | 1,710,450 | 19,869 | 16,248 |

and from years of commercial and subsistence turtling of the remaining green turtle population by Cayman Islanders and Miskito Indians. On the other hand, fish and game populations in the Tasbapauni area apparently have not been seriously depleted due to the extensiveness of the rainforest, river, and lagoon areas exploited by the Miskito and their concentration on green turtles. Villages such as Tasbapauni and a handful of other Miskito settlements represent remnants of a way life once much more widespread in the Caribbean.

Based on an estimated annual growth of 3.3 percent the current Miskito population of 35,000 will increase to 48,000 in 10 years and to 66,500 in 20 years (Nietschmann 1970b: 66,338). The Miskito are having to support their growing population with local resources. Increasing pressure will be placed on fish and game populations to meet nutritional demands for animal protein. Maintaining the present quality and composition of Tasbapauni Miskito dietary patterns in the future will be as closely correlated to what happens to green turtle populations as it will to increasing the area under cultivation to meet population growth.

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Si es cierto que el hombre inventa dioses a su semejanza, también lo es que encuentra su semejanza en las imágenes que le ofrecen el cielo y la tierra. *Octavio Paz*.

Los Kofan habitan las cabeceras de los ríos Aguarico, San Miguel y Guamúes en la zona fronteriza ecuatoriano-colombiana. La tribu consta de 550 habitantes, lo que equivale a un número igual de habitantes del idioma Kofan, y que no tiene relación definitiva con ninguna familia lingüística reconocida. La economía Kofan, al igual que la de otras tribus vecinas de la región del Putumayo, se basa en la caza, pesca y horticultura incipiente. Las familias nucleares o extendidas comparten casas-habitación, sobreelevadas del suelo, con pisos y paredes de chonta y techos de hojas tejidas. De los siete caseríos que hay, los más grandes tienen diez casas y una población de alrededor de 100 habitantes, dispersa a ambas márgenes de los ríos, en una distancia de uno o dos kilómetros.

Los Kofan son una tribu teknónima, o sea que los padres toman el nombre del primer hijo o hija al nacer y lo usan hasta cuando éste o ésta se casa. Es en este momento, entonces, que cambian sus nombres con la del siguiente hijo o hija no casado. Este hecho social crea una situación de "amnesia genealógica", que dificulta la determinación del parentesco más allá de dos generaciones. Se hace muy difícil recordar los nombres originales de los antepasados, e incluso, los nombres cristianos que todavía se emplean.

La descendencia Kofan es bilateral. Se reconocen los antecedentes de ambos parientes sin que ninguno de los dos grupos adquiera mayor importancia en la organización social. El nombre de familia, o apellido, se toma del padre biológico-social. Existen, sin embargo, rasgos de un sistema de "moietés" o 'mitades' con igual número de "familias" en cada una. Una mitad ocupaba el río San Miguel y la otra el Aguarico. Se casaban y aún se casan entre "familias" de un río y el otro (sería prematuro decir que son linajes, dado lo incompleto del análisis). Además, existe incluso una diferencia dialectal entre los grupos de ambos ríos; pero fuera de esto, comparten la misma cultura.

No hay herencia de bienes, ni funciones sociales, a excepción del cargo de *curaka* o shaman que es hereditario del padre al primer hijo (actualmente este patrón cultural está debilitándose por las presiones aculturativas). La propiedad de los hombres se reduce a sus artefactos y cultivos, yuca, plátano, maíz, tabaco y árboles frutales dispersos por el caserío y, además, a artículos y siembras en las que ha invertido su propio esfuerzo. Paralelamente, las mujeres son dueñas de utensilios de cocina y de artículos de artesanía. Por otro lado, hombres y mujeres tienen sus propias canciones, aprendidas en estado alucinante, producido por el consumo del yagé. Cuando muere una persona se destruyen sus bienes, se abandona su parcela y nunca más se atreven a repetir sus canciones.

El *curaka* o shaman es a la vez jefe político, intérprete e intermediario de aquella parte de la realidad que sólo él conoce. Su poder nace de este hecho y su conocimiento se extiende a todos los campos de la acción humana. La imposición del sistema de gobernadores en el lado colombiano ha creado un doble sistema de autoridades dentro de ciertos caseríos, pero al final, uno de ellos es intermediario con el mundo blanco y el otro, el *curaka* (solamente hay un caso en que los papeles coinciden) es el que "conoce" más y por cierto tiene la mayor autoridad. Las enfermedades del mundo occidental, las matanzas de la época misionarial-cauchera (y su continuación al presente con la explotación del petróleo) y la carencia de hijos amenazan la continuidad del sistema tradicional. Es muy probable que con la muerte de esta generación de *curakas* (actualmente hay únicamente dos aprendices) se extinguirá el shamanismo entre los Kofan.

Cada caserío tiene un shaman, un hombre de edad, casado o viudo, que ha servido y sufrido (según ellos) un período de aprendizaje con su padre u otro shaman durante su juventud, generalmente antes de cumplir los treinta años. El aprendizaje consiste en tomar, frecuentemente, grandes cantidades (hasta diez tazas) de yagé durante un período de no menos tres meses. El aprendiz toma junto con su maestro, los dos solos y/o con los demás del caserío.

La sabiduría, o sea el conocimiento y el poder que resulta del conocimiento, proviene de las visiones, formas provocadas por la droga alucinógena. Es el maestro o *curaka* quien ha visto todo (durante su propio aprendizaje y de allí en adelante reafirma continuamente sus conocimientos) y ayuda al aprendiz a ver lo mismo. 'Ver' significa percibir mentalmente, formas y sonidos naturales y culturales, sea de animales, pájaros y personas conocidas como la gente del yagé.

Conocer (*atesuye*) es el estado de haber visto o de estar viendo (*ateye*); es necesario ver antes de conocer. El proceso es irreversible, no hay conocimiento sin visión, y la visión sin conocimiento tiene el sentido del verbo 'mirar' en español, la cual precede la apreciación de las

cualidades de las formas. Además, en cada imagen visual hay un sonido que la acompaña, si es que la forma produce sonido en la naturaleza. Cabe notar que son las formas más temibles, por ejemplo, el tigre y la serpiente, las que producen menos sonido. Las demás formas con sonido constituyen un complejo audio-visual que tiene las mismas características en la vida cotidiana o bajo la influencia del yagé.

El maestro pregunta continuamente al aprendiz qué ha visto, cómo era, y qué hizo. De esta manera se informa del nivel de profundización o el estado del conocimiento de formas atestiguadas por el novicio. A los que no ven mucho se les obliga a tomar más yagé. El conocimiento se relaciona directamente con la cantidad de yagé que se consume.

Al parecer existen cuatro etapas del conocimiento, sin distinción clara entre las mismas y corresponden, por supuesto, a la cantidad de yagé que uno haya tomado. Se comienza con las formas de figuras geométricas, coloreadas y de una dinámica continua que se transforman constantemente en formas distintas. Después, durante un largo rato (aproximadamente una hora) asoman, entre las figuras abstractas, animales y pájaros silvestres. (Hay casos en que solamente con la ayuda del yagé se ven algunos pájaros que no existen en la naturaleza. Esto no ocurre con los demás animales).

Suponiendo que se siga tomando yagé, el estado compulsivo provocado por los alcaloides aumenta y comienza el miedo, el llamado sufrimiento. La cantidad de formas percibidas cambia a un ritmo acelerado y la inhabilidad para controlarlas provoca miedo. Los animales: serpientes, tigres y boas, por ejemplo, atacan al individuo, lo comen, lo destruyen hasta que siente su propia muerte. Es evidente que la inminencia de la muerte engendra miedo en personas conscientes de su vida, pero al morir el alma se separa del cuerpo y 'sube' adonde vive la gente del yagé. Ellos, por supuesto, son Kofan que viven en grandes caseríos, todos felices, con abundancia de comida y chicha, en fin un verdadero paraíso. Son ellos, la gente del yagé, la que enseña al individuo como cantar. Y como los *curakas* son quienes con mayor frecuencia llegan a verla, son los que cantan más. Quien ve a la gente del yagé les consulta sobre enfermedades, apariciones, cacería y pesca. Son ellos quienes ven todo. El *curaka* de mayor conocimiento es quien ve lo mismo que la gente del yagé, y ellos como ya se dijo, todo lo ven. El interpreta sus visiones, es decir, su conocimiento, para beneficio de los demás. Si este beneficio exige controlar la maldad de otro *curaka* y/o con mayor frecuencia el poder temible de *curakas* de tribus vecindarias, entonces lanzan sus propias flechas mágicas hacia la fuente de la maldad (también manifestada en forma de flechas mágicas).

El *curaka* interrumpe el ritmo de la vida cotidiana al anunciar que tomará yagé, y los demás, hombre y mujeres, saben que pueden compar-

tir con él. La asistencia del curaka la solicitan los enfermos y quienes por haber visto, por ejemplo, un tigre amenazándolos, padecen una crisis. Muchas veces el curaka decide tomarlo por razones personales, siempre relacionadas con el mantenimiento de la salud y el bienestar de los habitantes del caserío. En términos de función social, se consulta al yagé para diagnosticar los problemas y luego curar las enfermedades y resolver las crisis que provocan el desconocimiento de un hecho aparentemente incomprensible.

El curaka, si es que no hay una mujer menstruando, va al monte para cortar unos diez o doce trozos del tronco grueso del bejuco o liana, *Banisteriopsis Caapi sp.* y hojas de *Banisteriopsis Rusbyana sp.* Lleva lo colectado a la casa del yagé y al día siguiente su ayudante, el aprendiz o frecuentemente un anciano soltero lo cocina en una olla de barro, o se cocina o se maja con un palo, pero en ambos casos se prepara una infusión de las plantas que se toma esa misma noche.

La casa del yagé se encuentra más o menos cerca del caserío, si es nucleado, o de la casa del curaka, siempre en plena selva y al lado de una quebrada. Los que preparan el yagé tienen que estar en ayunas y se prohíbe la presencia de mujeres. Al anochecer, el curaka llega a la casa junto con los demás hombres y niños que también van a tomarla (se comienza a tomar alrededor de los seis años). No es obligatorio tomar yagé. Después de unos minutos llegan las mujeres y niñas y acomodan sus hamacas al lado opuesto de la casa del yagé, mientras el curaka y su ayudante arreglan la olla y la taza ritual.

Después de un largo rato de silencio y descanso el curaka comienza a bendecir la primera taza, que él mismo toma. La bendición, por falta de otro término, consiste en un 'click' y unos soplos hacia el líquido espeso de la taza. Con esto se evita la presencia de flechas mágicas perjudiciales cuando se le consume. Luego de beber convida a los demás, bendiciendo cada taza de los que vienen a tomarlo, arrodillándose a su lado. A las mujeres y niñas, el curaka, les entrega personalmente la taza sin que ellas tengan que atravesar la parte masculina de la casa. El curaka retoma siempre a su hamaca ubicada al costado masculino de la casa rectangular.

Esta acción se repite a voluntad del curaka, normalmente cada hora, cinco o seis veces. El curaka toma sólo en las ocasiones que comparte con los demás. Después de la segunda toma general, el curaka comienza a cantar y el resto de la noche sigue cantando y bebiendo hasta que se acaba la cantidad preparada de yagé. Los demás participantes toman cuando se les convida, pero no cantan. Únicamente los curakas cantan. En la madrugada, al alba, el curaka va hacia los enfermos presentes y los 'cura', primero soplando y luego chupando y escupiendo a un lado las flechas perjudiciales. Sigue un período de descanso, mien-

tras las mujeres preparan unas comidas especiales repartidas individualmente por los niños. Antes del mediodía todos regresan a sus casas en el caserío.

El consumo del yagé es el único rito entre los Kofan actuales. Se repite con bastante frecuencia, a veces incluso semanalmente. El consumo del yagé es un intento de comprender la realidad con mayor precisión. Dado que entre ellos no existe una clara distinción entre sueño y vigilia, es lógica la hipótesis de que las formas percibidas bajo la influencia del yagé no tienen una realidad aparte. Son formas normales o formas sin referencia concreta en el mundo de la naturaleza, o sea formas netamente culturales, con el mismo grado de realidad que las otras. Entre ellos no existen las distinciones duales o de polaridad del pensamiento cartesiano, (el buscar y encontrar tales estructuras cognitivas duales es fácil, pero ajeno al proceso de tratar de comprender como funciona el mundo cognitivo Kofan). Lo que se ha visto es lo que se conoce, sea como resultado de sus viajes diarios dentro de la selva o por los efectos de los alcaloides del yagé en una mente afectada. No hay distinciones entre estados de realidad. Tomar yagé sirve para intensificar el conocimiento de ciertas formas naturales (en términos cartesianos) de significado cultural, por ejemplo, los animales preferidos y más buscados en la caza. Se reafirma y verifica la presencia e importancia de estas formas percibidas y, por supuesto, la dinámica continua entre hombre y naturaleza. Pero el curaka va más allá hacia la reestructuración de las formas. Con un acceso más frecuente a las formas básicas, su mayor definición le da un mayor control y así manipula las formas, que contienen poder y significado culturales. Estas formas son símbolos fijables en un *continuum* del bienestar que el shaman Kofan trata de mantener. La gente del yagé le facilita mayor comprensión y control ya que para llegar donde ellos se pasa la muerte y se encuentra con un estado muerto pero vivo y sumamente sensible.

La gente del yagé permite al curaka apreciar las formas alucinógenas, pero siempre 'vistas', según su valor informativo cultural e interpretarlas y colocarlas en el *continuum*. El daño proviene de flechas mágicas enviadas por otros curakas, pero el problema no es tanto identificar la fuente de la maldad como buscar una nueva configuración de las formas de valor positivo, alentadoras para los demás, siempre dentro de un determinado marco de la realidad. La claridad de la visión proyectada por la gente del yagé permite al curaka buscar y extraer la maldad, a la vez que conseguir nueva información entre las formas antiguas y reconocidas, para así recomendar acciones concretas y hierbas medicinales a los demás. Como el curaka posee mayor acceso a esta claridad de la realidad, tiene en consecuencia mayor conocimiento y discriminación, en fin, el máximo poder entre un grupo humano consciente de su cultura en medio de la naturaleza.

LES TRIBUS INDIGENES DU PARC NATIONAL DU MANU

André-Marcel d'ANS

Introduction

Le Parc National du Manú couvre une étendue de près d'un million et demi d'hectares. Il englobe essentiellement, en sa partie septentrionale, les cours moyen et supérieur du Manú, premier tributaire important du Madre de Dios. Le parc est limité au nord par la ligne du partage des eaux du Manú et du Piedras, et à l'ouest par la limite du bassin de l'Urubamba. A l'est, la frontière du parc est parallèle au Haut-Madre de Dios. Vers le sud, enfin, le parc s'étend jusqu'à proximité de Paucartambo, comprenant des zones de Ceja de Montaña et de Sierra.

Depuis octobre 1969, nous sommes en charge des études anthropologiques à l'intérieur du parc. Nous exposons par ailleurs ¹ les principes généraux qui guident notre action. Nous voudrions ici apporter les résultats de nos premières observations et contribuer à une meilleure connaissance de la répartition géographique des tribus indigènes du département péruvien du Madre de Dios.

Les machiguengas de Tayacomé

A l'intérieur du parc, sur la rive droite du Manú, 170 Machiguengas se trouvent regroupés en un village nommé Tayacomé. Cette concentration a été provoquée, depuis une dizaine d'années, par des missionnaires protestants. Le noyau de population initial était constitué de quelques Machiguengas civilisés issus de la mission de Palotoa (Haut-Madre de Dios). Peu à peu est venue les rejoindre la majeure partie

1. Cfr. *Parcs nationaux et anthropologie*.

possible, des relations amicales qui permettent d'envisager, dans un délai convenable, l'installation du personnel de garde aux limites occidentales du parc.

Une première expédition, effectuée en novembre 1969, nous a permis de reconnaître le cours du Manú jusqu'à la limite des eaux navigables en saison des pluies. Aux environs de l'embouchure du Cashpajali, nous avons découvert des traces fraîches d'activité humaine, mais nous n'avons pu percevoir la présence d'aucun individu. Une nouvelle expédition est projetée pour août 1970. Nous espérons qu'à ce moment, la ponte des tortues devant amener sur les bords du Manú les populations qui vivent aux sources des affluents, ceci devrait être une circonstance susceptible de favoriser la réussite d'un contact.

Les habitants de la région désignent des indigènes comme étant des *Amahuacas*. La description qu'en donnent les rares témoins oculaires nous pousse à corroborer cette identification. Cependant, les autres indigènes, Machiguengas, Piros, Mashcos, distinguent parmi eux des Amahuacas et des *Yaminahuas*, ce qui ne manque pas d'être également vraisemblable.

Les Machiguengas de Tayacomé, en particulier, mentionnent avec précision un groupe d'Amahuacas sur le Cashpajali, différents groupes d'Amahuacas et de Yaminahuas aux sources des affluents septentrionaux du Manú, et un groupe de Yaminahuas aux sources du Panahua et du Pinquén. Les Machiguengas vivent en état de guerre latente tant vis-à-vis des Amahuacas que des Yaminahuas; ces deux derniers groupes en font autant entre eux.

L'identification des indigènes du Haut-Manú ne fait plus guère de doute si l'on ajoute à ce qui précède que des rumeurs recueillies sur le Río de las Piedras font également mention de groupes d'Amahuacas et de Yaminahuas sauvages aux sources de ce fleuve. D'autre part, les établissements amahuacas des sources du Mapuya, de l'Inuya, du Sepahua et du Purús sont bien connus. Il n'y aurait donc rien d'étonnant à ce qu'on en retrouve, non loin de là, aux sources du Piedras, du Cashpajali et des autres affluents de la rive gauche du Manú.

Précisons enfin que nos efforts de prise de contact ne portent, pour l'instant, que sur les indigènes qui occupent la région de l'Isthme de Fitzcarrald. Aucune pénétration du personnel du parc n'est encore envisagée dans le nord du parc ni vers les sources du Punahua et du Pinquén.

Autres tribus du département du Madre de Dios

Considérant le peu d'informations disponibles sur cette région et leur caractère souvent caduc, nous croyons utile de faire figurer ici les ob-

servations que nous avons pu faire au sujet d'autres tribus indigènes du département du Madre de Dios. Notre inventaire n'est exhaustif que pour ce qui est des régions proches du cours du Madre de Dios. Nous ne disposons que de renseignements peu contrôlables pour les zones plus éloignées, tant en direction de la Cordillère que vers les frontières du Brésil.

Une bonne centaine de PIROS sont regroupés dans le village de Diamante, sur la rive gauche du Madre de Dios, en amont immédiat de son confluent avec le Manú.

Plus de 150 MASHCOS vivent à la mission catholique de-Shintuya. D'autres, apparemment encore assez nombreux, restent disséminés sur un vaste territoire compris entre le Haut-Madre de Dios et l'Inambari. Remarquons que ces indigènes considèrent que la dénomination "mashco" est un mot espagnol (?) signifiant "criminel" et qu'ils jugent évidemment péjoratif. Eux-mêmes se désignent comme *Amarakáiri*. Cette ethnie comprend les *Wačipairi* du Haut-Madre de Dios; les *Wakitanéri*, *Hintapwéri* et *Kotsimbaéri* du bassin du Shilive; les *Kipondidéri* ou *Kipondiritajwéri* du Colorado; les *Arasáiri* de l'Inambari et les *Toyéri* ou *Toyonéri*, "ceux de l'aval", Comrrie les Machiguengas et les Piras, les Mashcos appartiennent au groupe linguistique arawak.

Sur le Tambopata, on trouve les HUARAYOS, de langue tacana, dont les familles les mieux assimilées se rapprochent constamment de Puerto Maldonado.

Sur le Bas-Paríamanu, se trouve un petit groupe de 25 AMAHUACAS, où nous recrutons notre guide informateur pour les expéditions à l'intérieur du parc. Dans ce cas-ci encore, les indigènes portent un nom "donné par les Blancs" et dont ils ne s'expliquent ni la signification ni l'origine³. Les Amahuacas du Bas-Paríamanu sont des descendants de *šā:wo*² "gens-perroquet" et d'*indowó*² ou *indonáwa*² "gens-tigre" originaires des sources de l'Inuya (am.: *i:ndoyá*² "[rivière] des tigres") et amenés sur le Piedras (am.: *pa:oyá*² "[rivière] des coquillages") à l'époque des *caucheros*.

Au sein de l'ethnie (am.: *nok̄ káiwo*², esp.: *paisanos* "compatriotes") les Amahuacas énumèrent encore les *na:šišmáwo*² "gens-qui ne savent pas se baigner" également des sources de l'Inuya, les *ko²tináwa*² ou *ko²tiwo*² "gens-palmier" des sources du Mapuya (am.: *mopo:yá*² "[rivière] de la

3. [^o*amawáka*] n'est phonétiquement pas possible en... Amahuaca, où les phonèmes /m/ et /n/ suivis de voyelle orale se réalisent en [m^b] et [n^d]. Le mot ne signifie rien en espagnol; en quechua, on pourrait l'interpréter en "ne pleure pas", mais on ne vit vraiment pas quelle serait la raison de cette appellation. Par contre, très souvent, les tribus amazoniennes ont été désignées du nom du cours d'eau qu'elles habitaient. Or *am^wáwaka*², qui signifie "fleuve des capybaras", se transcrirait normalement amahuaca en espagnol. Resterait à savoir si un tel toponyme existe réellement dans le domaine amahuaca...

terre a poterie"), les *rondowó*² ou *rondonáwa*² "gens-serpent"⁴ des sources du Sepahua (am.: *wʌʃnʌyá*² "[rivière] à eau claire", et du Haut-Piedras (am.: *amʷʌya*² "[rivière] du capybara"); les *isa:wó*² ou *isa:náwa*² "gens-petit oiseau" de provenance indéterminée et un autre groupe enfin, dont ils ont oublié le nom, sur le Haut-Purús.

En dehors de l'ethnie, les Amahuacas du Bas-Pariamanu ont également connaissance de l'existence des *yamʔináwa*² "gens-métal", leurs ennemis héréditaires. Assez peu en accord avec les classifications existantes, ils affirment que les Yaminahuas se subdivisent en *kašináwa*² "gens-chauve souris" et en *šišináwa*² "gens-coati". Tous ceux-ci vivent sur le Haut-Purús, de même que les *marináwa*² "gens-agouti", qui ne sont ni des Yaminahuas ni des "compatriotes" mais qui "parlent presque la même langue que les Amahuacas". Toutes ces tribus appartiennent en effet au groupe linguistique pano, tout comme les *Chamas* de l'Ucayali, également connus des Amahuacas du Bas-Pariamanu: quelques *ši*² *piwo*² "gens-ouis-titi" éloignés de leur habitat originel se sont établis sur des îles du Madre de Dios, en amont de son confluent avec le Piedras.

Observons enfin que les tribus qui, dans les classifications, constituent à elles seules le groupe pano sud-occidental; *Arasaire*, *Yamiaca* et *Atsahuaca* n'ont laissé ni traces ni souvenirs dans la région, non plus que les Huitotos qui y auraient été amenés à l'époque du caoutchouc.

4. C'est un chef de guerre (*ha:rʔ t ʔniro*²) *rondowó*², *Warā:k*¹ *pa*², qui, ayant unifié plusieurs groupes d'Amahuacas sous son autorité, mena, au début du siècle, une guérilla acharnée contre les patrons caoutchoutiers, notamment sur le Haut-Piedras. Les Amahuacas du Bas-Pariamanu pensent que leurs compatriotes du Haut-Manú doivent être des *rondowá*².

ACTITUDES DE CUATRO TRIBUS DE LA SELVA PERUANA RESPECTO A PLANTAS EMPLEADAS COMO ANTICONCEPTIVOS POR VIA ORAL

Nicole MAXWELL

Introducción

Se ha sabido desde hace mucho tiempo que los miembros de numerosas tribus de la Hoya Amazónica limitan deliberadamente el número de sus descendientes. Sus motivos para esto lo han mencionado muchos investigadores, pero los métodos que emplean han sido dados a conocer escasamente, habiéndose discutido ampliamente sólo el infanticidio. Sin embargo, existen unas cuantas narraciones publicadas de tribus cuyas mujeres beben preparaciones "secretas" de plantas con el propósito de provocar el aborto o evitar el embarazo. El informe más explícito que he encontrado se halla en el libro titulado "La Historia de la Contraconcepción" cuyo autor es el Dr. Norman E. Himes, quien cita la declaración de Rafael Karsten hecha en 1920: "Para ser capaz de cohabitar con un hombre sin resultar embarazada, las mujeres de los Canelos tienen la costumbre de tomar una medicina obtenida de la pequeña planta denominada *piripiri*. Los nudos de la raíz se trituran en agua y la mujer bebe una poción de esta bebida". Es interesante notar que por el año 1935, cuando se escribió este libro, una autoridad tal como el Dr. Himes manifestó de plano, que no existía ninguna sustancia que, ingerida oralmente por una mujer, podía evitar que concibiese, y que cualquier creencia en tales sustancias debería considerársele como superstición.

El propósito de este artículo es describir las actitudes de los miembros de cuatro tribus de la región amazónica peruana con respecto a las plantas que ellas utilizan para este propósito. Las observaciones que se dan aquí se efectuaron durante las visitas hechas a los Seune Witotos en el Río Napo en 1953, 1959, 1961 y 1966; a los Jívaros que viven en el Río Corrientes en 1959 y 1961; a los Shipibos en los Ríos Uca-

yali y Pisqui en 1963 y 1966; y a los Conibos en el Río Utucuru (Alto Ucayali) en los primeros meses de 1970. El propósito de todos estos viajes fue la colección y estudio de medicinas botánicas de las tribus.

Discusión

Las gentes primitivas son por lo general renuentes a revelar sus conocimientos médicos a un extraño, pero con cuidado y tiempo considerable corrientemente es posible propiciar un sentimiento de amistad y confianza. Si se hace esto, ellas pueden, como regla, ser persuadidas a reunir y explicar el uso de muchas plantas de las cuales dependen para el tratamiento de heridas o enfermedades. Pero esto no ocurre de ningún modo en el caso de las plantas que emplean como anticonceptivos. No todas las tribus parecen conocer estas plantas, pero aquéllas que las conocen son extremadamente reservadas respecto a ellas. En efecto, cualesquier planta que creen que afectan el dar o detener la vida están rodeadas de tabús poderosos que impiden su revelación a uno de fuera del lugar. Esto no es solamente cierto de las plantas que utilizan para evitar la concepción, sino también de aquellas que usan para aumentar la fertilidad de las mujeres, para facilitar el parto y provocar el aborto. A menos que se pueda establecer un sentimiento de intimidad, o de identificación, todas las tribus que he conocido, guardan celosamente tales secretos. Cualquier intento prematuro de averiguación, no importa cuán delicado, es capaz de poner un final abrupto y de enfado a toda clase de comunicación.

Una experiencia con los Witotos demuestra la fuerza de esta reacción. Este grupo, originalmente del Putumayo, ha vivido en el Napo más de treinta años con un *patrón* que los trata con afecto e indulgencia muy por encima de lo común. Estos miembros de la tribu son menos culturizados que muchos que viven en tales comunidades, porque su *patrón* consistentemente ha luchado para evitar la pérdida de su antigua cultura. Mi primera informante aquí fue una mujer de la tribu que era ya septuagésima. La integridad y carácter fuerte de Ema, aunados a su herencia como hija de un gran hechicero y tía del jefe hereditario de los Suenes le ha dado una posición de mayor autoridad que la que yo he observado en cualquier otra mujer de una tribu. Entre nosotras dos se desarrolló una cálida amistad, pero obtuve poca información de ella hasta que efectué mi segunda visita a la tribu. Entonces me contó que en su comunidad ya no permiten que las niñas de temprana edad contraigan matrimonio. Sin embargo, la madre de una niña que llega a la pubertad todavía le da una poción, una dosis con la cual evitará que conciba durante el período de los seis o siete años siguientes. Para la época que ya esta medicina no surta efecto, la niña ya habrá alcanzado una edad suficiente como para ser madre. Ema me confió esto la noche en que habíamos estado escuchando por espacio de varias horas en mi ra-

dio, el cual ella quería mucho. Llegó aun a prometerme conseguir las plantas, pero a la mañana siguiente había cambiado de idea. Su excusa fue de que yo nunca podría aprender el *icaro*, el canto ritual que debe acompañar a la preparación del brevaaje. No insistí, porque eso habría destruído nuestra amistad. Semanas más tarde, su sobrino Sere, el jefe, subrepticamente me trajo cuatro plantas anticonceptivas que todavía utilizan. Dos de ellas provenían de árboles, una era yerba y la otra una planta tuberosa. Su esposa cultivaba esta última en su *chacra*, pero las otras las había traído de la selva. Esto se repitió en mi siguiente viaje. Ema hablaba de las plantas pero fue Sere quien me las traía.

Yo me esmero en ir sola en todos mis viajes de colección en la selva, con excepción de los boteros, cargadores, o intérpretes necesarios. Pero mi último viaje a los Witotos constituyó una excepción; fui con un grupo de farmacólogos, tanto hombres como mujeres, que querían plantas medicinales de los Witotos. Los Witotos los aceptaron cordialmente como amigos míos pero me esforcé en mantener mi antigua intimidad con la tribu, evitando al grupo siempre que esto era posible. Yo permanecí en la casa de Ema como lo había hecho siempre, mientras que mis compañeros comían y dormían en el bote. Yo me puse a charlar con las mujeres mientras sus esposos coleccionaban numerosas plantas medicinales de la selva circundante para los farmacólogos. Pero no trajeron ni una sola planta anticonceptiva. Privadamente le solicité a Sere que me las consiguiese. Se sintió turbado. Pretendió haberse olvidado de ellas, después, que no sabía donde crecían. Abandoné el tema rápidamente, sabiendo que la insistencia solamente causaría molestias. Infortunadamente, a pesar de mis advertencias uno de los científicos pronunció abruptamente el nombre de una planta que yo le había dicho, y ofreció una recompensa por ella. Eso puso fin a la expedición. Los Witotos en su totalidad dijeron que tenían que hacer un trabajo en otro lugar. Continuaron corteses pero ya no tenían tiempo para coleccionar ninguna planta. Nos fuimos y desde aquel entonces no he regresado. No estoy segura si sería bienvenida.

Con los Jívaros, nuevamente fue una mujer quien me contó de sus plantas secretas. Tesa era una Quechua de la región baja que había venido a Corrientes con su madre, ahora esposa del hechicero de la tribu. Su padrastro la había instruido en el uso de tres plantas: una era un abortivo, la otra provocaba la fertilidad en las mujeres que no podían concebir, y la tercera era un anticonceptivo con efectos que duraban durante varios años. Tesa me dijo que algunas de las mujeres de la tribu cultivaban estas plantas en sus *chacras*, que se encontraban ubicadas a corta distancia de sus moradas. Encontré que todas ellas eran diferentes variedades de juncos, como las plantas mencionadas por Karsten. *Piripiri* es el nombre que se da a todos los juncos del género *Cyperus* a través de toda la región nor-occidental del Amazonas.

Según el Dr. Ketsuo Koyama, de los Jardines Botánicos de Bronx, hay unas 2,200 especies de *Cyperus* que crecen por toda la Hoya Amazónica. Suficientemente raros, a estos juncos se les valoriza por poderes mágicos que les atribuyen un número considerable de tribus diseminadas profusamente por todas las selvas de Sud América.

Que los hombres de la comunidad de Tesa conocían a estos *piripiri* y compartían la creencia de que había que conservarlos secretos se hizo evidente cuando yo me disponía a embarcar las canastas de plantas en mi canoa. Un hombre de la tribu las notó y excitadamente llamó a los otros, que repentinamente tomaron una actitud inamistosa. Después de una breve discusión, se dirigieron al hechicero y a dos ancianos de la tribu quienes se sentaron en una fila solemne. El de más edad pronunció un discurso: No entendí nada pues todos ellos hablaron en Jívaro. Después habló Tesa por breves instantes a quien siguieron mis otras dos amigas, quienes parecían estar formulando declaraciones. Mi intérprete me dijo posteriormente que ellas manifestaron que yo había conocido todas estas plantas antes de venir a la tribu. Finalmente, el hechicero a quien yo anteriormente había tomado cuidado de propiciar, habló con cierta extensión. Cuando terminó, disminuyó la tensión y la gente nuevamente demostró su amistad. Se me permitió partir con mis plantas.

En las colonias de Shipibos y Conibos que he visitado, he encontrado estos mismos juncos, o juncos que se parecen mucho a ellos, que se utilizan para el mismo propósito y rodeados de una mística por lo menos tan poderosa. Además de los tres tipos mencionados arriba, estas tribus tienen otro para usos obstétricos, empleado en lo que uno podría describir como una especie de programa rudimentario de cuidado prenatal. Una mujer que está embarazada toma su primera dosis de esta planta más o menos cuatro o cinco semanas antes de la fecha cuando se espera el parto y continúa ingiriendo una solución de las raíces a intervalos de varios días, tomándose la última dosis cuando comienza el parto. Ellos alegan que esto facilita un parto rápido y casi exento de dolores.

A las tribus de los Shipibos y Conibos debería considerárseles juntas, por su idioma, vestimentas, costumbres y cultura general que son sorprendentemente similares. Ambas proceden del lenguaje Panoa. La mayoría de los Shipibos viven en el Río Ucayali y sus tributarios aguas abajo de la ciudad de Pucallpa y los Conibos generalmente viven en ese mismo río y sus tributarios aguas arriba de Pucallpa. Ambas son sociedades matrilineales y matrilocales que practican una poligamia de hermandad y los matrimonios entre miembros de las dos tribus no son raros. El tamaño de la familia en ambas es corrientemente pequeño. Uno raramente ve una mujer con más de tres o a lo más cuatro hijos, y muchas me han dicho que es una tontería y poco saludable

que una mujer tenga hijos a intervalos menores de dos a tres años. Ambas tribus tienen un jefe elegido para cada comunidad, y el jefe de cada familia es un hombre, aunque las mujeres parecen ejercer bastante influencia inconspicua. Los hechiceros de ambos grupos son hombres y ellos se hacen cargo de todos los métodos sobrenaturales de curación, mientras que las mujeres están a cargo de la farmacopea botánica de la tribu. Pero aunque las mujeres se ocupan de todo el recojo y tratamiento de las plantas medicinales, los hombres de la tribu nunca han titubeado en indicarme y coleccionar plantas para mí que ellos creen medicinalmente valiosas. Esto, sin embargo, no se aplica al *piripiri*. Esto es puramente un asunto femenino y tanto los hombres como las mujeres guardan celosamente sus secretos. Una vez malogré lo que yo creí era una amistad que progresaba rápidamente con una mujer Shipibo meramente al mencionar prematuramente que yo había notado el olor característico del *piripiri* en su casa.

En estas comunidades, cada mujer parece tener un pequeño huerto de una u otra especie de *Cyperus* que cultiva cerca de su casa y en cada caso que he preguntado, ella había obtenido las plantas originales de su mamá, una pariente o amiga. Estos pequeños sembríos, rara vez mayores de una yarda o algo así de diámetro, bien pueden ser de algunos de los juncos mencionados anteriormente o pueden consistir de cualquiera de las variedades numerosas que se cultivan para una diversidad de propósitos. Yo he coleccionado más de veinte clases que se utilizaban para objetivos tan desigualmente diferentes como la curación de la malaria o diarrea, o teñir el cabello, o calmar la ira, o silenciar a una mujer excesivamente habladora, o para conservar la fidelidad del esposo. Cada planta es tan peculiarmente la propiedad de la mujer que la cultiva, que aun una amiga íntima o pariente no tiene por qué saber para lo que es buena. Si le pregunto a María respecto a una planta que obtuve de Alicia, ella responderá, "Solamente Alicia sabe", aunque puede ser evidentemente la planta para engordar niños. Otra peculiaridad es el afecto que las mujeres demuestran por sus plantas. Cuando una mujer Shipibo extrajo algunas para mí, ella les explicó: "Siento que me tengan que dejar pero yo las estoy dando a la Señorita Nicole. Ella es muy buena. Será muy bondadosa con ustedes. Las amará y cuidará y ustedes serán felices con ella. Deben crecer fuertes y en abundancia para ella".

Los hombres Shipibo y Conibo, aunque ellos conocen a las plantas, eluden recatadamente la discusión sobre ellas y ponen bien en claro que tales cosas están reservadas para las mujeres. No sé de ningún caso en que un hombre emplee alguna de ellas para tratamiento médico. Mientras me encontraba con los Conibos, tanto mi botero, Shipibo, y yo estuvimos afectados por un dolor artrítico. Acepté una dosis de *piripiri* que me sugirieron las mujeres y, pronto, posiblemente por coincidencia,

me sentí mucho mejor. El botero, quien estaba sufriendo mucho más que yo, dejó que las mujeres le aplicaran cataplasmas de hojas, que le produjeron poca o ninguna mejoría. Pero cuando le pregunté si no sería sensato probar el *piripiri*, él ni siquiera discutió sobre la idea. El único *Cyperus* que yo sé que los hombres de esta región hayan tomado es el junco que es valorizado altamente para el tratamiento de picaduras de serpientes. No lo he visto en la región del Ucayali, pero traje una planta de la selva cerca de Iquitos. Mi botero aceptó ésta entusiastamente, dijo que la iba a propagar y que tenía la intención de llevar un poco de ella consigo toda vez que se internase en la selva. Sin embargo, los hombres no se mostraron renuentes a manipular el *piripiri* que las mujeres me habían dado; no titubearon en ponerlo en el bote para mí o llevarlo por el largo sendero con destino a la casa.

Las cuatro tribus antes mencionadas no son las únicas que emplean secretamente los juncos anticonceptivos. Yo he limitado esta discusión a los Witotos, Jívaros, Shipibos y Conibos porque entre los grupos que conocen estas plantas, éstas son las tribus con las cuales he permanecido por períodos dilatados suficientemente como para poder estudiar sus reacciones. Sin embargo, debo mencionar que un Yagua ligeramente culturizado me dio una vez el *piripiri* anticonceptivo. Lo hizo tan subrepticamente y se hallaba tan ansioso de finiquitar la transacción que tuve dificultad en hacer que me contase cómo es que sus mujeres lo utilizaban —esto, a pesar de que era un antiguo amigo. Así mismo, me hizo prometerle que nunca diría que él me lo había dado. Aún más, una mujer Campa casada ahora con un misionero me contó de dos plantas de enredadera que las mujeres de su tribu empleaban como anticonceptivos tomándolas por la vía oral. Ella especificó que el té que se hace con ellas debe prepararse y beberse tarde en la noche cuando todos los demás se encuentren dormidos, o muy temprano en la mañana antes de que alguien se haya despertado y que uno nunca debería permitir que alguien se enterase que uno lo había tomado. Siempre que ella hablaba acerca de cualquiera de estas dos plantas, bajaba el tono de su voz a casi un susurro inaudible, aunque nos halláramos solas. Pero no tuve ninguna dificultad en persuadirla que fuese a la espesura y cortase algunas para mí ni tampoco actuó furtivamente cuando me las entregó; excepto que mantenía su voz como un murmullo.

Más evidencia en apoyo de lo mencionado viene del Brasil. Una carta del Dr. Octavio Rodríguez Lima, de la Maternidad Escala de la Universidad Federal en Río de Janeiro informa sobre sus averiguaciones con respecto al uso de anticonceptivos por las tribus de las selvas del Brasil. Para esto, se dirigió al Dr. Francisco F. Soares de Meireles, Inspector de los Indios para la Agencia Federal de Protección de los Indios. Con respecto a la cuestión de si las tribus de la selva del Brasil conocían y usaban anticonceptivos por vía oral, el Dr. Soares de

Meireles contestó: "Sí, existe un control de la natalidad muy real. Esta respuesta afirmativa proviene de estudios y observaciones que hemos realizado durante varios años, incluyendo los estudios efectuados por los etnólogos del Museo Emilio Goeldi. ¿Cómo es que ellos controlan los nacimientos? Por lo general, emplean plantas, cuyos nombres son secretos, para baños y bebidas en la forma de té". Una pregunta específica sobre si esto se aplica a los Indios Xavantes trajo una respuesta telegráfica de la misma autoridad, que decía: "Confirmando la existencia del control de los nacimientos entre los Indios Xavantes, utilizando plantas con propiedades anticonceptivas que solamente ellos conocen".

La montaña central peruana

JUAN SANTOS: PRIMITIVE REBEL
ON THE CAMPA FRONTIER (1742-1752)

Jay LEHNERTZ

Dissolution of the Campa frontier

Filled with the vigor of idealistic youth, and inspired by a recent revival of missionary dedication, a handful of intrepid Franciscans broke the frontier wilderness of the central montaña of Peru. The eighteenth century breakthrough was not a mean accomplishment, for it had been preceded by a century of frustration and defeat. But after 1708, when Spain finally weighed anchor below the *ceja* of the montaña, the robed pioneers moved rapidly to transform the realm of the Campa Indians into a Christian appendix to colonial Peru.

Valley by valley into the tropical world, these harbingers of Hispano-Christian culture advanced the Spanish banner of conquest. The Franciscans marched down the *ceja* in two independently weaving columns. One column funneled them along the Chanchamayo and Perené rivers, the second moved them through the Pangoa River system. Then, as the two lines met at the mouth of the Ene River, the missionaries turned northward to point the banner of Spain on the high rising Gran Pajonal. Within four decades, the Spanish succeeded in stretching the boundaries of the Empire from the eastern rim of the Highlands to the unknown lands beyond. More than merely explore the vast expanse of land, the friars occupied it with over twenty mission stations which functioned as enclaves of Hispanic culture in the immensity of the Campa domain.

These missions were, for the most part, modest settlements, even by the standards of the times. Nevertheless, modest as they may have been, the missionaries within their structured confines indoctrinated the Indians in the basic tenants of Spanish Catholicism, trained them in agricultural techniques and fundamental manual crafts, and intro-

duced them to patterns of socio-political organization which were decidedly more elaborate than those of their traditional culture. That part of the total Campa population which lived under the umbrella of mission life found itself, by 1742, in an intermediate state between pre-literate barbarism and European civilization. Although the Campa were still at the margin of Spanish Peru, the European missionaries had significantly altered the pre-contact structural patterns of segments of the Campa grouping, and had set the roots for what appeared to be their inevitable assimilation into the new cultural system which had emerged in the Highland world under Hispanic domination.

The eighteenth century friars performed amazing feats in the Campa domain, and, if they finally failed to consolidate their successes, it was not because their efforts were feeble. To the contrary, Franciscan progress matched in enthusiasm and dedication the first years of the spiritual conquest of New Spain. What hampered their advance was the marked degree of insecurity under which they labored. Their numbers were insufficient in spite of their vigorous efforts at recruitment; epidemic diseases struck the field with uncomfortable frequency; the rugged environment cut away at their stamina and resolve. Yet, notwithstanding the obstacles, the Franciscans succeeded in adjusting the Campa to mission life. Primarily through persuasion, and with the assistance of auxiliary forces of Negroes and acculturated Indians, the friars were able to control the natives, and the Campa, on their part, responded with an outward acceptance of the disciplines of settlement.

At a moment of extreme optimism for the Spanish, at a moment when the investment of over a century of energy promised to pay dividends to both the State and the Church, a Highland mestizo who called himself Juan Santos Atahualpa Apu Inca rose the standard of revolt against, ostensibly, the alien cultural importations of the Hispanic world. Within a year, by the end of 1743, Juan Santos and his guerrilla band had scattered most of the Franciscans back onto the Highlands, thus turning the tranquil Campa frontier into, from the Spanish viewpoint, permanent disarray. Forced finally to evacuate the borderlands, the Spanish never again were able to reenter the area which, only a short time before, they had counted as a part of their expanding empire. Spain's failure to hold the Campa borderlands within its orbit thus marked one of the few definitive reversals of Hispanic contact in the New World.

Juan Santos

Juan Santos, the man linked to the eighteenth century decline of the Spanish on the Campa frontier, was a stranger to the land in which he moved the forces of his revolt. He was neither a Campa, nor, for that

matter, a forest Indian. Beyond that negative assertion, nothing is certain about the man of flesh and bones. Record history, quite simply, preserves little factual information about him before his emergence in the Campa domain. Indeed, even after 1742, the public record deals more with his guerrilla activities than with the man himself. A few second hand reports, a number of sworn testimonies, and several written rumors transmitted by frontiersmen and a few Indians – comprise the bulk of the primary documentation about Juan Santos and his beliefs. But, from this small bundle of material, it is difficult to sift fact from legend, invention from the truth.

Within the dirth, the more accurate record available is the field report of Fray Santiago Vásquez Caicedo, a Franciscan missionary to the Campa who, in 1742, was in the station of San Tadeo de los Andes along the Perené River. When news of Juan Santos first spread among the mission community, Fray Santiago set out immediately for the station of Quisopango, in the Gran Pajonal, to talk directly with the newest intruder into the Campa domain. The report of the interview, dated June 29th, is among the earliest records of Juan Santos, and the only first hand description of the man:

El cuerpo será del tamaño de Manuel Grande (éste es un negro corpulento que dio de limosna un Bienhechor en Lima, para que acompañase a los Padres Misioneros, como esclavo de nuestros Misioneros de Infieles) el dicho Indio es huesudo: tiene algún vello en los brazos, tiene muy poco bozo, y ése bien rapado: en la Barba tiene un pelo largo como cosa de tres dedos: es de buena cara: nariz larga, y algo corva: color pálido y amestizado: el pelo cortado por la frente hasta las cejas, y lo demás desde la quixada alrededor, coletado; vestido con una cusma pintada, o túnica de algodón. (Gil Muñoz 1742).

While Fray Santiago gave history an impressionistic view of the bearded insurgent, he was unable to provide reliable biographical facts. The point bears repeating that historians know nothing more today than the Spanish knew in 1752. Who Juan Santos was and what he did before his appearance in the Gran Pajonal remain, for the most part, pure supposition based largely on scattered rumors that spread among the Spanish after Juan Santos rose in revolt. The composite of those rumors, however, provides a sketch of a Highland mestizo who, although acculturated, could not meekly bear the stress and anxieties of the world in which he lived.

The first years of his life are a somewhat conventional image of respectability, and do not hint at his future divergence. Born in Cuzco (some say, Cajamarca) sometime during the first two decades of the eighteenth century, Juan Santos claimed to have been the second male

child of a family of four. As his brothers –so continued the popular voice– he carried in his veins the blood of the Inca Atahualpa, who had been killed by Pizarro in Cajamarca. In view of his nobility, he was given a polished education in the Jesuit run Colegio de Caciques in Cuzco. Educated among the native elite, he spoke and wrote both Spanish and Quechua, and had a smattering of Latin which served him in his religious exercises.

It was after his formal education that the shadow of divergence rose. Juan Santos had traveled to Spain and to Africa in the service of a Jesuit missionary. Thus removed from his native social environment, he turned his attention to the sufferings of his own people under Hispanic control. His first response was to enlist the armed support of the English, securing their promise of military aid if and when the Highlands should rebel. He then returned to Peru; and, between 1729 and 1730, he covered the length of the sierra between Cuzco and Cajamarca, mobilizing the Indian caciques and governors for a general native uprising. Here the popular memory divides. Some say that Juan Santos, after his mobilization of the Highlands, entered the montaña at the suggestion of his older brother. Others maintain that, before he could ignite the tinder of latent discontent among the sierra Indians, he was forced to flee into the montaña, pursued by Spanish justice for the supposed murder, in Guamanga, of his former Jesuit master. Thus, either by plan or as a fugitive from justice, he roamed the Campa lands in company of a Piro Indian named Bisabequí. By May of 1742, he had infiltrated the Gran Pajonal and had set his roots in the mission station of Quisopango.

At this level, of course, the details of the life of Juan Santos have little real importance. The value of the composite is not so much its possible accuracy as its implications. Assuming that the various rumors rested upon at least a modicum of truth –or, that they reflected the spirit if not the letter of the truth– it seems safe to suggest that Juan Santos was a thoroughly assimilated Highland mestizo, who lived during a period of increased social stress. What distinguished Juan Santos was the choice to resist the crisis and tension of his society by open rebellion from without.

Juan Santos was clearly part of the mobile margin of Highland society. At least by 1742, he was one of the unsubmissive –the non-conformist who, rather than tolerate the increased levels of social stress or respond regressively through alcoholism, extreme passivity, depression or self-reproach, moved actively to escape the slow cultural distortion which was spreading in the Highlands during his life.

As E. J. Hobsbawm's (1969) social bandit, Juan Santos found the avenues of adjustment followed by the vast majority of his fellow mes-

tizos impossible to treat. He opted for revolt as the means to the resolution of his personal conflict and hopelessness. He was, thus, merely a symptom of the social stresses which were spreading along the Highland world. Obviously disillusioned with the social complex of the Highland society, he moved to escape what the Spanish had distorted through their efforts at forced acculturation.

With him into the station of Quisopango in the Gran Pajonal, Juan Santos brought a program for the resolution of his personal conflict. That program, nevertheless, was not that of a prophet nor ideologist. He was, at best, an activist who mounted a defense of the traditional order of the Inca Empire. His call was for restoration, not revolution; for a return to what he envisioned as the past, and not the creation of an ideal future.

In millenarian fashion, Juan Santos called himself the divine emissary of God, declaring that his ordained mission was the liberation of the Indian race. Heaven had sent him to the montaña to organize for revolt against the European masters, and to hack the way to a cultural transformation engineered by the supernatural. Juan Santos thus presented himself as an instrument and not a creator, whose modest program had been preordained. The means to the mission was the expulsion of the Spanish from colonial Peru.

Expulsion was the most revolutionary note in the program. After he had expelled the Spanish, Santos planned to reconstitute the Inca Empire with its authoritarian but paternalistic political system. Thus, above all else, after the initial expulsion, there was little revolutionary in the aims. To the contrary, the movement contained a strong note of reform based on the imagined glories of the Inca past. Juan Santos defaulted the Spanish system not on its hierarchical structure, nor on its ends and objectives, but on what he felt to be its unnatural coerciveness. Juan Santos primary hope was to free his people from their social debasement under Hispanic control. He would outlaw personal slavery and government tyranny; the drudgery of forced labor in the plantations, obrajes, and backeries would end. But such aims did not preclude the traditional social and political relationships which had characterized the Inca system. It was not the Hispanic structural patterns –which, in form, were similar to those of the Incas– which he found distasteful, but the excesses and means of the Spanish which kept his people under intolerable stress.

Expulsion of the political masters and institution of the Inca past were the first aims. But the new system envisioned by Juan Santos was not exclusively modeled after traditional native elements. Included in the new system were elements imported from the Spanish. For example, Juan Santos planned to maintain the framework of Christianity.

Christianity, of course, had been a major cultural importation of the Spanish. Evangelistic and exclusive, the new religion had sunk its roots deeply into the Highland soil and into the minds of the Highlands natives. That Juan Santos should choose the Catholic Church was, as a result, not strange. But as many mestizos before and after him, he had sifted from the culturally laden motifs of Spanish Catholicism the transcending ideology and force of the Primitive Church. Onto that primitive core, he had grafted his own spiritual motivations and motifs of the serranos. Nevertheless, the church which Juan Santos supported, in spite of variations from the Hispanic model, was still an alien importation from the point of view of the Inca past.

The native base

In program and stated objectives the Juan Santos movement was clearly Andean. Juan Santos' interests in the central frontier were tactical: he planned to use the area and its native peoples as a base from which to spring onto the Highland rim. But, to achieve his ends, he needed an organization, a cadre of followers who would help him. Without supportive forces, Juan Santos would not have survived.

The fact that Juan Santos rose in the central frontier has led many observers to see a direct link between the Highland mestizo and the Campa, suggesting that the movement was a Campa revolt (Loayza 1942; Valcárcel 1946; Varese 1965, 1967, 1968). The argument runs that for the Campa, the shock of culture contact had been severe – that the eighteenth century Franciscan mission system, based upon force and armed coercion, was both suppressive and disruptive. The Campa, under the environmental pressures of the intruding system, had reached a threshold of despondency and a feeling of inescapable frustration. At this critical point, Juan Santos reached Quisopango, and, as a Campa prophet, he promised a release from the impasse through open rebellion and a return to aboriginal configurations. Spurred by Juan Santos, who promised them an alternative to their cultural deterioration, the Campa rose in support of their new prophet.

Contrary to tradition, the available evidence does not seem to support the argument. The Franciscan mission system did not rest upon excessive force; the Campa had not reached threshold despondency; Juan Santos did not preach Campa revival. Indeed, if the revolt had been a conscious nativistic revival, it would have logically originated among the more acculturated sectors of the native grouping. But, in fact, the first converts to Juan Santos were Campa from the Gran Pajonal, precisely the Campa who were less acculturated and who had maintained fewer direct contacts with the Franciscans. Those natives in the older mission centers along the Chanchamayo and in Sonomoro

did not ally themselves with the rebels until after Juan Santos had forced the Franciscans out of the frontier. Even then, many of the older neophytes joined the friars in their retreat. Quite simply, Campa opposition or passivity was too widespread for the Santos movement to be considered a Campa revolt.

The Juan Santos movement appears less an example of a nativistic revival, or a conscious endeavor on the part of the Campa to reverse acculturation, than a carefully wrought campaign of a displaced mestizo to spur the Highland Indians into open rebellion. Those Campa who followed Juan Santos did so, in part, not because of the stress of their social system, but because Santos had been able to appeal to a few already influential men.

In this process of cooptation through intermediaries, Juan Santos coincidentally followed Franciscan precedent. Much as the Franciscans before him, he drew to his side – using the same methods of both coercion and persuasion – several Campa headmen, building strength for his movement on their prestige and influence. Almost characteristically, many of the caciques had occupied positions within the mission society. One particularly powerful headman was Mateo de Assia, the cacique of the station of San Antonio de Eneo. Assia had been a trusted servant of the friars along the Perené, and had become a valuable auxiliary in the extension of the frontier society. For his service the friars had rewarded him with a position within the mission community, and he had responded with an unflinching loyalty. But personal allegiance weakened under two crushing blows. One was the death of his family in the 1737 epidemic which swept the stations along the Perené. The second was an affront to his own dignity. Shortly before the arrival of Juan Santos to the Pajonal, Assia had been ordered to whip a neophyte who had been found guilty of polygamy. When Assia objected to the punishment, the friar ordered that three lashes be given to him for his "bad example" in questioning mission discipline. Assia was bitter over the incident, and made no efforts to hide his feeling. Perhaps as a result of his personal alienation, he joined Juan Santos in August of 1742. With him he brought many Indians from the Perené area, Indians who owed allegiance to him, first, and Juan Santos second.

Other caciques also joined Juan Santos. Among them were Mateo Luis Sanchez, Don Piñate and Don Honofre – all, evidently, respected men within the frontier missions. As in the case of Mateo de Assia, their defection brought other Campa into the rebel fold.

In spite of the inescapable fact that some Campa did follow Juan Santos, those natives did not provide the bulk of his support. Far more significant were the Indians from the Highland rim. In increasing numbers which greatly disturbed the viceregal officials, the serranos

along the edge of the Highland swept down into the forest to join Juan Santos in his moves against the Spanish. They proved effective rebels, and kept the Chanchamayo Valley in a constant state of turmoil. So marked was the exodus that in March of 1744 the corregidor of the Province of Tarma published a ban against serrano desertions, backing the prohibition with a penalty of immediate death.

There were other components to Juan Santos' force. The Negro Antonio Gatica and at least seven other Africans allied themselves with the rebels. A handful of Piro Indians, from the Upper Tambo and under their cacique, Siabar, and a group of about six Conibos, and an unknown number of Mochobos and Shipibos from the Ucayali also provided supportive strength. Both the other elements in no way equaled the numerical importance of the Highland natives. If the program of Juan Santos was trans-Andean, by late 1742, when he had moved his front to the Chanchamayo Valley, the human composition of his cadre smacked equally of a Highland revolt.

While the Campa Indians did not, as a tribe, play an active role in the Juan Santos movement, neither were they unanimous supporters of the Spanish. As individuals, many backed the Europeans up to the final years of the movement, and a few followed the Franciscans in their definitive withdrawal to the Highlands. The Campa in the area of Sonoromo proved more loyal, and under their cacique, Bartolomé Quintimari, they offered continuous resistance to the revolt. But in general, the vast majority seemed passive observers of the conflict, and they swayed easily to the side that controlled their land. In spite of the fact that their future hung in the balance, they contributed little, in view of the size of their population, to either Spain's victory or defeat. As the chameleon, they changed to suit the dominant environment; and, only when Juan Santos was at their side, did they raise their hands against the white man.

Warfare in the tropics

The Spanish, faced with insurgency in the central frontier, set as their objective the capture and destruction of Juan Santos and his rebel band. They planned to bring into the tropical forest adequate military force to achieve that objective. Implicit in the strategy of capture and destroy should have been the adoption of tactics compatible with the environment in which Spain chose to move; for, if the Spanish planned to defeat the primitive rebels in the tropical world, they would have had to do so on the terms dictated by the Indians and forest alike. But the viceregal officials and their frontier representatives failed to mold their tactics of offense to the dictates of the tropics, and they moved against their enemy with a form and style ill suited to the situation at hand.

What Spain apparently failed to fully appreciate was that Juan Santos led a guerrilla band in the tactics of guerrilla warfare: surprise attacks, followed by rapid retreats; raiding bands which expanded for combat, plundering, or siege, and then dissolved, only to assemble at a new point to attack again. He and his forces remained eminently illusive and flexible, and changed in structure and composition to meet each contingency. Rather than engage the Spanish in hand-to-hand fighting, they chose to avoid confrontation until victory was no longer a question of odds. Unhampered by supply trains and complicated plans of attack, they moved through the forest with speed and agility. When the Spanish marched against them with the brunt of their men and supplies, the rebels scattered, reassembling later at a point unprotected by military force, and at a distance immune to retaliation and direct confrontation. When the Spanish held their forces on the edge of the Highlands, the rebels moved with dart like swiftness, threatening unprotected settlements above the *ceja* and forcing the Spanish to scramble to their defense.

While the Spanish never knew with certainty the location of Juan Santos, the rebels knew with pinpoint accuracy each movement of their adversary. They used willing Highland Indians as spies to observe Spanish progress and to report the form and size of Spanish mobilization. Once the alien military had entered the montaña, Indian scouts monitored Spanish troop movement. Thus, both on the Highlands and in the forest, the Spanish lost the advantage of surprise to the surreptitious natives.

Juan Santos relied on the tactics of guerrilla warfare. The Spanish, in contrast, thought in terms of pitched battles and military campaigns. They did not appreciate the necessity of changing tactics which had served on other occasions; and, as a consequence, their periodic expeditions into the montaña were merely exercises in futility. To engage Juan Santos effectively—to capture and destroy his force—the Spanish needed mobile units of adaptable men who could worm through the forest with the same agility as the rebels. But instead of small bands, they countered with military regiments and companies, whose supply lines determined where and how long they could go, and whose numbers kept them glued to existing lines of communication. As a result, even without spies and Indian scouts, Juan Santos could have tracked his adversary with accuracy merely by following the din of Spanish activity.

It was not only tactical inflexibility which worked against Spanish success. The environment of the montaña also severely handicapped the Spanish. The forces of Juan Santos, including the Highland recruits, found little difficulty in adopting to the terrain and climate of the forest: their dress, armor, and weapons conformed to its demands, and

their stomachs ran on its vegetable and animal life. With obvious admiration of the Indians' balance with the land, the Peruvian viceroy, the Marqués de Villagarcía, wrote to the king: "Ni hay río, por rápido que sea, que no pasan como peces, ni montaña, por grande e intrincada, que como fieras no penetran; en ellas mismas hallan su más gustoso alimento en las sabandijas, culebras y animales inmundos de que abundan". But the admiration of the viceroy was punctuated with deep frustration. "Sería lo mismo", he concluded, "invadir los bárbaros en las montañas, que querer castigar o reducir los brutos en sus bosques".

Such harmony with the forest environment the Spanish did not achieve. In the dense jungles, firearms lost their advantage of range over long distances and proved no more effective than the wooden arrows, clubs, and spears of the Indians. The humidity and torrential rains ruined the gun powder and spoiled food supplies. The drop between the Highland and forest, together with the numerous rivers and broken terrain of the montaña, made troop movement tedious, even on existing trails. The temperature weakened the resolve of the soldier and left him mentally exhausted and demoralized; the climate weakened his body and left him susceptible to a myriad of infirmities. Moreover, the Spaniard never learned to live off the forest products, and what he could not bring with him or receive by supply trains of Indian bearers and mules he had to do without – on occasion, to the point of near starvation.

If the Indians and the environment were not formidable enough, low discipline and morale worked their way against a Spanish victory. The campaign against the forces of Juan Santos threw nothing but obstacles in the path of the common foot soldier and of his officers as well. Weakened both physically and emotionally by the environment, they found no promise of material rewards to compensate for physical discomforts and to serve as an incentive for service and dedication. There was no gold to discover nor booty to divide; no land to claim nor Indians to control. The Spaniards thus moved grudgingly into the Campa field, and when they reached their absolute threshold of discomfort they fled back onto the Highland rim, deserting their post without fear and before the helplessness of their superiors. Those who remained disobeyed orders at will, grumbled over their daily rations, complained of extreme fatigue, and accepted silver from the pockets of the officers before performing even the most routine of tasks.

The short-sighted inflexibility of their military tacticians, Indian skill at guerrilla fighting, the physical environment of the forest, and low morale within their ranks led the Spanish into military defeat. Spain, without ever engaging the enemy in battle, fell hopelessly and definitively before a band of primitive rebels whose only apparent bond was their social marginality. Unable to defeat these activists in

their domain and on their terms –indeed, on any terms– the Empire simply withdrew.

To withdraw, however, was not a hasty decision, for the confrontation between Juan Santos and the Spanish spanned ten difficult years. Nevertheless, the decade from 1742 was not one of constant nor widespread belligerency. In spite of the time span, face-to-face contact between the antagonistic forces and the theatre of action were both limited.

The climate of the tropical forest set for the Spanish rigid limits to planned encounters. The winter months, particularly between December and April, were not suited to military engagements, at least, not to the type of engagements envisioned by the Spanish. When the rivers were swollen over their banks, and the land lay drenched by the torrential rains, troops of a hundred men could barely keep themselves afloat. Only between May and November could Spain hope to venture out successfully to battle.

Of the four major Spanish expeditions against the primitive rebels, three (1742, 1743, and 1750) obeyed the seasonal dictates, timing their operations to avoid the brunt of winter. For the third expedition, in 1746, Spain attempted to break the seasonal pattern of conflict. Under the auspices of the newly appointed viceroy, Manso de Velasco, the Lima government decided to attack Juan Santos during the rainy season. Although the General of frontier operations, José de Llamas, opposed the plan, his objections were overridden by Lima. The viceregal officials felt that Juan Santos would not expect a Spanish offensive during the winter, and that, with the rebels thus unprepared, Spain could gain the advantage of surprise. The expedition, however, proved a dismal failure: as Llamas had predicted, the climate destroyed the Spanish well before they reached the supposed enemy base.

While the climate led the Spanish into seasonal battle, Juan Santos determined the theatre of conflict. In their efforts to capture Juan Santos and his band, the Spanish were forced to attempt to engage the rebels where they were. The rebels, for the most part, remained relatively stationary.

Between 1743 and 1751, the stamping ground of Juan Santos was the Chanchamayo Valley, at the base of the Highland province of Tarma. Before 1743, the rebels had moved in the Gran Pajonal. But that natural redoubt served during those early months as nothing more than an organizational base, the point from which Juan Santos forged his cadre into an effective military device and the place in which he laid his strategy for success. The Chanchamayo valley, on the other hand, was where the action was. There, at the gates to the Highlands, the rebels moved in their raids of plunder, spreading fear against the frontier bottom, and on the Highland itself.

Only in 1751 did Juan Santos tum from the Chanchamayo area to the sector of the Campa domain at the headwaters of the Pangoa River. He marched to the mission station of Sonomoro, situated along the Masamari; forced the Spanish and Indian defenders, who had grown rusty after eight years of inactivity, to evacuate the area; and then prepared for a military assault against the Highland town of Andamarca, in the province of Jauja.

The Andamarca campaign of 1752 brought the rebel forces a major defeat. The Indians bridged the gap into Andamarca, but the climate of the Highlands and the resistance of the Highland peoples posed barriers to a rebel victory. Unable to consolidate his objectives, Santos marched back into the montaña. The Spanish did not follow the rebels but opted instead for a policy of containment. They completely abandoned the Campa land, including the peripheral zones, and anchored their forces on the Highland rim. With the Spanish thus committed to purely defensive action, and with the force of Juan Santos unable to spring definitively beyond the forest, the movement died. But while it had lived, Juan Santos had called the tune to which the Spanish marched.

The entire decad was not all military campaigns and armed expeditions. The Spanish, at selected moments, attempted to achieve peacefully what they were failing to do on the battle field. In the summer of 1745, the Marqués de Villagarcía commissioned the Jesuits to enter the frontier. The Black Robes were, presumably, to arrange key defections among the cadre of Juan Santos. Two years later the Franciscans also entered the Chanchamayo area, this time to negotiate directly with the rebel leader. But the Indians did not defect nor did Juan Santos choose to talk. It seemed apparent that force would be the only way of settling the disruptions on the Campa borderlands.

Force, however, was not always available for frontier expeditions. Conditions with the area of Spanish Peru greatly influenced the level of Spanish involvement on the eastern frontier. Between 1740 and 1744, during the war of Jenkin's Ear, an English squadron commanded by Vice Admiral George Anson threatened Peru from the Pacific coast, in 1746, an earthquake leveled Lima and Callao; in 1750, three Indian conspiracies—in Huarochirí, Lambayeque, and Canta—threatened the social stability on the Highlands and along the coast, and revealed the level of latent unrest within the established colonial society. Although Anson left the Pacific area, and the Limeños began to reconstruct their city, and the 1750 conspiracies died before they spread—the pressures west of the montaña directed much of Spain's attention away from the situation on the Campa domain. The imperial forces were simply too overextended to deal simultaneously with the needs of the viceroyalty at large. Lima was forced to set priorities, and the frontier of the central montaña ranked low on the scale.

Epilogue to conflict

The 1752 Andamarca campaign ended overt hostilities between Spain and the primitive rebels. After Andamarca, conflict was largely latent, for Spain opted for a policy of containment and watchful vigilance from the edge of the Highlands, and the forces of Juan Santos withdrew into the Campa domain. It was not until the middle of the nineteenth century, after the creoles had won the political independence of the New World, that the white man managed to reënter the Campa territory, along the Chanchamayo River. With the construction of a fort at San Ramón in 1847, the Chanchamayo area was at last reopened, although not without occasional violence, to Western settlement and culture. The interior reaches of the Campa land, however, were still free from the white man as late as 1870, and areas such as the Gran Pajonal remained as virtually unknown hinterlands or islands of aboriginal culture.

Between 1752 and Peruvian independence, the Spanish did, on occasion, attempt to replant the banner of Hispano-Christian control. In 1778, for example, a group of frontiersmen received royal approval for a settlement project in the Chanchamayo Valley. Within a year, twenty seven settlers had pocketed the area with fifty cultivated fields; and, a fort maintained by eighty soldiers guarded the embryonic colony. But, late in 1784, for some unknown reason, the Spanish destroyed the fort and the settlers withdrew to the sierra (González Agüeros 1786).

Four years later, the Franciscans made a feeble attempt to puncture their old mission field. After Juan Santos rose in the Gran Pajonal, the Franciscans had withdrawn from the central montaña, directing their attention to the frontier zones east of Cajamarca, Huánuco, and Guamanga. The stretches east of Tarma and Jauja, nevertheless, still held a certain fascination for the friars. As a result of that fascination, they moved into the Vitoc Valley in 1788, and laid plans for a reënter into the Chanchamayo. But the new attempts brought few results. The Spanish managed to construct two forts, one in Uchubamba and one in the Vitoc Valley; but, by the time the friars turned to the central frontier, and intra-group dispute at the mission college of Santa Rosa de Ocopa had torn the Order and paralyzed it for real missionary activity. Without the support of the mission community of Ocopa, the Vitoc enterprise fell.

The Campa, thus freed from Spanish control, returned rapidly to their precontact patterns of life. Within a decade after Andamarca, little trace remained of the Hispano-Christian culture which had made such notable inroads among sectors of the grouping. Why the acculturated Indians reverted so easily to their aboriginal structures is still

unclear. One possible explanation is that the Franciscan program of acculturation concentrated almost exclusively on the male members of the Campa society and left the women at the margins of mission life. The principal transmitters of traditional intracultural patterns, however, seemed to have been the women. Nevertheless, as long as the Franciscans remained in the Campa area, they were able to short circuit the traditional avenues of culture transfer, thus, in effect, coöpting the cultural role of the female segments of the population.

The friars within the station controlled both the culture content of mission society, and its transferable processes as well. But when the Franciscans withdrew, the women were able to resume totally their traditional functions as the principal transmitter of culture. They filled the vacuum left by the friars, resuming, in the process, one of their principal social functions in the aboriginal society. Moreover, largely unacculturated in comparison to the men, they were able to impart the Campa heritage in a relatively pure form and free from contamination. Had the Franciscans concentrated equally on the women, the reversal of culture evolution might well have been less complete.

As the cultural importation of the Hispano-Christian world disappeared from the Campa domain, so, also did Juan Santos. He apparently renounced, after 1752, his plans for a Highland revolt; with his frustrated hopes, he sunk back into the tropical forest and out of the pages of recorded history. There were, of course, the proverbial rumors. A Franciscan friar, in 1776, had made his way to the Conibo Indians along the Ucayali River. During his brief stay with the Conibos, he received a report from two Indians who professed to have been captains of Juan Santos. The two men, although not particularly willing informants, did tell Fray Salcedo that their leader had died in the old mission station of Metraro, along the Perene River. When Salcedo continued to press for more details, they informed him that he had gone to Hell., disappearing before their very eyes enveloped in a cloud of smoke.

It is doubtful that Juan Santos descended so dramatically into Hell. Other rumors seem more plausible. One, as a case in point, describes the rebel's slow psychological deterioration: frustrated in his original designs, he was reported to have withdrawn into himself and away from his cadre of supporters. He grew, continued the popular voice, increasingly more irritable and, to avoid his betrayal, he killed Antonio Gatica along with various native caciques. Another variant maintained that Juan Santos himself had been accidentally killed in a mock battle with another rebel chief. But, whatever his end, it is surrounded, as is his birth, in mystery and myth. The only apparent certainty is that the primitive rebel, after 1752, lost or relinquished his former position of authority and control.

Juan Santos left behind him a record of modest military triumphs, but he was unable to re-establish his vision of the Inca past. Yet, while he failed to move beyond the montaña, he forced the Spanish to pull the boundaries of their empire back to the Highland rim. In their retreat, the Spanish left the Campa field much as they had found it at the dawn of the seventeenth century. The Spanish banner of conquest rotted on its staff as the Indians reverted to their traditional patterns of life.

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FRANCISCAN EXPLORATION IN THE CENTRAL MONTAÑA OF PERU

Alan K. GRAIG

"Allí no valen instrumentos, ni teodolito, ni la ciencia del ingeniero: lo que aprovecha es los buenos pulsos para manejar el machete o agarrarse de alguna rama, la práctica en andar por la Montaña, y una constitución robusta .."

P. F. Bernardino Gonzalez

Introduction

Franciscans first entered Peru with the conquistadores of Pizarro's expedition. From this earliest possible beginning they developed an organization that was remarkable both for its continual successes in exploration and for the production of martyrs. During the next four hundred years of contact with forest Indians of the Peruvian Oriente, Franciscan missionaries methodically collected a wealth of information and experience in their dealings with these tribes. While results of some expeditions have already been published, there is ample evidence that many other valuable documents have accumulated in various archives of the order where they remain unknown to ethnographers or geographers. By calling attention to some of the more important of these accounts it is my hope that interest in the remainder will be stimulated¹.

In addition, I am concerned with identification of those elements in the Franciscan field techniques and logistical structure that appear responsible for their excellent record in penetrating remote areas where modern attempts to achieve the same results have often failed.

Development of the Franciscan mission system

The initial efforts of the twelve Franciscans who entered Peru in 1532 were centered in the high Andes between Cajamarca and Cha-

1. Many valuable documents pertaining to Franciscan activities in Peru were lost when the Ocopa convent was ransacked by victorious Republicans in 1824. Further losses occurred when recovered documents transferred to the National Library at Lima were destroyed in 1879 by invading Chilean troops. A fifteen day search of the Seville archives by Izaguirre (1922, I:21) disclosed much pertinent material and suggests that other diaries, reports, and maps may survive in European depositories of the Franciscan order.

chapoyas. This region became the center of an administrative territory known in 1565 as the Province of the Twelve Apostles which included at that time much of western South America.

During the next few decades as the conquistadores were consolidating the results of their conquests, the Franciscans were equally busy, establishing 23 monasteries by the year 1577. Eventually 45 religious communities were located along the Peruvian coast and highlands where conditions of soil and climate were similar to those found in the Iberian Peninsula. The approach to the problem of penetrating the Central Montaña was slow and cautious. This was the same area that had thwarted both the highly organized armies of the Incas and the entradas of the conquistadores. Contreras has aptly summarized Franciscan missionary activities of this early period as "... trial assaults by (individuals) inexperienced in the study of Amazonian Indians and, above all, in the terrain in which they would operate" ².

There were some early failures about which very little is known—an example being the expedition into the Moyobamba area sometime before 1580. But, by the beginning of the 17th century a series of successful exploration trips greatly accelerated their understanding of tribal demography and the physical characteristics of the territories in which they lived.

Franciscan penetration of the Central Montaña began after the founding of the Huanuco Monastery in 1580. From this base they followed the valley of the Huallaga establishing some 15 reducciones among Indians whose tribal identities have since largely disappeared. Some indication of their early interest in this direction is apparent in the fact that Fray Antonio Jurado is said to have already learned the Panatahuan language by 1557 ³, but it was nearly one hundred years later before the Huallagá region had been thoroughly missionized.

From the Tinganese Station in the Huallaga Valley the Peruvian-born friar, Jerónimo Jiménez, made his first exploratory journey into the Chanchamayo Valley in 1635 in order to search out the famous Cerro de la Sal ⁴. In the process of exploring the Paucartambo and Perene Rivers he founded the earliest mission settlement in this area at Quimiri. Two years later he had the distinction of becoming the first of many Franciscans to be martyred by Campa arrows. Three days after

2. Contreras (1926:7).
3. *Op. cit.*, p. 10 – while the degree of Jurado's knowledge of Panatahuan may not have been great, this is an interesting indication of a very early Franciscan effort to study indigenous cultures.
4. Cerro de la Sal is not, as the name implies, a hill of salt but rather an outcropping of impure Jurassic salt mixed with much terrigenous material. It is nevertheless an extremely important natural resource of considerable strategic value to the Indian economy of this area.

this incident Padre Larrios, who was searching for Jiménez, had—in the words of Contreras—"the same glorious fate".

Franciscan reinforcements in the battle to open the Central Montaña arrived quickly and in ever increasing numbers that replaced their fallen comrades. During this era of great missionary zeal, we have reports of more Franciscans on the Perene, Aguaytía, Ucayali, Pangoa, and Madre de Dios Rivers. Important stations were founded at Sonomoro, Pichana, and again at Quimiri which was sacked by the Campas on repeated occasions.

Toward the end of the 17th century it must have been evident to the missionaries that the Campa Indians constituted the largest unassimilated aboriginal group in the Central Montaña. We note that the first Campa glossary, catechisms, and grammatical studies were produced by Padres Biedma, Izquierdo, and Gutiérrez in 1674. And it was in this same year that the Campa messianistic chief Mangoré attempted to foment an uprising to eliminate all of the Chacamayo-Perene mission stations ⁵.

Further Franciscan explorations

From the town of Andamarca the famous Franciscan explorer Padre Biedma began in 1677 an ambitious trip down the Mantaro, Ene, and Tambo rivers, finally arriving at the confluence of the Pachitea and Ucayali. His voyage down the Ucayali was a pioneer effort that opened up a vast region that consistently tempted Biedma and his fellow missionaries to return.

In view of the fact that the Franciscan mission system was already grossly overextended beyond their means of logistical support, it was perhaps beneficial to their goals that they began to encounter Jesuit competition on the Lower Ucayali from which they withdrew in 1686⁶. Biedma re-entered the Upper Ucayali-Tambo system and left detailed accounts of this region that are probably the source of the hydrologic data that was incorporated in Sobreviela's map of 1790⁷. Biedma succumbed in 1687 to the most prevalent of occupational hazards, being shot to death with four other missionaries in a shower of arrows on the Río Tambo.

5. For gruesome details of Mangore's death refer to the account by Amich (1853).
6. Jesuit missionaries were very thinly spread over the Lower Ucayali where they experienced indifferent success before their expulsion in 1767.
7. This is the first map showing detailed cultural and hydrographic data on the Central Montaña. Versions appear in Raimondi's *El Peru* (1966, II: 418), de Rávago's *Viajes y Estudios en la Historia de la Geografía* (1961: 136), Izaguirre (1924, VII:32), Herndon's *Valley of the Amazon* (Maps, Part I), etc. More pertinent comments appear in Izaguirre (1925, IX:55-9).

Franciscan contributions to geographic knowledge were summarized and rendered in map form at this time by Padre Amich.

From a summary of results made in 1824 at the closing of the Ocopa College by order of the new Republic, we find that an additional 30 expeditions had been made studying the courses of 16 major rivers, 42 villages founded, 6 new trails opened, 9 maps completed and 19 martyrs inscribed ¹¹.

Lines of communication

Although some missionaries were recruited from native-born Peruvians, the majority arrived from Spain with little experience to prepare them for the rigors of life in eastern Peru. To facilitate the process of acclimatization a special monastery for newly-arrived priests was established near the port of Pisco. At this hacienda they customarily spent several years preparing for their campaigns on the opposite side of the Andes. The base at Pisco did not, however, supersede in importance the enlarged monastery and college at Ocopa which remained the primary center for entradas into the Central Montaña.

Extending out from Ocopa were a series of smaller outposts usually located near headwaters of those more important valley leading down into the lowlands. These small hospices served as rest camps where missionaries could recoup their energy and cure their illnesses. Each hill station was located at a sufficient elevation to benefit from a refreshingly cool climate and there were vegetable gardens maintained at each site by permanent caretakers. The knowledge that these facilities could provide relief from the enervating effects of more or less continuous privation must have been an important factor in sustaining morale during mission tours and explorations.

Below the hospices a series of fortified supply camps were built and often garrisoned by a small detachment of soldiers; these sites were frankly referred to in reports as "forts." Strongholds of this kind were located at Chavini, Sonomoro and Quimiri in the Chanchamayo district. While they were no doubt useful as forwarding stations for material and personnel in transit to mission outposts, the forts evidently constituted a source of continual irritation to the Campas who repeatedly attacked and destroyed them.

I would like to conclude this brief historical resume by considering in some detail two important Franciscan expeditions that are representative of their approach to the problems of exploring the hostiles rain forest environment.

11. *Op. cit.*, p. 45.

Padre Plaza and the army of the Ucayali

As part of the determined effort to re-open mission stations and regain territorial control lost during the great revolt of the 18th century, Padre Manuel Plaza decided to establish a new outpost located in a most strategic position at the confluence of the Tambo and Urubamba rivers. This seems to have been a choice based largely on the fact that it was possible to monitor conveniently movements of Indians throughout the Tambo-Urubamba-Ucayali drainage system from this central point. Franciscan authorities were no doubt under the impression that this location would provide a strong base and convenient access route for future penetration of the Gran Pajonal since all former trails located in the south were closed.

Plaza founded his new base of operations in 1815, naming the mission Lima-Rosa, or Santa Rosa de los Piro. The initial settlement is said to have consisted of 130 Piro families collected from the surrounding area ¹². There are few locations in this rugged part of the Montaña that would appear to have sufficient arable land to support such a large number of Indians but Lima-Rosa, or Atalaya as it is now known, is an exception ¹³.

The following year Padres Plaza and Ruiz decided to extend the influence of their new mission post by advancing in force up the Río Tambo. They wanted to open a safe passage and communications route with the newly re-established missions in the upper Perene region. For this purpose the missionaries organized a group of Piro and Conibo warriors that exceeded anything recruited before or since. This is the origin of what was termed the "Army of the Ucayali" ¹⁴.

On the 29th of June, 1816, Plaza and Ruiz headed upstream from Santa Rosa de los Piro with a force consisting of 326 archers and 30 musketeers, all of whom traveled in 66 canoes making it as Plaza later reported "... the most beautiful convoy that has ever been seen in these parts" ¹⁵.

Their adversaries were the Campas living on both banks of the Tambo, which in previous years had become a veritable highway to martyrdom for a succession of Franciscan explorers.

Within a short time the Army of the Ucayali had its first skirmish on the sand bar of Mazoroveni. It is perhaps significant that the few

12. Izaguirre (1925, IX:).

13. At Atalaya there are two extensive Pleistocene terrace surfaces both of which are above present flood levels so that the site provides ample hectareage for a village of this size.

14. This term appears in the diary of Padre Ruiz who was a member of this expedition. It is quoted in Izaguirre (1825, IX:23).

15. *Op. cit.*, p. 20.

Conibos in this expedition were acting as scouts in advance of the main group of Piros who were considered to be enemies of the Campa. These Conibos were confronted by ten Campas who employed a tactic much in favor at that time: after retreating into cover the Campas sent their unarmed leader out onto the beach to meet his Conibo counterpart whom he grasped in greeting. Rotating his victim slightly to one side, the Campa stepped back whereupon the Conibo was instantly skewered by an arrow shot from the woods. In the melee that followed several more Indians from both sides were killed in view of the main party which was hastening upstream.

On reaching their destination at the mouth of the Rio Ene, Plaza employed his warriors in the task of building a number of fortified houses surrounded by a wooden palisade. This rustic stronghold or fort was a Franciscan response –typical at that time– to the probability of Campa reprisals.

In a letter written shortly thereafter by Padre Carvallo to the Governor of Tarma he makes an excellent evaluation of Plaza's methods and the Army of the Ucayali, admitting that they may appear "... more military than Apostolic¹⁶".

Sala's penetration of the Gran Pajonal

Of the many Franciscan expeditions into the Central Montaña, none, in my opinion, are comparable in terms of sheer physical difficulty to the penetration of the Gran Pajonal by Padre Gabriel Sala in the year 1896. His experiences are especially instructive and merit examination in some detail.

Sala was commissioned by the government to determine the most direct and practical route between the Chanchamayo-Cerro de la Sal region and the Ucayali¹⁷. This trajectory necessarily crosses the Gran Pajonal where Franciscans were anxious to re-establish their mission stations that had been destroyed in 1742 during the Juan Santos Atahualpa uprising.

As a veteran explorer with considerable selva experience, Sala approached this task cautiously. After consultations with various shiringeiros and Indian traders who professed familiarity with alternative

16. Raimondi (1966, III:55).

17. Government interest was a reflection of the much discussed plan to open a railroad link between the Andean network built by Meiggs and the head of Amazonian upstream navigation. Such a route would avoid the stormy Strait of Magellan. Thus Sala was in effect continuing the exploratory work of Lt. Herndon and Passed Midshipman Gibbon who, some forty years earlier, had been commissioned by the United States Navy to seek out a feasible trans-continental route.

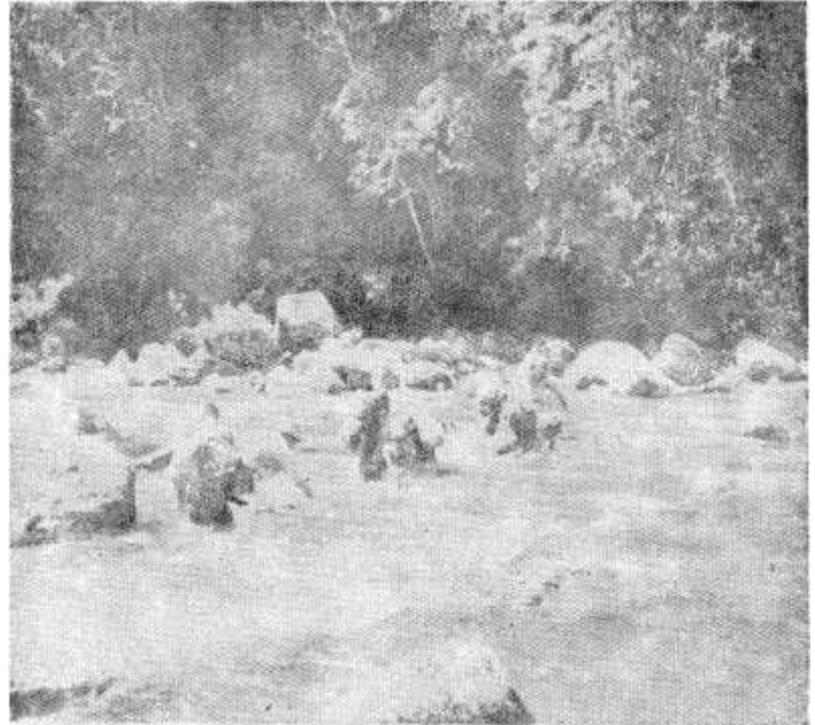


Fig. 3. In the Gorge of the Apurucayali.

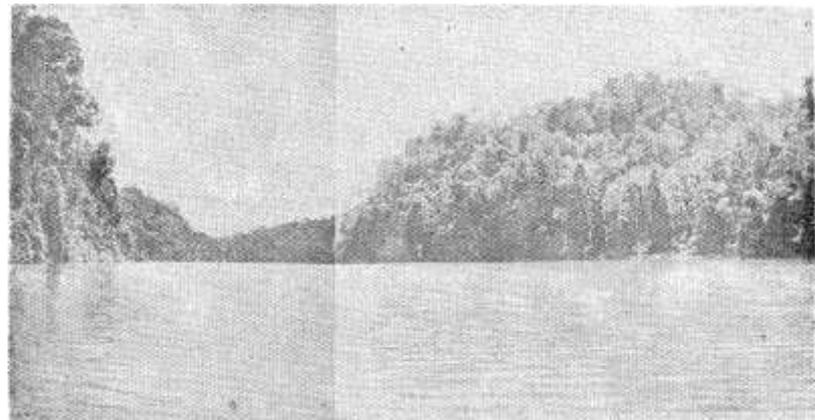


Fig. 4. Lake Parantiqui.

routes into the Pajonal, Sala elected to enter from Chicotsa – a small pioneer settlement on the western bank of the Ucayali.

Together with Padre Juan Aguirre, a Chinese settler, a "press gang" for the Fitzcarrald rubber camps, assorted drifters, and various Indians, this heterogeneous group of about 30 men made two abortive preliminary attempts to enter the Shiras by following Quebrada Chicotsa. In the first instance Sala narrowly escaped drowning when his canoe overturned¹⁸. Continuing on foot, their entry was contested by a single Campa, Michi, who threatened the entire party. At length they reorganized themselves, increased their armaments, and were strengthened by the addition of several Campa guides who had first-hand knowledge of the Pajonal,

It is quite clear from Sala's account of their journey that no path or trail of any kind actually connected Chicotsa or its watershed with the Pajonal¹⁹. Traffic between these two points is (and was) so slight that each adventurer must find his own way as best he can. Sala and Aguirre were undoubtedly the first caucasians to attempt an entry by this route as former Franciscan missionaries all arrived from the south following a tributary of the Perene.

Geological relationships along Sala's route

Surprisingly enough the Sala expedition led by their Campa guides was able in a single day to surmount the gigantic sandstone cliffs that present such a formidable rampart along much of the eastern flank of the Shiras. This immense fault scarp exposes massive beds of the Aguas Calientes formation to a height of approximately 2000 meters. For more than 60 kilometers along the eastern border of the Shiras this vertical facade presents an obstacle that is extraordinarily difficult to overcome.

Erosion of these highly indurated sandstones has occurred along fracture systems that result in numerous, deep box cañons occupied by streams that generally flow east-west at right angles to the north-south trend of the Pachitea-Ucayali interfluvium. This means, as Sala soon discovered, that anyone traveling any distance across these mountains must

18. The overturned canoe is an inevitable feature of riverine travel in the Oriente. Consequently, it is surprising that a seasoned traveller like Sala neglected to tie his important cargo to the canoe itself; when the accident occurred many loose items were lost and Sala became pinned by his foot as the strong current trapped him between the overturned canoe and a sunken log.
19. Notwithstanding, several earlier maps indicated such a trail and may have formed the basis for Sala's choice of Chicotsa as point of departure for his Pajonal expedition. It is probable that such a trail did in fact exist during the first Franciscan presence prior to 1742 but it is only through continued use that such trails can remain open in this habitat of exuberant vegetative growth.

of necessity cross these box cañons. The process involves scrambling down one side of a narrow gorge for hundreds of meters until the boulder-filled course is reached, whereupon it is necessary to climb up the same distance along the opposite wall with the net result that several hours of arduous work are required in order to advance your position a few hundred meters.

Another geological relationship present in the Shira Mountains is responsible for Sala's comments on "craters"²⁰ and Izaguirre's editorial comment concerning the necessity to investigate certain manifestations of vulcanism²¹. In reality, Sala passed through one of several districts in these mountains where karst topography is developed in Permo-Carboniferous limestones equivalent geologically to the Copacabana formation found in the Altiplano near Titicaca²². In the Montaña these limestones are widespread and found stratigraphically below the cliff-forming Cretaceous sandstones mentioned previously. Solution activity is intensive wherever these beds are exposed and Sala's "crater" full of owls is in reality a sinkhole²³. Similarly, we now know that this is also the explanation for the mysterious disappearance of Qda. Quepachi (as well as many other) which Sala described as plunging underground.

Underground karst drainage is common over a large area north and east of the main Pajonal. Air photos taken in 1958 show several large karst lakes located about 15 km. NE of Obenteni – one of which had been completely drained shortly before the photos were taken²⁴. Karst lakes also occur on the western slope of the Shiras where the best example is Lake Parantiqui, measuring nearly 4 km. in length. Sobreviela's map of 1791 indicates it was the site of a Franciscan outpost but he erroneously shows it draining into the Ucayali instead of the Pachitea.

Sala repeatedly mentions the lack of surface water over much of the central Shiras and even in the Pajonal itself²⁵. This anomalous condition is due to the rapid percolation of rainfall through porous, near-horizontal sandstones and into subterranean drainage systems deve-

20. Izaguirre (X:515).

21. *Op. cit.*, p. 515 footnote (1).

22. See Steinmann (1830: 34ff.).

23. This reference to owls is puzzling. Bats would be the expected inhabitant but it may be that Sala saw the guacharo or South American oil bird (*Steatornis caripensis*) in one of these caves. Its nearest known occurrence is in the caves near Tingo María which are formed in similar limestones.

24. In this remarkable photograph taken by the Servicio Aerofotográfico Nacional it is apparent that the entire lake was suddenly drained as the steep sides and sediment-covered bottom were completely devoid of any vegetation. By the time of this writing (1970) the site has no doubt become thickly overgrown and the opportunity to acquire valuable palynological samples lost forever.

25. Izaguirre (X:512, 513, 514, 515, etc.).

loped in underlying limestones. In the Pajonal area there is a distinct facies change in the Aguas Calientes sandstones so that hills and interfluvies often have shale beds intercalated with somewhat poorly indurated sandstones. At some point between the Pajonales and Cerro de la Sal in the Chanchamayo are lutitic red beds of Jurassic age containing thin seams of salt interposed between the Cretaceous sandstones and Permo-Carboniferous limestones. Virtually nothing is now known concerning the extent of these Jurassic continental deposits. However, it is significant to note that as far south as Obenteni it is still possible to locate limestone in many of the stream beds that support thick gallery forests between the pajonales.

Topography of the Gran Pajonal

Sala's comments on the topographic impregnability of the Pajonal are completely justified²⁶. Viewed from the air, it is apparent that the Gran Pajonal represents a large structural basin created by complex faulting that so far has largely defied attempts to render it geologically comprehensible. On the east this basin having a general elevation of about 1200 meters gradually rises to an elevation of approximately 2000 meters where is an abrupt fault scarp of 800-1000 meters, the southern end of which culminates in the impressive Coteni amphitheatre. Out of the center of this bowl-shaped feature rises a prominent, conical intrusive peak. The Río Unini, which has its headwaters slightly south of Obenteni, flows to this eastern rim and suddenly plunges down through a narrow chasm in wildly broken terrain where its course is deflected around the Coteni intrusive. From the rim of the Pajonal to the bottom of the Coteni amphitheatre (Mamoriari) the Unini is equivalent to a single great cataract, making any attempt to follow the actual course of the river totally impractical²⁷.

The southern rim of the Gran Pajonal is composed of a highly serrated ridgeline with the peaks culminating again between 1800-2000 meters. On either side of this east-west crestline there are deeply incised sub-parallel valleys creating terraing reminiscent of the Central Shiras. Toward the southeast these mountains, merge into a narrow sector of unusually rugged relief caused by the sedimentary formations having been thrown into tight folds. This province begins near the set-

26. *Op. cit.*, p. 511.

27. *Mamoriari* is a Campa word approximated by "labode of the sabalo" (Important food fish). Even this salmon-like fish cannot ascend beyond this point because of the chaotic nature of the channel. Throughout the Shira Mountains there is a noticeable lack of fish in those streams having a highly precipitous gradient. In addition, the waters of the Río Unini have a peculiar "smoky" appearance not seen elsewhere.

tlement of Unini where the crests of the ridges trend toward Atalaya and die out as they reach the north bank of the Río Tambo.

At the extreme southwestern corner of the Gran Pajonal a number of topographic features are compressed into the relatively small area between the east-flowing Perene and the north-flowing Pichis. Between the Palcazu-Pozuzo and west of the Pichis are the little-known Cerros de San Matías forming a rugged series of mountains parallel to the axis of the Shiras. At right angles to this system is a series of mountains immediately north of the Río Perene and known locally as the Cerros de Kitsungari, which form the southwestern rim of the Pajonal. Where the two mountain systems meet, the formations have been heavily faulted with blocks rotated in many directions. It is across this severely disturbed terrain that Sala opened the famous Pichis Trail uniting the mission station of San Luis de Shuaro with Tambo Azupizu over a distance of more than 65 kilometers²⁸.

Sala's insistence that the canon of the Río Aporoquiali (Aporucayali) offers the most advantageous route into the Gran Pajonal²⁹ was based on hearsay and cannot be supported today from analysis of the air photo coverage nor from the results of contemporary exploration. As a result of Sala's report almost all current maps show the Aporoquiali having a relatively straight course from headwaters in the center of the Gran Pajonal northwestward to the Río Pichis – suggesting that it would be a relatively simple matter to follow this river upstream and step out onto the pajonales³⁰.

During most of the year it is only possible to navigate the Río Aporoquiali in small canoes to the former Franciscan mission station located at the contact between the Chonta shales and the Aguas Calientes sandstones. At this point a box cañon is formed and massive sandstone boulders narrow the channel to the proportions and velocity of a millrace making further progress by water completely impossible. Upstream from this point the Aporoquiali is entirely engorged in a rectilinear system of increasingly rugged canons that could only be followed on foot with extraordinary difficulty. Toward the headwaters, the terrain becomes truly chaotic with jagged precipices, a deeply incised stream bed, and slopes scarred by many landslides.

28. For those who are familiar with the present remote and desolate nature of this forgotten corner of the Peruvian Oriente, it is difficult to imagine that at one time it was bustling with activity, boasted telegraph service to Puerto Bermudes via Tambo Azupizu, and had a series of government-staffed relay stations maintained for this purpose.

29. Izaguirre (X:530).

30. From an inspection of the indice gráfico (negat. 9482-A-58-02-A-2) of Proyecto N° 9482-A-58-02, scale 1:40,000 it is clear that this route is utterly impractical—the Aporoquiali follows a contorted course through the widest portion of the Shiras and does not approach any pajonales except in the extreme headwaters area. The map in Izaguirre (X: 203) is very misleading in this respect.

No doubt Campa travelers have passed on occasion from the north-western pajonales to the Río Pichis by generally following interfluves associated with this river but it is not in any sense a feasible route for non-indigenous explorers.

The Nevati (Newatzi, Neguachi) corridor is another major topographic feature of the western flank of the southern Shiras and a suggested route to the Gran Pajonal by writers innocent of first-hand knowledge.

The Río Nevati has its headwaters in one of the gallery forests in the southwestern portion of the Pajonal. It soon becomes a substantial stream of swift-flowing, dark-colored water flowing over a slippery, algae-covered bed of limes tone and sandstone boulders. After making several large, fault-controlled bends, the Nevati cuts through the constricting western ramparts of highly faulted block mountains and plunges hundreds of meters down the face of this escarpment in a series of torrential cataracts of awe-inspiring proportions³¹. It is in this hellish gorge that the river has ground its way completely through the Copacabana limes tones into a majestic sequence of bright green, massive arkose beds exposed nowhere else along the entire western side of the Shira Mountains.

Although Campa Indians sometimes arrive at settlements near the mouth of the Nevati, they do so by circuitous routes. In recent years only one instance seems to be known of a Campa having survived a downstream trip directly through this gorge by clinging to logs in the short intervals between the falls³².

Further comments on Sala's Pajonal expedition.

Even though it is not possible reconstruct precisely the route followed by Sala's party if we apply his description to what is seen on the aerial photography, it is evident that his guides did not take him by the most direct route into the better-known settlements of the central Pajonal, Nowhere in his account do we find mention of the important Campa population center of Obenteni. This unique location is formed by volcanic ash that accumulated as Pleistocene lake bed deposits now serving as an excellent landing field. Obenteni was the most important of the original Franciscan stations in the Gran Pajonal during the 1730's and it was cast in a similar role on the reopening of Franciscan efforts there two hundred years later under the direction of Padre Rojas.

31. During a five day penetration of the Nevati canon the writer measured 2 tributary waterfalls each of which was higher than Niagara Falls.

32. However, workers at a small hacienda on the Rio Nevati reported that several bodies had come down this river in recent years – probably the result of inter-cine fighting rather than accident victims.

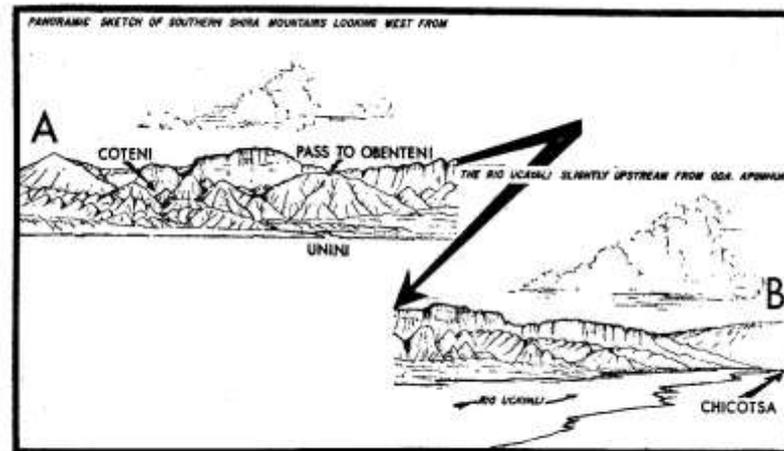


Fig. 5. Geomorphologic Sketch of the Eastern Shira Facade.

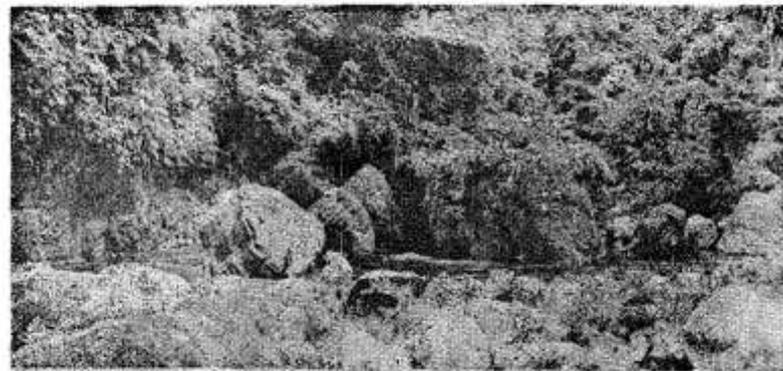


Fig. 6. Entrance to the gorge of the Río Aporoquiali, western Shira Mountains. Boulders are Aguas Calientes sandstone, height of central block is 4 meters.

Today it boasts a brick church, several permanent buildings of the Franciscans also made of local brick, a "main street", homes of colonists from the highlands, a kind of store, and a rustic building of two stories that is utilized for a lodging house.

Also omitted from Sala's account is any reference to the adjacent Campa population centers of Tihuanaski (Tiguanauqui) and Shumahuani, both former Franciscan missions and still of some consequence on the Pajonal. We can only assume that avoidance of these places was intentional on the part of Sala's guides who may have had good personal reasons to detour around them.

Exploration techniques

By comparing the expeditions of Plaza and Sala we can see that the Franciscans employed two distinct solutions to the problem of exploring the selva. Plaza preferred to travel in the company of a large group, well equipped and armed, with as many trappings of civilization as were practicable. Sala, on the other hand, adopted a largely aboriginal style of travel – following, rather than leading, his Indian companions³³.

Acquiring sufficient food in route has been a serious problem for all missionaries. Plaza's army was forced to keep moving since their continued presence at one place for more than a few days was certain to exhaust all the available food. Sala's much smaller group experienced the same difficulty but they were able to rest and recuperate their strength for a short time at almost any Campa chacra.

Since there exists a tacit obligation to feed friendly visitors, few Indians in the Montaña feel the need to burden themselves with travel rations. Instead, they plan their journeys so that no more than a few days at most are needed to travel from one house to the next where they are fed along the way. On the other hand, they are conditioned to consume ephemeral food surpluses since they often lack knowledge of effective preservation techniques. This is the basis of the traditional explorers' complaint that their Indian companions irresponsibly eat all the food on hand with no thought for the future.

The Franciscan heritage

If we analyze the effect of four centuries of unrelenting Franciscan effort to civilize the forest Indians of Peru we must conclude that they failed in certain respects to achieve the ambitious goals they set for

33. This has been the same technique employed by the Passionist missionaries since the beginning of their efforts in the Peruvian Oriente in 1921.

themselves³⁴. The Gran Pajonal has not been turned into the great ranching center Sala envisioned, full of prosperous colonists from the highlands³⁵. Campas still shoot at strangers on the Unini or the Anacayali, and rapine is a common part of their lives.

From an ethnologic viewpoint it can be said that continued contact with missionaries served to entrench and stimulate institutionalized barter of trade goods that had already begun in pre-hispanic times between "chunchos" of Anti-Suyo and the Incas. Franciscans customarily paid for goods and services by gifts of tools and metalware, especially knives, axes and machetes. The accumulation of these items together with cloth goods and shotguns has since become a status symbol requiring much travel, social interaction, and complex barter – factors which tend to lessen a modern tendency toward misanthropic isolationism.

Overland travel remains exactly as difficult and arduous as it was in the early days of exploration – storms, floods, earthquakes, insects, hunger, heat and cold, continue to harass everyone who sets foot in the selva. To travel upstream from the mouth of the Pachitea to Puerto Bermúdez is still a serious undertaking – the long-projected railroads have never been built and even the famous Pichis trail has now fallen into disuse.

On the other hand, communications in general have been dramatically improved since the introduction of the airplane. Almost every mission station, Franciscan or otherwise, has its landing strip and radio transceiver. This has made it possible to introduce more workers and equipment than in the past, but it has not led directly to an acceleration of the Indian acculturation process. Much of the beneficial and pacifying aspects of missionary influence on these forest Indians have been offset by negative experiences the tribes have suffered from a succession of outside exploiters of rubber, rosewood oil, barbasco, and slaves³⁶.

It is true, however, that Franciscans have left one outstanding heritage. In effect, they deserve credit for bringing the Montaña out of the realm of fear and mystery into the cognizance of the Peruvian people who were quick to follow as pioneers in those areas where the priests first entered as explorers.

34. I am referring to the concept of the Millennial Kingdom whereby the Franciscans idealistically hoped to create a perfect Christian empire by converting all of the aborigines of South America and insulating them from the corrupting influence of secular Europeans. For details see Tibesar (1953) and Phelan (1977).

35. Izaguirre (X:555 ff.).

36. The institution of slavery still exists in some isolated parts of Peru where Indian children are kidnapped and sold to hacendados for use as domestics. If they reach adulthood, they remain as agricultural workers in debt peonage to the patron.

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THE ECO-GEOGRAPHICAL CHARACTERISTICS OF THE GRAN PAJONAL AND THEIR RELATIONSHIPS TO SOME CAMPA INDIAN CULTURAL PATTERNS

Marshall S. CHROSTOWSKI

Introduction

I was first attracted to the ecological aspects of Campa Indian life when I observed, in the course of biogeographical investigations, a marked correspondence between the presence and activities of these Indians and the character and patterning of vegetation in the Gran Pajonal. The most conspicuous pattern is the patchwork of savannas (*pajonales*) capping many ridges in this otherwise forested region. Also characteristic is the pattern of diminishing forest disturbance with increasing distance from pajonal clusters. I therefore found it necessary to examine the possible role played by the Campa in the creation and maintenance of these *pajonales* (See Chrostowski and Denevan, 1970).

One striking Campa cultural feature is that the Campa tend to be forest-oriented in their subsistence pattern but have tended to be savanna-oriented in their preferred settlement locations. A family group traditionally has selected a pajonal ridge having a commanding view of the surrounding terrain and has practiced slash-and-burn agriculture in the surrounding forests, first in the adjacent woodlands but, with time, at increasing distances from the central settlement. In recent times the Campa have abandoned many of the savannas in the face of alien cultural pressures and have found greater security in the more remote forest or have modified their life styles to conform to the Peruvian pattern.

Even in these remote forested regions, the Campa attempt to establish ecological settings comparable in general aspect to those found in the pajonal region. A ridge site is thoroughly cleared of vegetation for settlement, and gardens (*chacras*) are made on adjacent slopes. Over time, a substantial area of disturbance, centered on the ridge settlement, is created. Then, following a characteristic behavioral pattern, the Cam-

pa abandon the settlement and move to another ridge site and commence to repeat the same cycle.

In this report, the resource potential of the physical geography and ecology is described, and some relationships between patterns of land tenure and land use and the ecological patterns In the present landscape are examined.

Landscape and hydrology

Landscape

The Gran Pajonal¹ is located in the basal center of the rugged triangular region bounded by three drainage systems: the Perené- Tambo, the Ucayali, and the Pichis-Pachitea (Fig. 1)². It is a heavily dissected region surrounded, in part, by precipitous terrain sculptured from up-turned sedimentary formations, thrust blocks, and prominent igneous intrusions through which a few major streams draining the pajonal area have out gorges. The eastern margin is flanked by the Shira mountains which attain elevations above sea level of 2,300 to 2,500 meters with the Pico Shira surpassing 3,100 meters (Allan Craig, personal communication). To the south the Cerro de Sal range and the Kitchangani mountain knot reach elevations often exceeding 2,000 meters above sea level. To the west and northwest is a nearly impenetrable maze of canyons incised by tributaries of the Pichis and Pachitea rivers. Only the basal central section, the Gran Pajonal proper, offers relatively gentle terrain.

The savanna zone is gently to severely rolling with slopes reaching 45 to 55 degrees and local relief ranging from 20 to 400 meters but mostly averaging less than 200 meters. The easiest slopes are concentrated along ridge lines whose crest elevations vary from 1,000 to 1,300 meters above sea level with a few prominent ridges reaching 1,500 meters. Obenteni basin and the major streams (the Unini and Niwatzzi) lie between 900 and 1000 meters above sea level. Obenteni basin (the upper Río Chitani valley) is the only extensive low-lying plain in the region; elsewhere floodplains and alluvial terraces are largely lacking.

Hydrology

The regional drainage system is complex. Major streams and tributaries follow rather meandering, deeply incised courses while their mi-

1. In the usual sense, the term "Gran Pajonal" has been applied to the total area between these drainage systems, however, I prefer to restrict the term to the immediate area encompassing the pajonal-forest complex which covers about 140,000 hectares with about 9,000 to 10,000 hectares of savanna.
2. Figure 1, preceding page 1, is modified from Chrostowski and Denevan (1970), Figure 1 (Transverse Mercator Projection, after Servicio Aerofotográfico Nacional, Neg. N° 9482-D-5, 1959), Generalized areas of larger pajonales and pajonal complexes are also mapped.

nor tributaries approach a pinnate pattern oriented to systems of fractures and jointing in the bedrock formations. Except for the Río Unini, which has managed to break through the Shira range, regional drainage is directed toward the northwest into the Río Niwatzzi which finally joins the Pichis-Pachitea system outside the Gran Pajonal zone.

The geographical isolation of the Gran Pajonal has been maintained by the physical barriers to surface accessibility described above. Access to the Río Ucayali has been possible by following two seldom-used trails, one a very difficult and dangerous trek along the Río Unini and the other linking Obenteni and the Unini settlement across a high pass in the Shira range. A trail southward from Obenteni to the Río Perené, via the Río Shima pass, still is the most used surface route for reaching the outside world. Passage westward and northwestward (primarily to Puerto Bermúdez) along the Río Niwatzzi is reported to be very arduous and follows ill-defined trails through a thinly populated area. Within the Gran Pajonal, internal communication is facilitated by the easier terrain and a dense network of trails, linking most pajonal concentrations, follow ridge lines wherever possible.

A markedly seasonal superficial flow of water accounts for two culturally significant aspects of the regional environmental setting. The seasonality of flow is due to a combination of rainfall seasonality, high rates of surface runoff, and the highly fractured character of the limestone lying at depths of from 10 to 200 meters below the surface. Many smaller tributaries cease flowing during the dry season, and the volume of flow of the major streams is greatly diminished. Conversely, during periods of heavy rain, raging torrents often fill the valley bottoms of larger streams. These hydrological characteristics have two influences. During heavy rains surface movement is all but impossible between uplands adjacent to these streams. Second, the seasonal nature of the hydrology accounts for the reduced availability of food fish in the region. Although many Campa families cultivate *barbasco*, the fish poison is seldom used locally, rather, the traditional pattern has been to send a sizable Campa group on a lengthy expedition to the Ucayali or Perené drainages for the purpose of fishing, trading or raiding in the past), and acquiring wives. These trips are made during the dry season (June through September), when agricultural activity is reduced, the ease of travel greatest, and *barbasco* fishing easiest.

Climate and soil

Climate

The climate of the Gran Pajonal is "permissive" in that it is generally agreeable to health and physical activity and favorable for the Campa agricultural system. The region experience a warm subtropical tempe-

perature regime and adequate rainfall, and therefore the cultivations of many tropical, subtropical and warm temperate cultigens is possible.

The region enjoys a humid subtropical climate having an estimated mean annual temperature of between 20° and 22°C. (ONERN, 1968, p. 39). It is probable, based on patterns exhibited by stations outside the region, that the region experiences a 2° to 3°C. annual range on the order of 14°C., but no frost (See Drewes and Drewes, 1957, pp. 31-34; ONERN, 1968, p. 39).

Partial rainfall records of a few years from Obenteni and the Shumahuani hacienda are also comparable in pattern to those of the adjacent stations. The summer season from October to May receives substantially more rainfall than does the period from May through September. However, the northeastern margin of the Gran Pajonal receives somewhat more rain and experiences a shorter and less intense dry period than does the central zone of the pajonales, Obenteni, on the eastern margin, record about 2,200 mm. of rain with only three months of reduced rainfall while to the west Shumahuani receives between 1,600 and 1,800 mm. with four to five dry months³.

In addition to greater rainfall, Obenteni experiences a higher incidence of fog-shrouded mornings and greater cloud cover than does Shumahuani due, respectively, to nocturnal cold air drainage from the adjacent Shira range and to the proximity of the orographic storms along the range which impedes the flow of prevailing easterly and northeasterly winds. Shumahuani's climatic characteristics are more typical of the zone of maximum Campa settlement and land tenure activities. Unlike Obenteni, Shumahuani suffers 4 to 6 weeks of notable evapotranspirational stress (ONERN, 1968, pp. 61 and 68).

Soils

Most soils of the Gran Pajonal are acidic and nutrient-poor. In terms of modern forms of intensive agriculture, most soils are marginal; however, they are adequate to support the Campa system of swidden cultivation and the available crop types.

The region is dominated by the *Pajult Association* which has two soil series that have developed on shales, siltstones and sandstones: a well-drained *Rodo Pajult Series*, a reddish brown lateritic (latosolic) soil group; and a hydromorphic red-yellow podzolic soil group called the *Amarillo Pajult Series*⁴. Most soils of these series are deep, clayey, acid and nutrient-poor with moderate to slow internal drainage. Coarser

3. ONERN (1968, p. 39) cites annual means of 2,166 mm. for Obenteni and 1,634 mm. for Shumahuani, using shorter records.

4. See ONERN (1968) and Chrostowski and Denevan (1970) for more thorough discussions of the classification and evaluation of Gran Pajonal soils.

parent materials, more common on lower slopes and to the east and north of the pajonal zone, yield loamier and freer draining soils.

The *Percal Association*, comprised of lithosolic Brown Forest soils, occurs on slopes ranging from 50 to 75 per cent and is distributed along the eastern and southern, and more sporadically on the western and northern edges of the Gran Pajonal. To a limited extent they also occur in the pajonal zone on ravine and canyon slopes. These soils are rather thin (less than a half meter deep) and are acid to calcareous.

The *Arcel Association*, a true Lithosol, occurs on slopes in excess of 70 per cent and predominates in the Río Unini region and in the dissected zones west and north of the pajonales, The *Arcel* soils are thin and unstable and are acid to calcareous according to the parent material.

On the alluvial-colluvial (-lacustrine?) deposits of the Río Chitani valley bottom are a zonal soils of the *Pajovega Association*. Minor areas of this soil group may also occur in larger canyons of the region. On better drained sites these soils are sandy and strongly acid while the hydromorphic phases tend to be finer textured and somewhat less acid. Other hydromorphic soils (the Rumie Gley and Low Rumie Gley types) are distributed within the area dominated by the *Pajult Association* in seep zones and closed depressions.

In brief, the soils of the *Pajult Association* occupy crest slopes and the gentler mid-slopes in the rolling ridge country of the Gran Pajonal proper while the thinner, more unstable soils of the *Percal* and *Arcel Associations* cap the ravine and canyon slopes, particularly toward the outer margins of the region. The *Pajovega Association* is restricted largely to the Río Chitani valley.

The quantity of soil moisture available for plant growth varies widely among the soil groups discussed above and is determined, in large part, by the topographic position of the soil mass and by the soil texture which is influenced by the original parent material. The typical lithological sequence of the dominant *Obenteni Formation* varies from shales and siltstones at the top to sandstones and conglomerates in basal positions. Therefore, the rolling crestlines tend to carry heavier textured soils derived from shales and siltstones, and the lower ridges and the ridgeslopes tend to carry coarser textured soils derived largely from sandstones⁵.

The influence of topography and soil texture on soil moisture availability may be summarized as follows. Thin soils on steep slopes

5. Orogenic events and variable sedimentation processes tend to confuse this neat sequential pattern. Orogenic complexity is most apparent toward the eastern and southern margins of the pajonal section.

tend to be droughtier than deep soils on low or moderate slopes. Coarse textured soils (sandy) than medium textured soils (clayey) have less available soil moisture for very fine textured soils (loamy). In very sandy soils, rain water passes rapidly through the soil mass, and moisture storage is low due to the relatively few, large pore spaces between grains. In soils in which the particles are not aggregated into larger structural units, the infiltration of surface water into the soil mass is slow and water loss through overland flow high. Moreover, a large percentage of the sizable store of soil water is held so tightly in the minute pore spaces that the root hairs cannot extract much of it. It has been found experimentally that the available soil moisture in a sand soil and a clay soil is approximately the same. It is probably true, then, that the heavy clay soils on ridge crests are droughtier than soils on midslopes and lower ridges with their loamier textures. Very steep slopes will also be droughtier.

The influence of the contrasting forest and savanna vegetations on soil morphological development appears to be minor; however, differences in soil fertility⁶ between savanna and forest sites may be *agriculturally* significant⁷. There seems to be notable differences in soil quality as recognized by *colono* farmers who seek out the forested "coffee soils" which are said to have higher inherent fertilities than poorer forest soils occurring either in the vicinity of savannas or on droughty ridges and sharing many of the gross physical properties of savanna soils. The topsoils of savanna sites are thinner, lighter colored, and more impermeable than those under mature forest, given similar topographic and edaphic conditions. The pajonal subsoils tend to be stiffer and slower draining than those under mature forest. In fact, as a rooting medium, the typical savanna soil is poor as evidenced by the superficiality of rooting which is limited to the upper 6 to 10 cm. of soil.

The savanna soils are never cultivated by the Campa Indians or the *colonos*. In part, the limitation for cultivation may be the difficulty of eradicating the hardy grasses; however, experiments by the Shumahuani ranch proved that the pajonal soils would not support the cultivation of improved pastures, let alone cultivated food or industrial crops (Moisés Caudillo, personal communication).

The soil nutrient status of samples collected from the *Pafult association* indicate that without fertilization most soils are of marginal value

6. The term, soil fertility, as used in this paper, refers not only to the macro- and micro- nutrients critical to plant growth, but also the physical properties which effect such things as the storage and uptake of nutrients and soil water, internal drainage, and soil aeration.
7. Chrostowski and Denevan (1970) have concluded that differences in soil fertility do not account for the occurrence and distribution of savannas in the region. In fact, minor differences that exist between savanna and forest soils are probably products of the contrasting ecosystems, rather than the causes of them.

for all but perennial tree crops (e. g. coffee) or shortcycle swidden gardening. Most soil samples prove low in exchangeable (available) nutrient elements, strongly to weakly acid in reaction, and low to moderate in their capacity to hold nutrients on their colloidal components. Particularly noteworthy are the low availabilities of critical elements such as calcium and phosphorus and the potentially toxic levels of free (ionic) aluminum. Critical values of 40 percent or higher of exchangeable aluminum are common in forested and chacra soils; however, no evidence of aluminum toxicity in Campa crops was noted in the fields. Aluminum percentages in savanna soils appear to be lower.

Although soil sampling was insufficient for a clear decision, it appears that soils of lower ridges and moderate midslope positions offer higher fertilities than the deeper, more clayey soils of the higher ridge lines. The higher fertility status of many of these soils is probably due to a combination of (1) the less intense chemical decomposition of these younger surface and, therefore, more nutrients available from weatherable minerals; (2) the more friable textures favoring optimum rooting and drainage; and (3) the greater likelihood of higher moisture availability, as described earlier.

In the course of the one two year life span of Campa gardens, limitations to plant growth from subminimal soil fertility does not seem significant. Burning of slash yields ash rich in soluble nutrients, and nitrogen loss through volatilization probably is not significant considering the high percentage of organic material in the topsoils. Finally, burning of slash and duff yields a highly friable soil surface that is an excellent germinating and rooting medium.

Vegetation

The vegetal resources of the Gran Pajonal are as varied as those found in similar forests elsewhere in subtropical eastern Peru. Although I did not, in the course of research, directly study the nonagricultural resources potential of the regional vegetation, I can offer some general observations about resources and greater detail on the character of the biotic ecosystems and their inter-relationships with Campa life.

Forests

Of the three types encountered in the Gran Pajonal, the *bosque de colina baja* is the most important⁸. This type is associated with savannas within the *bosque húmedo subtropical* climatic zone, and its

8. See Chrostowski and Denevan (1970) for further details on the forest and savanna types. The authors drew heavily from Tosi's *Zonas de vida natural en el Perú* (1960) and incorporated other data from Weberbauer (1945) and ONERN (1968).

distribution more or less coincides with that of soils of the *Pajalt Association*. The *bosque aluvial* forest, largely restricted to the Río Chitani valley but also observed along the Río Niwatzí, is floristically and physiognomically related to the tropical alluvial forests of Amazonia. The *bosque de colina alta* forest type is less a climatic climax as it is an edaphic climax occupying more precipitous terrain under both *bosque húmedo subtropical* and *muy húmedo subtropical* climates. It is mainly distinguished from the *bosque de colina baja* by its floristic simplicity and its more stunted appearance, conditions induced by limitations imposed by the thin, droughty, unstable soils of the *Arcel* and, to a lesser extent, the *Percal Associations*.

Forest of the *bosque húmedo subtropical* climatic zone are closely related to those of the *bosque húmedo tropical* and *seco tropical* climatic zones of the Amazon Basin and lower eastern Andean valleys. A few remnant virgin stands of *bosque de colina baja* survive in the Gran Pajonal proper where they are found in inaccessible sites and, in depaupered condition, on steeper slopes located toward the margins of the pajonal zone⁹. Aside from a mesic "climatic climax" subtype, there is also an edaphic variant of this forest occurring on more xeric ridge sites. In mesic situations the forests are mostly evergreen with a single closed canopy from 20 to 30 meters high overtopped by occasional emergent trees reaching to 35 meters. Below the main canopy is a weakly developed intermediate tree layer, and below this a sparse ground cover of scattered shrubs, epiphytes, lianas and climbers. The xeric edaphic woodland has a single, rather open, semi-deciduous canopy from 15 to 20 meters high and a dense shrub-climber layer reaching from 2 to 4 meters in height. Xeric stands are most often found in the vicinity of pajonales and might be taken for secondary growth except for the absence of signs of previous disturbance (for example, fire-charred stumps which persist for man); years and which I have seen in tall, relatively mature forest stands). Secondary forests do share many of the floristic and physiognomic features of these xeric stands.

The Campa have a well developed taxonomic appreciation of the forest flora, particularly the tree, palm and liana species. Their taxonomic differentiation among pajonal species is more limited. Due to a lack of time and a communication problem, I did not gather data on Campa useful plants. However, on the basis of casual notes and plant

9. Among the more important genera encountered in these forests are the deciduous *Cedrela*, *Bombax*, *Erythrina*, *Jacarandra*, *Cordia*, and *Tecbeuia* (*Tecoma*); the evergreen *Aniba*, *Aspidosperma*, *Bunchosia*, *Brosimum*, *Caryocar*, *Ceiba*, *Clarisia*, *Eudlicheria*, *Ficus*, *Inga*, *Juglans* (rare), *Myroxylon*, *Nectandra*, *Ocotea*, *Persea*, *Phoebe*, *Sapium*, *Schizolobium*, *Swietenia macrophylla*, *Trichilia*, *Virola*, *Vochysia* and *Zschokkea*, the palms *Bactris*, *Euterpe*, *Geonoma* and *Wettinia*; and the tree ferns *Cyathea* and *Alsophila* (Tasi, 1960, pp. 190-191).

lists, I can offer a sample of the range of potential and actual products garnered from the forests.

Species of *Palma* are useful in several ways: (1) edible palm heart, (2) thatching, (3) fibers, and (4) bedding material. The Campa gown and tote bag are woven from the silk cotton fibers of *Bombax* species (and possibly other sources as well) whose flexible bark can also be used as cordage. Other sources of cordage, other than lianas, include species of *Cecropia* and *Guazuma* and *Trema micrantha* whose younger stems can be woven into mats or baskets. *Tabebuia* (or *Tecoma*) species are elsewhere employed for a kind of cloth from the inner bark which separates into a number of thin sheets. Resins and gummy latex can be gathered from *Sapium*, *Vismia*, *Myroxylon*, and *Vochysia* species. Several resins and latexes have medicinal uses elsewhere; for example, *Clarista nitida* and *Zschokkea ramosissima*. The legume *Erythrina esculenta* supplies ornamental scarlet seed, an infusion from boiled bark to treat skin ailments, and an edible fruit. Several *Ficus* species have latex used as a vermifuge or as a treatment of anemia or for healing wounds. Edible fruits are also produced by *Bunchosia elliptica*, *Ficus* spp., *Persea americana*, *Caryocar glabrum* (kernal), *Inga* spp., *Psidium guajava* and *Spondias* spp. (Williams, 1936).

Secondary vegetation

Secondary vegetation, which has replaced most of the virgin forest may be grouped into three types: *chac-chac*, *purma* and *monte alto*. An abandoned chacra is soon covered by either *chac-chac* (the bracken fern, *Pteridium aquilinum*) or by shrub-dominated *purma*. *Chac-chac* is extremely aggressive in open habitats and forms thick stands which virtually exclude most other plant species. *Purma* is a dense tangle of shrubs, lianas, thorny climbers, low palms, tree ferns and, locally, bamboo thickets. In time, an open overstory of sun-loving, rapid-growing trees is established. The *monte alto* is dominated with these trees and individuals of the future climax forest. The closed canopy has suppressed many species present in the original *purma* stand while at the same time has created conditions favorable for the generation of tree and other species characteristic of the mature climax forest. In appearance the *monte alto* is similar in its early stages to the xeric forests.

It is not surprising that of the regional vegetation is in secondary growth even though there has been marked population decline over the past 15 to 20 years (Chrostowski and Denevan, 1970). One family group can, in the course of a 15-to-20-year generation, convert 15 to 20 hectares of mature forest to secondary growth, part of which will be the persistent *chac-chac* community. *Chac-chac* tends to persist for many years under certain, not as yet understood, conditions and is only slowly suc-

ceeded by *purma* or less commonly by elements of the savanna vegetation¹⁰. *Purma* communities attain heights of 3 to 4 meters in a few years, and *monte alto* may become well established in 20 to 30 years. Relatively mature forest with little ground cover probably develops in 50 to 75 years; however, this has not been determined in the field. I suspect that centuries are needed to establish a true climax forest, one in which all (?) arboreal elements of the *purma* type have died out.

In searching for new chacra sites, the Campa appear to prefer woodlands having tree diameters of 25 to 30 cms. or greater. Therefore, *purma* is normally avoided, probably due to the greater effort needed to clear the understory and to strong regeneration of weedy species. *Chac-chac* stands are also ignored because the fern is impossible to eradicate by cutting and burning. This selection process insures that much of the forested land amenable to primitive agriculture will remain in earlier stages of secondary vegetation. I also suspect that in the past, with greater population pressure on arable forest reserves, the extent of younger secondary vegetation was greater than at present and, possibly, *purma* was cleared under a shortened swidden-fallow cycle¹¹.

Savanna

Three types of pajonal communities are significant in relation to Campa land tenure and related activities; *grass*, *shrub-grass* and *bush island* types¹². *Grass* savanna are communities in which shrubs are absent or are rarely present in suppressed form and are, therefore, uncommon in this humid subtropical climatic region. They occur on the more xeric ridges, particularly in the vicinities of present or past Campa settlement, and are thought to have been derived from *grass-shrub* communities through conscious Campa efforts.

The Indians establish wide areas of "clean" pajonal around their settlements using machetes and savanna fires to eradicate or suppress woody growth. The resulting community is a low and open grassland having heights of less than one half meter and basal coverage of grass of 25 to 75 per cent. There are few species of graminaceous or flowering plants, the dominants being *Andropogon leucostachyus* (Gramineae) and

10. A number of old chacras have remained in *chac-chac* for at least as long as 15 years near the Shumahuani ranch. Species of both *purma* and pajonal are present but in unimportant numbers.
11. A short-fallow system is common among the Río Ene Campa who clear chacras from *purma* (W. M. Denevan, personal communication).
12. Chrostowski and Denevan (1970) have identified five types of savanna communities in the Gran Pajonal: the *Melastomaceae-Compositae-Andropogon Association*, the *Byrsomina-Andropogon-Leptocoryphium Association*, the *Shrub Pajonal Association*, the *Graminaceous Pajonal Association*, and the *Marginal and Island Pajonal Association*.

Rhynchospora spp. (Cyperaceae) and the subdominant species being the annual grasses *Aristida adscencionis* and *Panicum* sp.

The *grass-shrub* communities are characteristic of most pajonales. The most common community is the floristically rich *Melastomaceae-Compositae-Andropogon Association* which occurs on mesic sites on midslopes and abrupt breaks in slope¹³. The community physiognomy is very variable depending upon the soil moisture status and the frequency and intensity of burning.

With annual fires, the structure is as follows: an open shrub layer from one to one and a half meters, a more or less complete cover of tall bunch grasses from one half to one meter high (excluding inflorescences), and a herb-subshrub layer below a half meter. On ridges east and north of Obenteni occurs a distinctive xeromorphic community called the *Byrsomina-Andropogon-Leptocoryphium Association* in which shrubs of Melastomaceae and Compositae are uncommon and the variety of graminaceous species greater¹⁴. The *Shrub Pajonal Association* occurs in the vicinity of Obenteni and the ranch grounds at Shumahuani and Tihuaniski on disturbed, overgrazed sites. Most of the herbaceous flora has been suppressed and tall shrubs and low trees of *Purma* and pajonal affinities abound¹⁵. This community is definitely a *colono* phenomenon and appears to be an irreversible change from a true pajonal type since the community does not burn.

Bush islands are conspicuous features on the pajonales, especially on the larger savannas where topographic variation produce sites conducive to their development. Larger islands (and narrow extensions of the surrounding forest) are associated with shallow ravines and closed depressions and the smaller islands with abrupt breaks in slope or

13. The species include the following: the dominant shrubs of Melastomaceae are *Miconia ibaguensis*, *Clidemia capitellata* var. *dependens* and *C. pilosa*; subdominants are *Miconia stenostachya*, *Leandra crenata* and an *Aclotis* sp.; the Compositae *Baccharis* spp., *Vernonia* spp. *Erigeron sordiodus* and *Eupatorium laeogatum*. Other species include *Coccocypselum hirsutum*, *Sauvagesia erecta*, *Hypitis lutescens* and less commonly *Pteridium aquilinum*, a *Solanum* sp. and the legumes *Stylosanthes* sp. and *Crotalaria nitens*. The important graminaceous species are *Andropogon condensatus*, *A. bicornis*, *A. leucostachyus*, *Rhynchospora globosa*, *Rhynchospora* spp. and (less commonly) species of *Axonopus* and *Panicum*.
14. *Byrsomina crassifolia*, a low tree, is dominant with suppressed shrubs of *Miconia* spp. and *Malpighia glabra* uncommon. A Rubiaceae (either a *Palicourea* or *Ladenbergia*) is present in great numbers but in suppressed condition. Grasses include *Andropogon leucostachyus*, *Leptocoryphium lanatum*, *Axonopus aurens*, and three unknowns in the tall grass layer, and in the ground layer several *Paspalum* spp. and a *Bulbostylis* sp. (Cyperaceae).
15. For example, the *Andropogon* spp. and the Melastomaceae become less common while *Baccharis*, *Vernonia*, *Eupatorium* and *Solanum* spp. increase. Clambering plants (e. g. *Bubus urticaefolius* with an edible fruit and *Lantana armata*) and other fire-sensitive species enter (e. g. *Jacarandra*, *Cecropia*, *Cedrela*, *Psidium*, and genera of Lauraceae, Leguminosae, Anonaceae, and Compositae).

abandoned ant mounds. These communities are outliers of *purma* or more mature woodland, however, they are continually affected by encroaching savanna fires. The larger ones are zoned concentrically according to the degree of influence exerted by the fires. Inactive ant hills are most conspicuous on the large savannas just west of Obentini, and the density of mounds seems to be related to the age of the pajonal.

The frequent presence of stumps and stump- or root-sprouting suggests that the Campa cull trees from nearby islands for construction materials. In several pajonales, the Indians had cleared bush islands in the vicinities of new settlements, probably to remove dangerous covers for potential enemies. Two useful tree species, *Psidium guineense* (edible fruits) and *Rapanea oligophylla* (construction), are common elements within the smaller islands.

The major ecological influence of the Campa on pajonal vegetation is the process that leads towards reduced woody growth. In the vicinity of settlement shrubs and most shrub islands are cleared and the grass burned over annually. The site of settlement itself is scraped clean of plant life and in the course of time is compacted through the passing of many feet and the effects of exposure. At greater distance from the site, the *shrub-grass* community (or the *grass* savanna on xeric sites) is maintained by frequent firings¹⁶. More remote pajonales, which have not supported settlement for a time and which are not in the path of frequent travel, have much richer floras and much better developed shrub and low tree strata. However, these remote savannas are burned over at infrequent intervals by intense fires that feed on the accumulated fuel and consume all aerial plant materials.

Faunal resources

The faunal resources of the Gran Pajonal are potentially as great as those found in other subtropical regions; however, according to Campa and *colono* informants, the bird and mammal populations within and adjacent to the pajonales have been substantially reduced through overhunting. Game reduction has been intensified with the introduction of the shotgun, at least one of which is found in the larger, more well-off Campa groups. The reduction of game might well be one of the reasons for long-distant shifts of Campa settlement sites.

The Campa Indian is a skilled and resourceful hunter using a bow and a variety of specialized arrows for taking birds, small and large animals, and fish. I have seen a Campa hunting party patiently

16. Since one ignition seldom burns ever the whole surface of a pajonal in this type of setting, parts of a savanna may escape burning for two years or more.

stalk a single bird for more than an hour before bringing it down with a single shot from a knob-tipped arrow. Periodically, a hunting party will go on a lengthy hunting expedition well beyond the pajonal zone, but for the most part, the Campa garner their game within a range of a few hours from settlement and chacras.

The Campa appear to be bird hunters foremost. Not only do they eat nearly every species of the larger birds, but bird plumage and dried, partially gutted carcasses are prominent in their ornamentation and probably medicomystical observances. Their taxonomic classification of bird life is more complete than that of plant life, and they not only have a through knowledge of the ecological characteristics of each species, but can identify and duplicate most, if not all, bird calls. Their success as bird hunters is attested to by the silence and the few bird stings in the pajonal areas.

Unfortunately, I know very little about the bird and mammal resources of the region. During my stays in the region, totalling twelve weeks, I saw carcasses of only four animals in Campa settlements; a small forest deer, a tigrito, a tapir (?), and a small, tree-living, nocturnal animal¹⁷.

I saw several live pumas but the Campa with me were not interested in attacking the large cat with arrows. Monkeys are absent although they must have been present in the past because they are common in similar forests outside the region (e. g. the upper Río Mayo). Herds of wild pig, so conspicuous in the tropical alluvial lands of the Río Ucayali, are unknown here, probably because of adverse habitat conditions rather than overhunting.

Insects and larvae are significant components in the protein diet of the Campa, especially the children. The Campa will eat most types of insect and larva, including body lice. Aside from items gathered during the scavenging by woman and children, a grub and leaf-cutter ants (*caqui*) are important food resources. The grubs are "cultivated" in mounds of maize cobs and debris in the settlement and are eaten as snacks, either raw or partially roasted in hot ashes.

The Indians have identified and named five or six species of leaf-cutter ants (species of *Atta*) on the pajonales although I could only distinguish two types, based on size and color. The ants are eaten during October when they swarm. There appears to be an interesting relationship between the conspicuous occurrence of these ants on many pajonales and the Campa Indians. Although active ant hills are oc-

17. The Campa are very reluctant to advertise a successful hunt, especially one which has produced a large mammal. If possible, the animal is eaten immediately; otherwise, another Campa group (especially a related one) will arrive and either join the feast or take the carcass.

asionally encountered along open forest trails of some antiquity, they are most common on the pajonales. Gross (n. d.) has suggested that the Campa actively and consciously manage these food sources through the control of shrub densities. To some extent this assertion may be true, in several instances in which shrubs were encroaching on active ant hills, the Indians had cut away the stems. Moreover, the Campa were displeased when I dug into a mound. Considering the danger posed by leaf-cutter ants for cultigens, the association (symbiotic?) of Campa and ants is interesting. The ants collect mostly broad-leaved species from *purma*, woodland and cropland (but from few pajonal species) and are considered by the *colonos* to be agricultural pests.

Summary

The report is meant to serve the participants of this symposium as a background survey of the physical geography and ecology of the region inhabited by the Gran Pajonal Campa. However, I have attempted to describe and evaluate not only the elements of the present landscape, but also some of the relationship between patterns of land tenure and land use and the eco-geographical patterns in the landscape. The following summarize the major points discussed.

1. The ruggedness of the topography surrounding the Gran Pajonal proper (See footnote 1,) has contributed to the isolation of the Campa from the major river valleys. The Indians have traditionally concentrated on the gentler rolling terrain in which the savanna patches are so conspicuous.
2. The Campa are forest-oriented in their subsistence pattern but tend to be savanna-oriented in the preferred settlement pattern. Settlement is established on commanding pajonal ridge crests, and swidden cultivation is carried on in the surrounding forest country.
3. The climate of the savanna region is favorable for agricultural activities although seasonality of rainfall has contributed to the seasonality in the agricultural cycle. The climate is a frost-free, humid subtropical type with a mean annual temperature of about 20-22°C., a mean annual rainfall of between 1600 and 2200 mm., a dryish period lasting from 2 to 5 months (the latter more typical), and none to 4 to 6 weeks of evapotranspirational stress.
4. Four soil Associations (the dominant *Pajult*, the *Percal*, the *Arecal*, and the *Pajovega*) are described and their generalized agricultural qualities are evaluated. Differences in soil fertility occur between fores-

ted and savanna soils and among forest soils of the important *Pajult Association*.

5. Soil tests indicate that while most forest and chacra soils are deficient in two or more nutrient elements, they offer sufficient nutrient reserves to support the present Campa swidden system without seriously affecting long-term edaphic stability. The savanna soils are incapable supporting food crops.
6. Three forest types are noted but only the regional "climatic climax", the *bosque de colina baja*, is described. There remains very little undisturbed forest in the vicinity of the pajonales.
7. The Campa have an elaborate taxonomic knowledge of forest flora. Examples of some of the useful species (present and potential) are given.
8. Three types of secondary vegetation (*chac-chac*, *purma*, and *monte alto*) and the role of the Indians in maintaining woodland in more weedy condition are described.
9. Savanna communities, which are thought to be anthropogenic, have been grouped into three classes, depending upon their appearance and their relation to Campa activities. *Grass* pajonales are believed to be associated with xeric ridge sites and with present or past settlement locations. *Shrub-grass* savannas, a really dominant, are variable in character with the "shrub pajonal" being a product of *colono* disturbance. *Bush islands* are associated with microtopographic irregularities (shallow ravines and depressions, breaks in slope, and inactive ant mounds) and are often much disturbed by the Indians.
10. The clearing of woody growth from the vicinity of settlement sites and the burning of pajonales are two major influences of the Campa on the savannas. The degree of woodiness depends upon the intensities of these two factors (as modified by natural habitat factors, such as soil moisture and topography).
11. The faunal resources were not studied, but it was apparent that the men prefer hunting above all other subsistence activities. The Campa are expert hunters with the bow and arrow, and this probably accounts for the apparent overhunting in the vicinity of the pajonales.
12. Bird hunting and the collection of insects contribute a substantial part to the animal protein diet. A grub is "raised" in the settlements, and leaf-cutter ants (*Atta* spp.) are collected in October. The possible symbiotic relationship between the Campa and the ants is noted.

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CAMPA SUBSISTENCE IN THE GRAN PAJONAL, EASTERN PERU

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Introduction

Shifting cultivation supplemented by hunting, fishing, and gathering, is the common form of subsistence among the indigenous peoples of tropical America. It is characterized by a great variety of methods under an equally great variety of ecological conditions. Numerous studies of shifting cultivation and subsistence systems have been made in Asia and Africa, and enough detail exists for major comparative studies to have been made (Spencer, 1966; Allan, 1965; Miracle, 1967). On the other hand, only a handful of case studies are available for tropical South America (Carneiro, 1956, 1964; Leeds, 1961), other than fragments in ethnographical and geographical accounts. On the basis of these few studies, several theoretical statements have been put forth on the relations of subsistence patterns to population density, settlement stability, food productivity, and cultural evolution (Meggers, 1957; Lathrap, 1968; Carneiro, 1956, n. d., Denevan, 1966). To test these theories and to make comparisons possible, ecological field studies must be carried out in conjunction with ethnographic and demographic surveys. Such studies should include detailed measurement of inputs and outputs over at least one annual cycle (Nietschmann, 1970), including time and distance factors (Brookfield, 1968). The need is urgent in view of the rapid cultural changes now being experienced by the tropical tribes and the population decline and actual extinction of many tribes. Such salvage ecology is needed not just for understanding aboriginal groups, but to provide insights into how the people replacing the Indians can come to terms with the tropical environment in a productive and non-destructive way.

This preliminary report on the Campa, which by no means achieves all the objectives just mentioned, (1) describes the subsistence system of the Campa, a representative non-riverine tribe in western Amazonia, and (2) relates the Campa situation to larger issues of population density, settlement stability, and subsistence stability. Field work was carried out among different groups of the Campa in 1965-1966 and

in the summer of 1968, particularly in the Gran Pajonal, but also on the central Ucayali, lower Ene, upper Pichis, lower Tambo, and the Perené-Pangoa. Some groups were visited at several periods of the year, others only once. A major objective was to gain perspective on the variability of subsistence from group to group, rather than to make an in depth study of a single group. Many of the studies of tropical agriculture are based on a single village or farmer and are therefore not indicative of the frequent great diversity of practices present within a culture. Spanish-speaking campa informants and interpreters were used. Missionaries and others with long residence among the Campa were particularly helpful¹. Relevant details of Campa ethnography and ethnohistory are omitted here as they are covered by other in this symposium and by Varese, 1968; Weiss, 1969; Bodley, 1970; and Lehnertz, 1969. The Gran Pajonal has been described by ONERN (1968) and by Chrostowski and Denevan (1970).

The Campa

The Campa are an Arawakan-speaking tribe, with several dialects, located in the foothills of the central Andes. Their territory is roughly bounded by the upper Ucayali, lower Tambo, and Pichis-Pachitea, and the foothill zones on both sides of the Ene and lower Apurimac rivers a total area of about 25,000 square kilometers. The present Campa population is estimated at between 20,000 and 30,000 making them the largest surviving tribe in the Amazon Basin². The population density, then, is about 1 per square kilometer. A larger number still live in the Cordillera de Vilcabamba, but there has been a steady movement in recent years toward the riverine missions on the Ucayali, upper Pichis, Perené, and lower Apurimac. The population was undoubtedly significantly higher as recently as 20 to 30 years ago, but the death rate from introduced diseases has been high. The degree of acculturation is considerable along the rivers and in the west, but relatively little in many parts of the uplands, and some isolated groups have had no direct white contact and are still hostile.

The Campa are best described as a semi-nomadic (frequent moving) horticultural tribe with a strong emphasis on hunting, rather than fishing, as the major source of protein. They are socially organized into small groups consisting of an individual family or up to five or six conjugal families, seldom numbering over 35 persons and usually between 5 to 15 persons. Villages consist of from one to five huts, except for the mis-

1. Burt Watson and Mack Robertson of the South American Indian Mission. In the Gran Pajonal, Moisés Cadillo and Teodoro Peña provided considerable assistance and facilities.
2. Fast (1962) and the Summer Institute of Linguistics give a figure of 30,000, but others feel that 20,000 is more realistic, Bodley (1969) estimates less than 1500 in the central area of the Gran Pajonal.

sions which number Up to 300 or 400 people. Settlement sites are moved every two to three years for a variety of reasons; hence, the designation, "semi-nomadic".

In view of the frequent movement of settlements, it is not surprising that the material culture of the Campa is minimal, Pottery is crude and now absent among most Campa groups, whether or not they have metal pots. Other manufactured materials include the cushma, bow and arrows, shoulder bags, masato troughs, looms, barbacoas, and basket (see Weiss, 1969: 591-599 for a detailed list).

Casual observers characterize the Campa as hunters rather than as agriculturalists, and most Campa males do spend the majority of their working time hunting. Nevertheless, most of a families' food, by weight and calories, comes from cultivated plants. Yuca (sweet manioc) is by far the most important crop, but many other plants are cultivated. Still, meat is the main source of protein, and it seems likely that the frequent shifting of fields and settlements is related to the depletion of local game supplies. Fishing is of little importance among the Upland Campa, but is a major source of food for the Riverine Campa. However, even in the lowlands many Campas are in the piedmont areas away from the floodplains and are more hunters than fishermen. Ecologically, then, the Campa can be divided into Upland and Riverine groups³. The latter make use of alluvial soils and aquatic resources and as result tend not to be as nomadic as the former. This study will focus on the Upland Campa of the Gran Pajonal, but will bring out contrasts with the Riverine Campa.

The Gran Pajonal

The traditional heartland of the Campa is the remote plateau of the Gran Pajonal located between the Ucayali, Pichis-Pachitea, and Perené-Tambo rivers. The core area, south of 10°S. latitude, measures about 200,000 hectares of rolling terrain deeply dissected by gorges of the Río Unini and Río Nevati (Neguache) and their tributaries. On the more gentle slopes between these two rivers there are from 5,000 to 6,000 hectares of pajonales (grasslands), which owe their presence, at least in part, to a long history of Campa clearing and burning (Chrostowski and Denevan, 1970). The grasslands are in numerous scattered patches along the hill crests, mostly under 10 hectares in size with a few up to 100 hectares or more. The dominant forest vegetation is Bosque Húmedo Subtropical (see ONERN, 1968: 67-70), much of it second growth. The area of pajonales has had greatest concentration of Campa settlements in the past; however, the recent pressures from settlers, the Guar-

3. Weiss (1969: 42) makes a sociological distinction between Pajonal and River Campa, based on apparent separate breeding populations.

have the chacra adjacent to the hut for ready availability of food and for fuel logs. The nights are cold in the Gran Pajonal, and the Campa like to keep a fire going at all times for both warmth and for cooking. Star-shaped fires are built using long logs from the chacras, with the logs being pushed forward as they burn. Having heavy logs close at hand is probably even more important than having the crops close by.

For chacra sites, mature forest is preferred over young second growth, probably because of better soil fertility, especially on upper slopes. Other siting factors being equal, "black" soils with a high organic content are sought out in preference to eroded and highly leached "red" soils. For a detailed description of the soils of the Gran Pajonal, see Chrostowski and Denevan (1970).

Clearing. The preferred time of forest clearing is at the start of the dry season, as is typical of shifting cultivation in the tropics. However, the Campa are known to clear in the middle of the wet season, and I have seen a number of chacras cleared in the middle or late dry season. Present clearing tools are the axe and machete for all Campas. (Stone axes are very common in old village sites, attesting to their former importance). All large trees are cut first and serve to topple smaller trees and brush. Remaining material is cleared by machete. Clearing is a concentrated process, with all other activity coming to a near halt, with the possible exception of early morning hunting. Each family is responsible for its own chacra. A man may do all the clearing alone or with the help of his sons. Working most of each day, a man can clear an average sized chacra of 1/2 to 1 hectare in one to two weeks.

Burning. Burning does not necessarily take place at the end of the dry season, but may occur whenever cleared debris is dry enough to burn, which may be early in the dry season only two to three weeks after clearing. Such a burn, however, will seldom be a good one, and it is necessary to stack the remaining debris for second and even third burns. I have seen quite green debris burned on cold, misty days, but with ignition on the lower slope and a brisk upslope wind, a fairly hot fire is still possible. Since they desire to use chacra logs fuel, the Campa probably prefer not to have a complete burn. Also, since most chacras are only used for one to two years, a good ash layer for fertilizer isn't too important, and removal of the smaller debris to expose ground for planting is the main objective. Second burns of piled materials do provide good ash piles, but these are not particularly sought out for planting.

Planting. Planting is done immediately after burning, regardless of the season. I observed fields being planted a full month or more before the rainy season began. There are light and some heavy rains during the dry season, and while these are not adequate for most crops, reasonably good growth of yuca does result.

Yuca and maize are the first crops planted, usually intermixed, but often the maize is concentrated on the lower slopes where the soil is more fertile and more humid. One chacra just planted, for example, had about 60 percent maize plants and 40 percent yuca on the lower slope, 10 percent maize and 90 percent yuca on the middle slope, and 100 percent yuca on the upper slope. Averaging out crop percentages on newly planted chacras, I obtained roughly 25 percent maize, 70 percent yuca, and 5 percent other crops. The maize is harvested at the end of four months and is replaced by yuca and other plants, and other plants are gradually added elsewhere so that by the end of six months the ratio is more like 85 percent yuca to 15 percent other crops. Thus, the importance of maize can be overestimated by only viewing a new chacra.

Yuca is planted by digging up a shallow hole with a short handled, metal hoe or with a machete. Two to three yuca cuttings, each about 1 foot long, are inserted in the loose earth piled up at the edge of the hole. The holes are spaced 8-12 feet apart where the ground is bare of logs, with no attempt to make rows. Maize is planted simultaneously 4 to 5 feet apart in between the yuca holes, using a large (5-6 feet long, 4-6 inches diameter), heavy dibble stick to make holes 8-12 inches deep. Three to five maize kernels are inserted in each hole and loose dirt is scraped into the hole.

Other crops are planted widely over a chacra where there are suitable niches. Clusters of taro, yam, dali-dali, and plantain bulbs are planted just below the surface. Sweet potatoes are usually planted a few weeks later, or when good rains are certain, in the yuca hillocks or next to logs, along with a few sugar cane cuttings. Beans of several varieties are planted at various times, but seldom in quantity. Kidney beans are often planted next to stumps of small trees prior to burning. The area around them is cleared so that few are killed by the later fire. Beans are also planted immediately after burning. Most tree and shrub crop are planted leisurely well after initial planting where there is good sunlight, either in the house clearing, chacra fringes, or along trails. Some fruit trees germinate naturally from the seed of fruit eaten near the house. Tuber cuttings are clearly selected for desired qualities and are carefully transported to new chacras. Maize and other seeds are stored in gourds for later planting, but are seldom stored for food.

Crops. In terms of numbers and total weight, the staple crop is clearly sweet yuca (kaniri) *Manihot esculenta*, of which there are at least a dozen varieties in the Gran Pajonal. The major secondary crops, with common, Campa⁴, and scientific names, are: maize (šínki) *Zea mays*, taro (pitóka) *Colocasia esculenta* and (impári) *Colocasia antio-*

4. Spellings of Campa names are taken from Weiss (1969: 599-604). These, however, are for the River Campa and pronunciations are often slightly different for the Pajonal Campa.

rum?, sweet potato (koriča) *Ipomoea batatas*, and the kidney bean (mačáki) *Phaseolus vulgaris*. Other important crops include: yams (máona) *Dioscorea trifida*, arrowroot (tinkóci) *Maranta arundinacea*, dali dali (šoneáki) *Calathea allouia*, squash (kémi, cori) *Cucurbita maxima*, tree bean (cítioíki) *Caianus indicus*, peanut (ínki) *Arachis hypogea*, plantain (parénti) *Musa paradisiaca*, pineapple (tivána) *Ananas comosus*, and papaya (mapóča) *Carica papaya*.

In addition, there are over 30 lesser crops which are either present or known and planted irregularly. These include: achioté, achira, avocado, arracacha, bananas, barbasco and other fish poisons, caimito, calabash, canavalia bean, castor bean, chili pepper, cocona, cotton, datura, gourds, granadilla, guayaba, hyacinth bean, lemon, mango, orange, pacay, pejibaye, sugar cane, tobasco, tuber bean, tumeric and watermelon. A few additional crops are cultivated by the Campa living along the large lowland rivers, including rice and cashew, and plantains are much more important than in the Pajonal.

Several of these crops are Old World in origin and are presumably of post-Columbian introduction (taro, yam, plantain, sugar cane, citrus). Some Campa near Obenteni raise coffee or cacao, often commercially. Two crops not usually associated with tropical forest tribes in South America are the potato and coca. The potato (močákí) is a small, primitive type identified as the Amico variety by Dr. Carlos Ochoa. It has also been found in the San Ramón area, which was once Campa dominated, in San Martín, and at La Libertad on the coast. It grows at Obenteni (1005 meters), but is usually found at higher elevations. However, it is uncommon, and seems to be in the process of being lost by the Campa. Coca (kóka) is grown as a single plant, with a few in each chacra. The leaves are mixed with calcium and chewed much as in the highlands. Presumably both crops have been derive from the highland Indians, but the possibility of tropical submontane origins should not be discounted.

Cultivation and harvesting. Both weeding and harvesting are women's work, although the men help out at times. Weeding is minimal, mainly because it is not a serious problem during the short one to two year life of most chacras. Weeding is mostly by hand, rather than by machete, in order to avoid destroying useful plants. Harvesting takes place as crops mature and when needed in the case of tubers which can remain in the ground, for long periods. There is no attempt to preserve food. Maize is piled in the roof rafters, but is mostly used up within a few weeks.

Productivity was measured on only two first year chacras (totaling 3.4 acres) and only in terms of numbers of plants. On these chacras, where there was intercropping, (1.2 acres) there was an average of 7744 maize stalks and 3932 yuca plants per acre. Elsewhere (2.2

acres) there were about 10,000 yuca plants per acre. (A few hundred plants of other crops were planted later, and the maize was replaced with yuca). Crop losses from dry soil, animals, insects, disease, and spoilage was estimated at 20 to 30 percent, with the maize loss being higher than that for yuca.

Abandonment and fallowing. Most slope chacras in the Gran Pajonal are only planted in one crop of yuca. The majority of the crop will have been harvested after 16 months, at which time planting and weeding ceases and fallowing begins. Nevertheless, perennial tree and shrub crops and some late planted annuals continue to produce and are harvested for food or used for seed and cuttings over the next year or longer. A chacra may thus have a full cropping life of around three years despite only one major crop of yuca. As the first yuca is harvested, often as soon as eight months after planting, the cleared area may be immediately replanted with yuca cuttings from the harvested plants, or by other crops (but not maize), thus providing a partial second harvest. In some situations a full second crop of yuca will be planted where there is superior soil or when for some reason a man has not yet cleared a new chacra. I did not see any chacras with over two full yuca crops in the Gran Pajonal,

The length of the fallow period is at least 10 years and usually much longer. In contrast, the Riverine Campa frequently clear second growth that is only 5 to 10 years old.

Houses usually are not moved with each change in chacra, as long as the new chacra is close at hand. Ideally, each family clears a new chacra each year. The second chacra is adjacent to or at least close to the first. The third year chacra may also be close by, but usually by the fourth year, if not before, a new chacra site is selected and cleared several miles away. By the time the last full yuca crop from the old chacra site is exhausted, the family will have moved into a house on the new site. For a year or so, though, there may be a fair amount of moving back and forth to work the new chacra and to build the new house and, after moving to the new house, back to the old chacras to harvest remaining plants and to obtain seed and cuttings. The reason for moving both chacras and huts is not that land has been exhausted at the initial site, since a great many more chacras could be cleared within a short walking distance, and individual chacras could be cropped for longer period than one to two years. The depletion of game may be the most critical factor, and this reason was given to me several times. Other reasons given for abandoning a house are (1) to escape an enemy or disliked neighbor, (2) a death in the family, (3) disease, (4) deterioration of the hut, or (5) an influx of pests.

Thus, there is an overlapping sequence of chacra making and use. At any given time, the basic pattern would involve tapping residual crops from the chacra cleared two years ago, the harvesting of the main crop from the previous year chacra, and preparation of a new chacra. All three chacras may be at the same site, or one may be at either an old house site or a new house site. The actual pattern may be much more complex, however, since many Campa are not very systematic land use planners. A still producing chacra may be abandoned prematurely because of a house shift due to a death or lack of game. A family may move too far away to be able to utilize an old chacra. Relatives may move in and help deplete a chacra faster than otherwise. Because of bad weather, an extended trading or fishing trip, or injury, a man may not clear a chacra some years. As result, some families have plenty of food and future needs assured, whereas others are caught short with a chacra depleted before another comes into production. Campa then either move in with relatives or live off the land hunting and gathering until the new chacra is producing. Such instability of production seems to be very common in the Gran Pajonal and helps explain why the Campa frequently clear, burn, and plant out of season. They fully realize they won't get a good crop, but for one reason or another their cropping-shifting sequence is out of balance and a poor crop planted at the start of the dry season is better than no crop at all. This doesn't necessarily mean the Campa are poor farmers, however.

Effect of cultivation and clearing on soil. For several chacras, top-soil samples were taken over a two to three year period to determine changes in fertility during the cropping cycle. Results were not always comparable, due to differences in methods of soil analysis, but the following examples are believed to be representative. From an upper slope chacra near Shumahuani, a soil sample was taken in August 1966 a few weeks after clearing and before burning and planting. A second sample was taken in July 1968, after the chacra had been abandoned for two to four months and was regrown in 5 to 10 foot high purma (second growth) with scattered remnant yuca, papaya, and plantains. After two years, the pH had risen slightly (4.6 to 5.0) which is not unusual (probably due to addition of ash), but there was a decline of organic matter (7.6% to 6.7%), of phosphorus (23.0 to 11.5 kg./hect.), and of potassium (300 to 180 kg./hect.). On two adjacent chacras on a ridge near Obenteni, one just planted and one in crops for a year, the older chacra's soil was higher in pH (4.6 compared to 3.7), lower in organic matter (6.6% compared to 6.9%) and potassium (240 compared to 300 kg./hect.), and was the same in phosphorus (17.2 kg./hect.).

In general, while nutrient levels did decline somewhat, with probable corresponding declines in crop yields, there is no evidence that

this was the main reason fields were abandoned after only 1 to 2 1/2 years. Nor did excessive weeds seem to be critical, as they often are for lowland, Riverine chacras.

Other food sources

Hunting. While the Campa obtain the greater part of their food from agriculture (about 90 percent by weight), they are commonly thought of as hunters, and in terms of economic activity time well over 50 percent is spent on hunting. No meal is considered complete without meat, and when a family is out of meat the men and boys go hunting for at least the early part of the day during periods of chacra work and for full days at other times. Most hunting trips are no more than a half day in distance away from the houses, so that the hunters can return at night; however, two to three day trips are not uncommon. Game is not plentiful in the Gran Pajonal, and a day results are often pitiful – a few small birds, a bag of snails and grubs, or nothing at all. The Campa will go to great efforts with little return, partly because they enjoy hunting, but probably also because of a need for protein which is deficient in the plant food diet with its strong emphasis on starchy tubers.

While many Campa men have shotguns, shells are less available, and most hunting is done with bow and arrow, with which the Campa are quite proficient. A wide variety of arrows are used (Craig, 1967: 233) for different purposes, with shafts of chonta or cane and points of chonta or bone. Blow guns and poisons are not used. Blinds are set up, but I observed no traps.

The main game animals are deer, peccary (huangana and sajino), paca, armadillo, majas, agouti, coati, squirrels, monkeys (capuchin, choro, howler, mono blanco), lemur, añuje⁵. Rabbits and sloths are present but aren't eaten. Tapir is rare. A large variety of birds are hunted for food and for feathers, including partridges, guans, doves, macaws, parrots, toucans, paucars, woodpeckers, paujil, trompetero, trogon, and swallows.

Most of the large game is seriously depleted in the central Gran Pajonal, even though the Campa population itself has been greatly reduced in recent years. The best hunting areas are near the larger rivers below the Pajonal, but these are several days away and are hunted by other people. Thus the main reliance is on small game, particularly rodents, birds, and reptiles, plus snails, larvae, ants, beetles, and other insects. Children especially spend a lot of time scavaging for insects, and this may reflect their need for even greater protein than adults. A few Campa have a chicken or two, and an occasional muscovy duck is seen.

5. For scientific identifications of economic animals, birds, and fish, see Weiss (1969: 605-620).

Fishing. Most streams in the Gran Pajonal are quite small and fish are of corresponding size and number. Even the larger Unini and Nevati rivers are relatively unproductive compared to the lowland rivers. Consequently the Pajonal Campa is sometime fishermen at best. They do cultivate barbasco, and the local streams are blocked with weirs and poisoned once or twice a year, but the catches are meager. During the dry season, however, many Campa families make a fishing trip to one of the larger rivers, such as the Ucayali, for a stay of several weeks, often living with relatives. Most Pajonal fishing is with barbasco or with bow and arrow. The Campa, including those living along the large rivers, lack many of the elaborate fishing devices (hooks, nets, traps, spears) of the true riverine tribes such as the Shipibo-Conibo on the central Ucayali.

The most common fish caught in the Gran Pajonal, all quite small, include corvina, anchoveta, boca chico, mujalita, carachama, bagre, saba--lo, pez perro, and several catfish.

Gathering. Although the collecting of snails, insects, frogs, crabs, and the like is quite important, and is considered part of hunting here, the gathering of wild food plants (fruits, nuts, tubers) is minimal. Most vegetable foods gathered are actually feral domesticated plants that have grown up near the houses and trails or on old chacra sites, including papaya, pacay, guayaba, pejibaye, and caimito. A large variety of wild plants are gathered for medicinal purposes, drugs such as the ayahuaca vine (*Banisteriopsis* sp.), construction, tools, fibers, and magic.

Diet

The end product of shifting cultivation and other subsistence activities is, of course, the actual food that is eaten. Diet is culturally determined, within the confines of available foods, and day to day meals reflect cultural and personal preferences, seasonal variability, and the general success of the food quest. The subsistence pattern in tum has a major influence on population density, village size and stability, and social organization.

Many Campa meals were observed at different times and places, and the types and relative quantities of food were recorded. For one Campa family of four living about 5 miles south of Obenteni, everything eaten for one to three days for each person was weighed on a 5 pound balance scale. This was clearly not an adequate sample. Ideally, diet should be measured for each member of several families for a period of several days each month over a full year in order to get seasonal variations. The meals recorded were not average ones in that they contained a higher amount of meat (from a recently killed deer) than did many other meals I observed in the Gran Pajonal. I found that I could record food intakes for only one person at a time and had to stay with him all 24 hours of a day due to frequent eating between

the main meals. The Campa often eat at night when they wake up to tend their fires, and I had them wake me too. The family never really understood why I wanted to weigh everything they ate, but they were reasonably agreeable if not always cooperative about it. The weighing process did not seem to effect what was eaten or how much. Food was weighed in the ready to eat state, and the weights of tubers were extrapolated back to fresh weight which is the condition used in most dietary tables. The INCAP tables for Latin America (Leung, 1961) and the Collazos (1957) tables for Peru were used to determine protein, fat, and caloric content. While crop varieties do vary slightly in nutrient content percentage, this is small enough to allow use of standard tables for most purposes. The main objectives were to learn what portions of the diet came from the different subsistence activities and what were the quantities and sources of protein and calories.

Figure 2.

Average Daily Food Components for One Adult Campa Male (Height 5 ft. 2 in.; weight about 115 lbs.). Based on a three day sample in the dry season (July 1968).

| Food | Weight in gms. | % of Total Weight | Protein in gms. | Fats in gms. | Calories in gms. |
|---------------------|----------------|-------------------|-----------------|--------------|------------------|
| Yuca* | 1049 | 71.8% | 10.2 | 2.6 | 2067 |
| Sweet Potato* | 62 | 4.2% | 1.4 | 0.1 | 84 |
| Maize (Roasted) | 14 | 1.0% | 1.0 | 0.4 | 52 |
| Palm Heart (Fresh) | 28 | 1.9% | 0.9 | 0.2 | 16 |
| Venison (Roasted) | 307 | 21.0% | 90.6 | 6.8 | 450 |
| <u>Totals</u> | 1460 | 99.9% | 104.1 | 10.1 | 2669 |
| Masato (Beverage)** | 3591 | | | | |

* Tile weights given for yuca and sweet potatoes are actual eating (roasted) weights; these were converted to fresh weights, 1276 gms. and 74 gms. respectively, for nutrient calculations.

** Protein, fat, and calorie content of masato (yuca beer) are not given, since the water/yuca ratio was not determined. The masato consumed, however, was very thin and little fermented and was used for refreshment on hot working days, in contrast to the heavier, alcoholic beverage. Hence, the nutritional components would be low despite the large quantity drunk.

The data above shows more than an adequate diet in terms of both protein and calories for the three day period sampled. However, on the fourth day, the venison having been exhausted, the same man had only 57 grams of meat (portion of a dove), which only provided about 10 grams of protein. The fifth day there was no meat at all. Observations of many Campa meals indicated that the fourth day was the more typical. There are some days with much meat and others with no meat, but on the typical day a family will have a few birds and small animals which provide per person about 100 grams of meat containing from 20 to 30 grams of protein. If the vegetable protein averages between 15 and 20 grams daily, the total daily protein would range from 35 to 50 grams on the majority of days. This is on the minimum side of body needs but is usually adequate. Data gathered for other family members was inconclusive, but children and mothers seemed to have a more varied diet and obtained more protein than the adult male. Children clearly consume more insects, frogs, etc. than adults. In general the Campa go to great efforts to obtain seemingly small amounts of meat. Furthermore, all portions are eaten including intestines, bone marrow, and the flesh on skins. This would seem to confirm the indications that the Gran Pajonal Campa have inadequate vegetable protein and are at the lower level of sufficient total protein intake during much of the year.

Conclusions

The information presented here on the subsistence system of the Pajonal Campa can be related to a number of generalizations and hypotheses concerning tropical forest ecology in South America.

1. Most descriptions of shifting cultivation give an impression of cultural consistency in the seasonal pattern of activities, crops grown and methods. This is not true for the Pajonal Campa, and equally great diversity exists for the Riverine Campa. The frequent failure to burn and plant at the optimum time or even to clear a new chacra, resulting in uncertain production, reflects the instability of Campa settlements, the dietary and cultural importance of hunting, the availability of food relatives, and probably other factors. I have noticed that even a single family will vary its methods considerably from year to year to accommodate differences in site ecology or social factors. Actually, there seems to be comparable variability or lack of regularity in many shifting cultivation systems (Brookfield, 1968: 421).

2. Semi-nomadic tribes with a strong emphasis on hunting, such as the Campa, are often thought of as being incipient or primitive agriculturalists. However, an examination of the large number of crops cultivated, the many varieties of each, plus the utilization of a wide range of micro-ecological conditions, suggest considerable agricultural sophistication,

much more than that of the average non-indigenous settler in tropical Peru. The strong emphasis on yuca is misleading. It is a simple, labor saving way to provide calories, while a man's greater physical efforts and ingenuity are directed elsewhere (hunting) for the more basic food element of protein. About 90 percent of the Campa's total food by weight does come from agriculture. Although a labor time study was not made, agricultural productivity does seem to be very high in terms of time expended, whereas hunting productivity is very low for time expended.

3. For the Campa, soil does not seem to be the prime determinant of field location, as it generally is elsewhere. More important is the local availability of game and the location of the fields adjacent to huts positioned on upper slopes and ridge crests. Within a field, however, crops are located with respect to variations in soil fertility, soil moisture, and slope exposure.

4. It has been postulated that the greater population densities and more developed cultures have been located along the large Amazonian rivers, in contrast to the nearly empty interfluves, because of the availability of large amounts of protein from aquatic resources which supplement the protein-poor root crops dominating the vegetable diet of Amazonian people (Lathrap, 1968; Denevan, 1966). Away from the rivers, game is the main source of protein, but it doesn't exist in large enough quantities to support large social units or in permanent enough quantities to support long enduring settlements. Hence the common aboriginal pattern of the rivers is semi-nomadism, small social groups, and a limited material culture.

One of my purposes in studying the Gran Pajonal Campa was to test the above argument, and the Campa clearly fit the non-riverine pattern. Their total protein intake is low, and they seem to go to great efforts in hunting, with low returns, to stay above the minimum. The result is settlement instability and a low population density. This is not to say that there aren't other important factors involved, and careful sociological study is needed to define these factors, their causes, and their relative importance compared to the dietary argument.

Certainly diets can change, and a greater use of protein-rich maize and beans, as in Meso America, would reduce the need for animal protein⁶. -The emphasis on protein-poor root crops in Amazonia seems to be culturally determined and is sensible, in view of the great productivity and ease of ground storage of root crops, as long as population is concentrated along the large rivers, where fish and game are also concentrated. It is interesting to note that the missionaries have been able

6. However, the Amahuaca (Cameiro, 1964), one of the few tribes in the Amazon Basin for whom maize is the staple rather than yuca, are still semi-nomadic hunters despite the relatively high protein content of their vegetable diet.

to establish much larger and more permanent Campa villages along the lowland rivers, including Campa recently arrived from the Gran Pajonal. On the other hand, the Seventh Day Adventists prohibit meat eating, or at least restrict the varieties of game fish the Campa in their missions can eat. As result, there have been severe nutritional problems in some missions, as on the Perené (Paz-Soldán and Kuczynski-Godard 1939: 12); elsewhere, the Campa have ignored the restrictions. More recently, the Adventists have been making major efforts to shift the Campa diet away from the traditional yuca and towards more maize, beans, peanuts, and other crops with a relatively high protein content and also to domesticated animals.

5. Betty Meggers (1957) has presented the controversial thesis that the development of culture in the Amazon Basin was held back due to limitations on agriculture, and thereby population density, imposed by poor tropical soils. Carneiro (1956) and others, however, have shown that quite substantial settlements and population densities apparently can be supported by shifting cultivation. On the other hand, if shifting cultivation doesn't supply sufficient protein, there may be a limiting factor imposed instead by the availability of unevenly distributed animal protein. Such a limitation, apparently applicable to the Campa, must be viewed as culturally determined insofar as the dietary pattern responsible for it is culturally determined.

6. Robert Carneiro (n. d.) in a provocative paper on subsistence in the Amazon Basin has pursued the protein argument further by developing a "Subsistence Quotient" based on the percentages of food obtained from different subsistence activities:

$$\frac{A + F}{H + G} \text{ "A" is the percentage of}$$

subsistence derived from agriculture, and F is the percentage derived from fishing, while H is the percentage derived from hunting, and G the percentage derived from gathering. The higher the numerical value of the quotient, the greater the reliance on those subsistence activities favoring sedentary settlement". Using estimates from his own field research, Carneiro obtained a low Subsistence Quotient of 1.2 for the seminomadic Amahuaca, and a relatively high Subsistence Quotient of 19 for the nearly sedentary Kuikuru.

However, applying Carneiro's index to the Pajonal Campa raises some questions. The Campa obtain at least 90 percent of their food, by weight eaten, from agriculture, and, at most, 6 percent from hunting, 3 percent from gathering, and 1 percent from fishing⁷. This gives a Sub-

7. The hunting figure of 6 percent is based on an estimated average of 100 grams a day per person from meat out of the total of 1700 grams of food obtained in Figure 2. Actually, the total food weight probably averages closer to 2000 grams, which would give less than 6 percent for meat. Murdock (1967: 122), in contrast, lists a hunting percentage of from 26 to 35 percent for the Campa. (Murdock's percentages are apparently based on calories rather than actual weight).

sistence Quotient of $\frac{A(90) + F(01)}{H(06) + G(03)}$ which equals 10.1. This figure

is considerably higher than that for the Amahuaca. The Campa, moving about once every two years, seem to be just about as nomadic as the Amahuaca, who move every 1.5 years, but the Campa do move shorter distances (about 5 miles compared to 15). The problem with determining the Subsistence Quotient is that we have only rough estimates of food source percentages to work with. The evidence for the Campa, while not precise, does indicate that a tribe consistently thought of as hunting oriented, actually may obtain no more than 5 to 10 percent of its total food from hunting. The hunting estimates for other semi-nomadic Amazonian tribes such as 40 percent for the Amahuaca and those listed by Murdock (1967: 118-122) of from 16 to 55 percent are undoubtedly also disproportionately large⁸.

Possibly a more satisfactory Subsistence Quotient showing a closer relationship to sedentariness would be simply:

$$\frac{F(\% \text{ of animal protein from fishing})}{H(\% \text{ of animal protein from hunting})}$$

It would be applicable, of course, only to cultures whose vegetable diet was severely deficient, in protein.

The purpose of this paper has been to describe the subsistence system of the Pajonal Campa and relate it to some of the traditional and recent thinking about tropical forest agriculture, diet, demography, and culture. Conclusions are tentative but suggest some new perspectives. What is especially needed before proceeding further in developing theory on the cultural ecology of tropical forest people is accurate quantitative data for diverse tribes on labor inputs (both time and energy), locational factors (distance and site), production factors for individual items, carrying capacity, and actual dietary intakes and their nutritional breakdown.

8. There have been only a few careful measurements of both meat and crop consumption for tropical tribes in Latin America. For the Miskito of Nicaragua, who obtain relatively large quantities of meat from both the sea and from hunting, only 10 percent of the daily diet comes from meat and fish (150 grams) (Nietschmann, 1970). For the Bayano Cuna of Panama the daily average of meat was 57 grams and fish 51 grams for only 5.3 percent of the total diet (Bennett, 1962: 46). Hence, a total of 7 percent meat and fish for the Pajonal Campa is not unreasonably low.

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SOME ASPECTS OF ECONOMIC CHANGE AMONG THE CAMPA

Judy HOLSHOUSER

The information presented in this paper is the result of research conducted during the months of June through September in 1968 and 1969 in the Alto-Pachitea region of the central montaña of Peru. The populations studied are located on the Neguachi, Nazaratégui, and Azupizu Rivers (see map). The purpose of this essay is to discuss some aspects of the economic situation of the Campa in the area as specifically related to land use patterns. The conclusions are general and tentative in nature since the research is still under way, eventually the author hopes to compare the data from this zone with studies of the Puerto Bermúdez area and selected settlements in the Perené-Chanchamayo zone.

Several significant factors which distinguish this area from others should be kept in mind during the discussion. First, many of the Campa in this region are members or descendants of a group which migrated from the Perené in the 1940's and still have relatives in that area; also, nearly all of the settlements studied pertain to the Seventh Day Adventist Mission in Nevati. The effect of these factors on the economic life of the Campa will not, however, be dealt with here in detail, since the comparative data from other areas is awaiting the termination of the study.

Although a great deal of variation in land use is noted in this area, an overwhelming majority of the Campa practice a system of crop rotation on each chacra. The general nature of this system is as follows: a new piece of land is cleared, preferably of virgin forest, and manioc is planted as the dominant crop. It is rare, however, that manioc alone is planted; usually other "low" crops will be mixed with the manioc, such as corn, beans, peanuts, pineapple, squash, or other root crops.

As the manioc matures and is harvested (generally from nine to twelve months), the plot is replanted in manioc a second time (this is done by replacing the plants section by section as they are harvested over a period of time) and tree crops are added, such as orange, tangerine, avocado, cacao, or achiote. In many cases, an intermediate planting of medium-height crops, such as bananas, is practiced.

As was mentioned above, a good deal of variation exists in these patterns, but this primarily consists in the scheduling of the different plantings, e. g. the medium-height crop may be omitted or tree crops may be planted with the first or third planting of manioc, etc., but the basic pattern remains the same. Land planted in tree crops is almost never recleared, and the same procedure is repeated on virgin land. As can be seen from this description, there is no real Fallowing, the land is used continually for production. The few cases that were observed of land left to fallow and then reopened were usually due to the fact that a family had moved to another area and a new owner reopened the plot. A few cases were also noted where the owner felt it uneconomical to continue caring for a chacra, such as the case of achiote stands whose produce could no longer be sold.

It is also evident from this pattern that a majority of cultivated land is devoted to tree crops I, and that after even a short period of time using the same rotation system, much more fruit will be produced than can be consumed by a family; indeed this was found to be the case. Since there is no method of preservation of these products, a large proportion literally rots on the ground. The question raised by these observations is why do the Campa in this area continue such an apparently inefficient pattern which requires expenditure of energy to produce more than can be consumed? Several hypothetical examples were posed for the informants in an effort to answer this question. Two most obvious alternatives met the following responses:

1. An example where a plot should be used continually for staples, such as manioc.

The overwhelming response to this example was that a plot could not produce good manioc for more than a few years. The reason for this is that weed incursion becomes a serious problem on "old" plots, and control requires too much work.

1. Although it is difficult to estimate the amount of land devoted to each crop due to a great deal of mixing and unevenness of the terrain, from information received in interviews and observation of plots, it is estimated that approximately 45% of land under cultivation is devoted to tree crops and 30% to manioc-dominated plots. But it should be noted that while manioc is not found on tree chacras, young trees are often found on manioc plots. The remaining 25% is devoted to other crops such as corn, beans, or bananas, or is too highly mixed to be classified by dominant crop.

2. The case where two or more plots would be rotated, one being left to fallow while the other is producing, then reclearing of, the former after a suitable period.

The main objection raised to this was also the problem of weed incursion, although most informants claimed this example was somewhat more feasible than (1). Still, informants indicated they would much rather travel a distance from their house to open virgin land than reopen a secondary forest nearby, since weeds become a problem more rapidly on re-opened land. Many had used a plot twice, allowing for a fallow period of two or three years, but none had re-opened a third time.

The question as to why tree crops are planted at all, rather than just leaving the land abandoned and moving to new plots for manioc leads us to the question of markets in the area. Since more fruit is produced than can be consumed, and some (even though relatively little) expenditure of energy is required to maintain these plots², the persistence of this pattern must be due to the hopes of marketing the surplus. The few cattle ranches, the mission, and the small town of Puerto Bermúdez comprise the only market in the area, and it was commonly stated by informants that only those who arrived first with their produce would be able to sell. Thus, on the surface, at the time of the study it seemed that there was very little reason for the continued caring and planting of fruit crops. However, an examination of the recent economic history of the area provided a partial explanation. In the past ten years, the area has experienced a series of economic "booms". The rubber concessions provided a significant source of cash income for the Campa at one point, but this terminated with the devaluation of the sol. Somewhat later wood and achiote brought good prices; to date, achiote chacras comprise a significant portion of land under cultivation, although very few Campa still plant it, and many are reclearing or abandoning former plots. Both these means of income dropped sharply in 1967-68. This kind of sporadic boom economy has provided the local inhabitants with a kind of random reinforcement for market production, and most certainly a taste for cash income.

Another important factor in encouraging market production in spite of low returns is the plan for construction of a road from Chanchamayo to Puerto Bermúdez. The road is, in fact, partially completed; unfortunately it has been partially completed for quite some time and there is no indication of when it might be finished. Nearly without exception, the Campa interviewed expressed the urgent need for this means of

2. Tree crops require the least amount of care among the various types of crops. Most informants claimed, once mature, tree chacras need weeding only once or twice a year, since the shadow from the canopy prevents most low growth.

communication with the outside and see it as a panacea for the present economic problems.

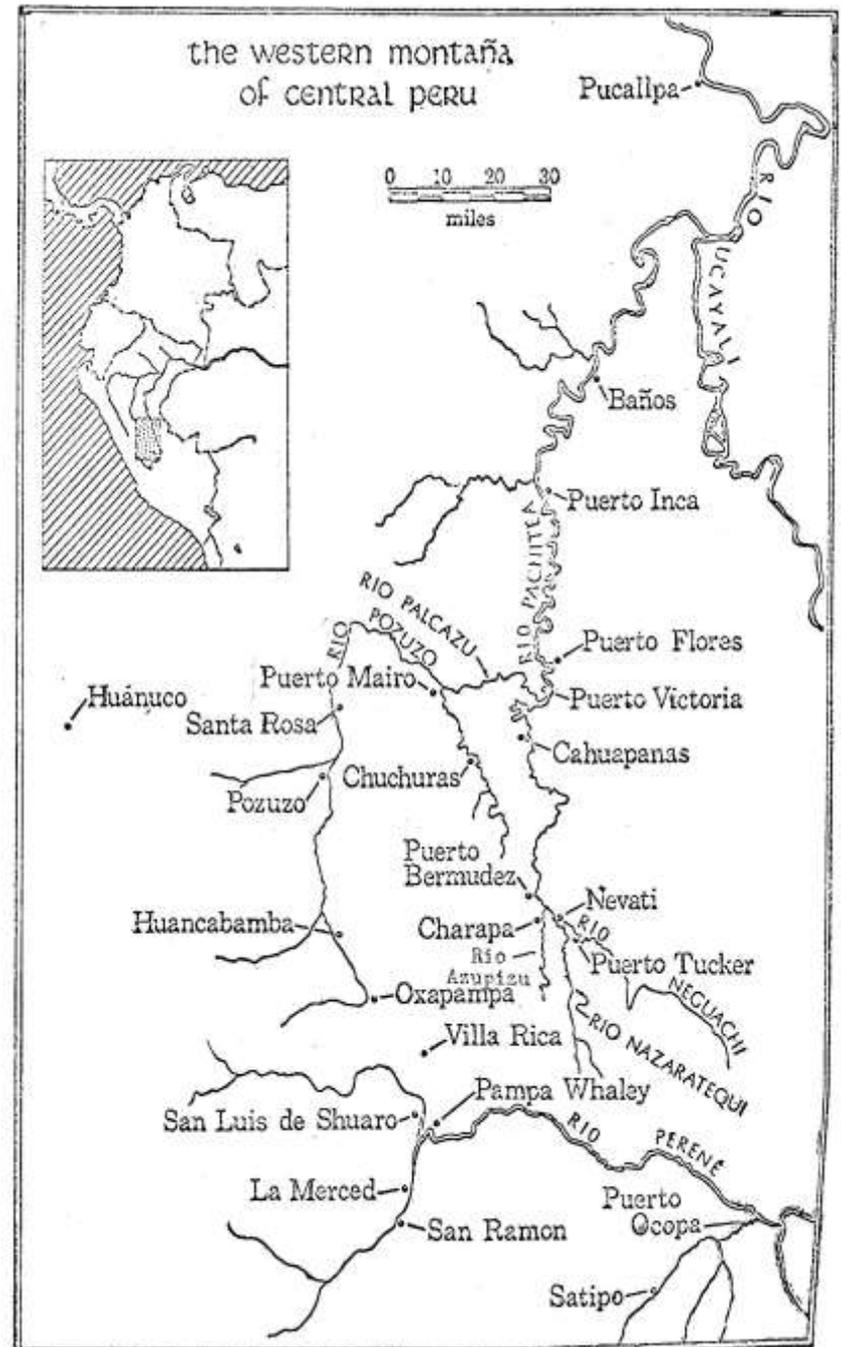
At this point in the presentation, it is important to note once again the contact the people in this area have with Chanchamayo. A majority of males have spent some time on the Perené River, working on plantations, and many go there each year for this purpose. Since the market in Bermúdez is so small, the largest source of cash income is the temporary labor in this zone. Except for intermittent periods of outside inversion in agricultural lands in the local area, nearly all employment is outside of the zone. Most men spend a month or two at such jobs, but some stay as long as a year at a time. Since the women do most of the cultivation, once the chacras are cleared and planted, the men are free to travel and look for work. Thus, the felt need for money means a good deal of time in which families are separated. Most men expressed a strong preference for working within the zone, but recognized travelling to the Perené as the only form of earning necessary cash with which to buy clothing, household utensils, and pay for schooling for their children. A discussion of outside labor invariably provoked an expression of the desire for the road to be completed.

Due to the extensive contact the Campa in this area have with the market economy of Chanchamayo, they are very aware of what they do not have. When questioned about what they would like to be able to buy and that kind of community they would like to live in, it was obvious that the ideal is a replica of the Perené living patterns³. A significant number, in fact, have migrated (or returned) to the Perené-Chanchamayo zone permanently.

Thus, we can conclude that the seemingly inefficient (i. e. in terms of results obtained for energy expended) land use pattern predominant in the Alto-Pachitea can be at least partially explained by the influences of outside contact with an area of substantial market movement, the sporadic boom economy of the zone which has given the inhabitants a taste of economic prosperity from time to time, and the promises of communication with the outside markets by means of a road.

We might say that, due to these influences, the Campa in this zone have a certain degree of economic sophistication in market conditions. However, it is well to point out here some of the areas in which many informants demonstrated a notable lack of awareness. The most important of these (especially in terms of the inevitable future development of the zone) is the lack of concern for formalizing ownership of land. On the one hand this is surprising, since many have had contact

3. Items mentioned most often as desired are clothing, tools, aluminum roofing, medicine, and inexpensive means of transportation. Also often mentioned was the desire to open a business, such as a store or canteen.



with, or themselves experienced, situations in which outsiders have expropriated Campa land. A situation of this sort was, in fact, one of the motivating factors for the immigration of the original group from the Perené. This is happening to some extent in the Alto-Pachitea now, although the problem is not yet serious. There are also, however, many factors which help explain this lack of concern. One obvious reason is that the population density is quite low and it is hard for anyone to imagine a shortage of land; and since Campa are quite mobile, moving to another plot is not considered a serious inconvenience. Another factor which might possibly add to this lack of concern is the fact that a large portion of the more heavily populated area is a reservation for the Campa; and people do not envision that this might be insufficient in the future.

Another aspect of a lack of economic sophistication might be noted in the susceptibility of the Campa to enterprises which are productive only on a large scale and require techniques or equipment they lack. One example of this is cattle raising. A large number of informants expressed plans to open pasture land and many had already done so; the models for this are the several ranches in the area. However, on a small scale, caring for cattle in a tropical zone is a highly costly and uneconomical venture; many who had some cattle previously had lost or sold them. Only individuals with some other sources of income, above the average, can afford this luxury, but nonetheless, the "cattle craze" continues.

Another example of economically unsuccessful enterprises on a small scale is rice cultivation. The recent interest in rice, however, is due to encouragement by the local Banco de Fomento Agropecuario, which offered seed and loans to encourage production. Many took advantage of these offers, but production was extremely low, since cultivation requires more labor than a family could provide⁴. The lack of economic sophistication perhaps is not so much expressed by the fact that individuals tried these enterprises; this is understandable in light of the models that exist in the zone. It is expressed, rather, in the fact that the Campa continue the attempts after they have proved fruitless⁵. This same behavior was noted in the persistence of labor on boom products long after the market had disappeared.

One more item might be noted here. There was no consistent response among informants as to how much land was deemed desirable

4. The Campa do not practice co-operative labor, each family working its own plots. The greatest labor requirement on rice chacras is guarding against birds when the crop is mature, and it is very difficult for a single family to do this, especially since the plots are often located a distance from the house.
5. When asked how they would use land for market production, 30% replied that they would plant more of what they had, i. e. mixed crops, and 70% responded with pasture land, rice, or fruit.

to cultivate if a market were open (this question was phrased as "how much land would you cultivate if the road were open"). Responses ranged from 2 to 1000 hectares, around 50% desiring between 2 to 10 hectares and roughly 50% from 12 to 50. This may be due to a lack of experience in actually planning for a real market situation, but it might also possibly be due to an inability to calculate in terms of hectares, or different interpretations of the question. The resolution of this problem will have to await further research.

The large difference in levels of economic sophistication among informants is evidence of a change in the zone, and an increasing concern with cash enterprises⁶. As might be expected, it seems to be the case that settlements further down the rivers and closer to Puerto Bermúdez are more concerned with their economic future and more attuned to the problems involved in a market economy, but this is by no means true in every instance. The reasons for the large variation between individuals and between settlements is still under investigation and should provide more insights into the generalizations discussed above.

To summarize, the Campa in the study area employ a system of crop rotation which results in a large portion of the land being devoted to fruits, the majority of which can neither be consumed nor marketed. The expenditure of energy required for the maintenance of these economically unproductive plots is felt justified by the owners by the fact that occasionally some might be sold in the local area, but, more important, the road might be completed in the near future and these crops will be immediately available for export. A great deal of variation exists in economic sophistication between settlements and among individuals, but in general it can be stated that the Campa in this area show a marked concern with entering a market economy to a greater extent and obtaining a standard of living like that which exists in the Perené-Chanchamayo zone. This interest and degree of awareness is due primarily to contact with outside regions in the form of periodic employment in these areas, to contact within the zone with outsiders such as the missionaries and ranchers, and to the sporadic boom nature of the local economy. However, the intermittent nature of this contact and the economic history of the zone has also had its effects in an economically negative sense; while the Campa are rapid to engage in new enterprises which might bring cash profits, they are slow to abandon such efforts once they have proved a failure. And although some are beginning to realize the necessity of protecting their ownership of the land with titles, for the majority this is not yet considered. It remains to be

6. A number of individuals have solicited title to their land, and one group has even solicited land for a community co-operative cattle enterprise; but there are also a significant number of individuals in the same community who demonstrated a complete lack of awareness of the purpose or goals of the project.

seen whether or not the knowledge gained through contact with outside areas will result in a favorable economic position for the Campa once the area is opened up and outsiders move in to exploit the agricultural possibilities of the area, or whether these Campa, like so many others in other areas, will simply pick up and move to a more isolated region.

The above discussion is designed to give the reader at least a general idea of some of the factors involved in the economic situation in which the Campa of the Alto-Pachitea participate. If this essay has raised more questions for investigation than it has answered, the author is not discouraged. The information on which it is based is only part of a study which is yet to be completed. Hopefully, future research from the same region and comparative data from other areas will answer these and other questions on the dynamics of economic change and land use patterns among the Campa.

CAMPA COSMOLOGY ¹

Gerald WEISS

Preliminary remarks

The Campas of Eastern Peru, who number perhaps 30,000 (Fast, 1962), occupy a large territory that includes the watersheds of the Ene, Perené and Tambo rivers, plus the Gran Pajonal. These four geographic terms—Ene, Perené, Tambo, and Gran Pajonal—correspond to four cultural regions differing to a certain degree in dialect and other cultural details, the Gran Pajonal region being the most divergent from the others. Between the Campas of the Ene, Perené and Tambo rivers and the Campas of the Gran Pajonal there is long-standing enmity, little contact, and very little intermarriage. This situation suggests that there is not one but two Campa tribes, which may be called the River Campas and the Pajonal Campas respectively, with two correspondingly different cultural systems. The information here presented was drawn from the River Campa cultural system and so describes, to be precise, River Campa cosmology, though undoubtedly the Pajonal Campas hold many similar or identical beliefs.

A further qualification should be made explicit. No single Campa has in mind all the ideas and details that will here be set forth as River Campa cosmology. Each idea, each detail has its own distribution, its own frequency of occurrence within the River Campa population. Some, surely, are universal in that population, others nearly so, but many are more limited in their occurrence. Nevertheless, there are certain general understandings shared by all members of the tribe in terms of which their more specific cosmographic and cosmogonic ideas make sen-

1. The author's field work among the Campas was conducted between 1960 and 1964. The present paper is a summary of a much more extensive report on the subject (Weiss, 1969).

se. The result, it seems, is that these ideas are by and large compatible with each other even when they are not held by the same individuals. When the cosmological ideas elicited from different informants are pieced together, the result is not a collection of heterogeneous elements but rather a single completed picture of which each individual Campa has come to possess some fragment, however large or small. In addition to these distributional differences there are variational differences—different versions of the same myth, for example— but again the differences in each case are not as important as what is common to the several versions, and the place of that commonality in the architecture of the Campa cosmological scheme.

The Campa universe: terrestrial geography

The Campas identify themselves as *asháninka*, "our fellows"². They understand themselves to occupy a definite region on a flat Earth extending out in all directions to unknown limits. They recognize that they are surrounded by neighboring tribes and peoples, each occupying its own territory: the Amuesha (*amáisha*), the Cashibo (*kashívo*), the Conibo (*konívo*), the Shapibo (*shipívo*), the Piro (*shimiríntsi*), the Machiguenga (*machikénka*), and the Highland Indians (*chóri*). Finally, there are the invading Caucasians (*virakócha*), believed to have been fished up initially out of a lake in Campa territory, a lake within which they originally resided, but whose present homeland is far downriver in the vicinity of the river's end. The land beyond the circle of neighboring tribes is largely *terra incognita*, until the limits of the conceptualized or "known" world are reached. About those limits the Campas have something definite to say: good spirits reside there. Further, it is there that two important geographical features are located: River's Beginning and River's End. The main river that courses through River Campa territory—the Apurímac-Ene-Tambo-Ucayali—has its source at River's Beginning (*Intatóni*) at the southernmost point on the rim of the known world, and its termination at River's End (*Otsitiríko*) at the easternmost point, where the main river falls through a hole into the underworld, to proceed no one knows where. Many Campas believe that a gigantic crab (*antári oshéro*) lives in this hole, and that its movements regulate the river's level. Both at *Intatóni* and at *Otsitiríko* there are important settlements of good spirits. Another important spirit center on the rim of the known world is *Irimáka*, located in the west, and quite possibly derived from reports of the existence of Lima (if not the old spiritual center of Rimac). Some Campas extend the radius of the known world

2. The River and Pajonal Campas are more likely to call each other by the less friendly term of *ayómpari*, "our trading associates". The Pajonal Campas are referred to as the *keshisáti*, "grassland dwellers", by the River Campas.

a little farther, speaking of settlements of good spirits just beyond those mentioned, such as *Otiriáni*, the place of the thunder spirits, situated just beyond *Otsitiríko*. What lies beyond these frontiers of the conceptualized world—whether there is land or anything—is completely unknown. The Earth; as thus described, is commonly and quite simply referred to as *kipátsi*, "land", those Campas who give it a specific name refer to it as *Kamavéni*, "the Land of Death", because it is on the Earth that all mortal creatures, including man, dwell.

The Campa universe viewed vertically

The Campas view *Kamavéni*—the Earth which they inhabit—as one of a series of strata arranged one above the other to form the complete universe. Each stratum is inhabited by its own class of beings, for whom it is as solid underfoot as the Earth is to us. The sky, *Inkíte*—also referred to by the term *henóki*, "up"—consists of an indeterminate number of such strata, all inhabited by good spirits. Through the sky flows an invisible river called *Hananerite* (perhaps derived from the Milky Way, but not at present identified with it). Between the sky and the Earth lies the intermediate stratum of the clouds (*Menkóri*), also inhabited by good spirits. Below the Earth, some Campas recognize the existence of a stratum called *Kivínti*—again a residence of good spirits. The bottom-most stratum of the universe is *Sharinkavéni*, the stronghold of demons.

The good spirits and gods

For the Campas, the universe is inhabited not only by the living forms that they can observe, but also by hosts of beings normally invisible to human eyes. These are the spirits—immortal, powerful, capable of rapid flight and of instantaneous transformation. Through such transformation a spirit takes on one another visible form or reverts to its true form—human (or humanoid) but invisible. Two main hosts of spirits are recognized: good spirits and evil spirits.

The good spirits are frequently called *asháninka*, "our fellows", which reflects the close friendship and even kinship ties that the Campas feel to exist between themselves and the good spirits, for many of the good spirits were once Campas here on Earth. A more specific term applied to the good spirits is *amatsénka*, a term that might be translated as "our spirit fellows". Finally, the good spirits are also known as the *manínkari*, the "Hidden Ones".

The good spirits have, as their places of residence, settlements located (1) on the mountain ridges in Campa territory (these are the *otishisáti* or "mountain ridge dwellers"), (2) along the rim of the known

world (these include the *intatonisáti*, the *otsitirikosáti* and the *irimakasáti*), and (3) on other strata in the universe: the celestial strata, the stratum of the clouds, and the first subterranean stratum (these are the *henokisáti*, the *menkorisáti* and the *kivintisáti*, respectively). There the good spirits live in their true, human form much the way the Campas live, except that they have all good things and know nothing of sickness, misery or death. They periodically rejuvenate themselves by bathing in *Hananeríte*, the celestial River of Eternal Youth.

Some of the *henokisáti* or "sky dwellers" are visible as stars (*impó-keró*) in the night sky. The Pleiades are *Mashíkinti* with his family. As a Campa here on Earth, *Mashíkinti* was the first to use ayahuasca and instruct the Campas in its use. *Mashíkinti* and his family reached a state of perfection by taking ayahuasca with suitable continence over a period of time, and flew to the sky and immortality on a raft. The belt and scabbard of Orion is *Porínkari*. In one version, *Porínkari* was *Mashíkinti's* brother-in-law, whom *Mashíkinti* so loved that he let down a rope from the sky for *Porínkari* and his family to clamber up. In another version, *Porínkari* was a Campa pursued by a warrior wasp (still in human form at that time); *Porínkari* escaped by climbing a rope connecting Earth and sky and then cutting it, but not before receiving an arrow in his leg. Another *henokisáti* is *Kirákiri*, the red star Antares in Scorpio, a nearby dark streak in the Milky way is *itsakaménto Kirákiri*, "*Kirákiri's* diggins stick". *Kirákiri* taught the Campas how to cultivate their gardens; when *Kirákiri* is overhead at nightfall, it is time to plant maize (*shínki*). Other features of the night sky are recognized: the Campas have names for the planets, for example, and identify the Larger Magellanic Cloud as a sloth (*soróni*) and the Coal Sack in the Southern Cross as a bee's nest (*áeri*). But the Campas do not presume that all the stars are *henokisáti*, or even to know what they are.

As with mortals, there are both male and female spirits, and they have offspring. The good spirits, however, are equipped with diminutive genitalia, lack the passion of lust, and reproduce by means other than sexual union. Furthermore, the good spirits are spared the burden of infant and child care: their offspring are born *standing*, and reach adulthood in a single lunation or so.

In their true form, the good spirits are human in shape but invisible to the normal human eye. Only shamans have the ability, as a result of their special powers, to see spirits in their true form, both when good spirits come to visit and when the shaman himself (or rather, his soul) goes to visit the good spirits at their places of residence. The good spirits, however, do take on visible forms when they visit or pass through Campa territory. Lightning flashes mark the passage through the air of good spirits or of the souls of shamans traveling to or from distant places. Good spirits can also assume the guise of certain species

of birds and animals. The sacred birds of the Campas—those which are good spirits in visible form—include *ashívanti* (the scissor-tailed falcon, *Elanoides forficatus*), *tsonkíri* (hummingbirds, Fam. Trochilidae), *neoránke* (a particularly small species of hummingbird), *kamévira* (a particularly large species of hummingbird), *tsiróti* (the paucarillo, *Cacicus cela*), *mankóri* (the paucal, *Cacicus uropygialis*), *píchoti* (the "siete colores", *Calospiza chilensis*), *pitóroro* (*Eubucco* sp.), *yoríni* (the cock-of-the-rock, *Rupicola peruviana*), *áávo* (the grey heron, *Ardea cocoi*), *katári* (the black cormorant, *Phalacrocorax brasiliianus*), and *shankénti* (the timelo, *Parra jasana*?). These are the most commonly recognized sacred birds, there are others whose recognition is less common. The highest-ranking sacred bird is *ashívanti*. In each case, the visible bird is understood to be the "clothing" of the good spirit appearing in that form. Significantly, the Campas have chosen as the material manifestations of their good spirits living forms possessing a power denied the Campas—he power of flight—and of these the Campas have selected those most beautiful in plumage or most stately in flight to admire and revere. The sacred animals of the Campas are the otters, both the small and the large species (*parári* and *charavapána*, respectively). Generally speaking, these sacred birds and animals are referred to as *itómi Pává*, "sons of the Sun". The Campas also believe that good spirits, when they so will, can materialize in visible human form, as *amatsénka* instructing and leading a group of Campas for a time; an interesting case of this kind is reported by Padre Sala (in Izaguirre, 1923-29: X, 532-33, 546).

Certain game birds are understood to be raised and consequently provided by the good spirits who reside on the mountain ridges. The Campas call these birds *ivíra itómi Pává* or *ivíra otishisáti*, "creatures raised by the children of the Sun, or the mountain ridge dwellers". They include the toucan *chári* (*Ramphastos ambiguus*), the curassow *tsamíri* (*Mitu mitu*), and the pava *kanári*, *sankáti* and *tsióni* (*Pipile cucumanensis*, etc.). The mountain ridge dwellers also raise the game animal *kapéshi* (the coati, *Nasua nasua*) as their form of the dog (*irotsítite otishisáti*). The peccary (*shíntóri*), an important game animal, is *ivíra Pává*.

In addition to the sacred beings mentioned, there is a small number of creatures with ambivalent status: they are good spirits and not demons, yet they do only harm, in one way or another. One of these is the *yaanáite*, described as a kind of arboreal beast living in the mysterious, uninhabited mountain reaches of Campa territory. These *yaanáite* kill and eat any Campa intrepid enough to enter their habitat. Yet the *yaanáite* are not demons: they are identified as *itómi Pává*. The description of the *yaabáite* suggests that, if it is not an entirely imaginary creature, it may be some species of anteater, or the opossum, or some composite of these animals. Two species of birds can also be noted in

this connection: *amémpore* and *etsóni*. From its description, *amémpore* would appear to be the condor. In Campa thought, *Amémpore* –i. e., the "father" of the *amémpore* birds– resides between Earth and sky. The danger is that the soul of a Campa will encounter *Amémpore*, take him to be the "true God", which he is not, and remain with him. *Etsóni* is another species of bird, a swallow perhaps, with black plumage and a white throat. What seems to have caught the imagination of the Campas is the sight of flocks of these birds wheeling in circles in the air. The shamans say that when *etsóni* fly in circles, they are playing pan-pipes and dancing (as if they were human). The souls of just-deceased Campas rising to join the good spirits in the sky will be intercepted by *Etsóni* –i. e., the "father" of the *etsóni* birds– and, if they are not sufficiently good, will be flung back down. Souls thus falling from the sky are seen as meteors. *Amémpore* and *Etsóni*, "fathers" of the *amémpore* and *etsóni* birds, are what we can recognize as "species masters", each a spirit personifying and controlling an entire species.

Sacred plants include the tobacco plant and the hallucinogenic aya-huasca vine (*Banisteriopsis* sp.), used by shamans to perfect their powers. Associated with each species of sacred plant is a specific group of good spirits. A shaman will have one or more spirit "wives" from among their number, with whom relations are purely spiritual: a special word is used by shamans, the word *nomankiáro*, to signify "my spirit wife, my narcotic drink".

At the pinnacle of the hierarchy of good spirits stands a small number of beings, the most powerful in the universe, which we may identify as gods. The Campa term for these beings is *tasórentsi*, the substantive form of the verb "to blow". The Campas believe that these beings have the power to transform one thing into another, that the universe as it is today came into existence partly as a result of many such transformations, and that the typical way for a *tasórentsi* to effect such a transformation is with a simple puff of breath. Another term used by the Campas to refer to their gods is *pinkátsori*, literally "he who is feared"; this is the Campa word for "ruler". The most important of the *tasórentsi* are *Avíreri*, *Pachákama*, *Inkanítari*, *Kashíri*, *Pává*, and *Inka*.

Avíreri is the great mythological transformer of the Campas. According to the mythology, *Avíreri* was originally a Campa among Campas; he lived with his grandson whom he carried on his back wherever he went, and habitually visited his sisters to drink manioc beer and to socialize. In the course of time, as related in a lengthy myth cycle, *Avíreri* transformed many of his nephews into rocks, monkeys, and nests of insects, thereby bringing these things into existence; he created the alternation of day and night, of dry season and wet season; and he attempted to dam the main river at *Kentipánko* on the Upper Tambo,

only to abandon his project (the dam-like mountain of *Kentipánko* is the remains of this earth-work).

A number of natural features along the Tambo River are understood to be human beings, etc., transformed by *Avíreri* into imperishable rock. On the face of a cliff overlooking the little salt spring of *Tívtha* on the right bank of the Upper Tambo is a natural formation of rock, roughly human in outline. This formation was once the "owner" of the spring, a malevolent person whom *Avíreri*, passing by, transformed. A good-sized stone on the left bank of the Tambo below *Tonkáma*, one having an unusual shape, is understood to be the petrified remains of a woman caught in her bath by *Avíreri* and transformed. The huge rock called *Manihiróni* (the Peña de Wertheman), located on the right side of the Tambo just below the mouth of *Onkonéni*, was a launch manned by Caucasians heading upriver to molest the Campas, and transformed to stone by *Avíreri*. Along the river there are rock outcrops cracked into rectangular blocks: these are crates and bales of merchandise left by Caucasians and transformed to stone by *Avíreri*.

Avíreri's life among the Campas ended in this way: His sister and the others became so angry at him for transforming her sons that they plotted to get rid of him. His brother-in-law excavated a hole under the dancing area of the settlement, leaving a thin roof of earth over the hole, then *Avíreri* was invited to visit and induced by his sister to dance. *Avíreri* thereupon fell through into the hole. When he was not given any assistance, he transformed his sister into the tree *shimáshiri* and his brother-in-law (who had wrapped himself in his sleeping mat out of fear) into the armadillo *etíni*. He then used his power to extend the hold to *Otsitiríko*, and emerged there at Ríver's End. He was greeted by *Pachákama* who, not wanting *Avíreri* to return and wreak more havoc, requested his assistance in holding up the Earth. A strangler vine wrapped itself around *Avíreri*, and there he remains to the present day. The hole into which he fell (*imóro Avíreri*) is still to be seen on the pajonal Mapínini, located just above the tributary *Yorináki* on the left side of the Upper Perené River.

Avíreri's grandson, *Kíri*, was left behind. Heartsick for his grandfather, *Kíri* began the long trek down to *Otsitiríko*. He was pursued and overtaken, however, by a number of the others. They tried to kill him for his complicity in *Avíreri's* activities, but were unable to do so. Finally, *Kíri* instructed them to take a wooden stake and drive it into his head, down through his body, and into the ground. When this was done, he was transformed into the *kíri* or pihuayo palm (*Guilielma speciosa*), whose fruit is used today by the Campas to make a wholesome fermented drink. In another version of the same myth, the figures of

Avíreri and *Kíri* are not distinguished, and it was *Avíreri's* fate to become the *kíri* palm.

Pachákama is the god who holds up the Earth at *Otsitiríko*. He seems to have certain tree-like properties. The distinction that the River Campas make between *Avíreri* and *Pachákama* does not appear to be made by the closely-related Machiguengas, who use the two names interchangeably in referring to the equivalent of *Avíreri* in their mythology (see García, 1935-37: XVIII, 11). This suggests either that the Campas have divided one deity into two, or that the Machiguengas have merged two deities into one. In either case, the name of *Pachákama* is surely derived from that of Pachacamac, the deity worshipped on the coast of Peru in pre-Conquest times. While *Avíreri* is widely known among the River Campas, the recognition of *Pachákama* appears to be limited for the most part to the Perené region.

Inkanítari is the god of rain (from *inkáni*, "rain"). He resides at the level of the clouds and is the ruler of the good spirits of that realm. He does not play a part in Campa mythology.

Kashíri is the Moon. He is male (as are all the Campa gods) and father of the Sun. At first, human beings (i. e., the Campas) knew nothing of cultivation, and subsisted on a diet of earth to be exact, the nests of the termite *katsíkori* (from which the Campas themselves had been fashioned originally by some *tasórentsi*). Then *Kashíri* appeared to a young girl in her menarche hut, introduced her and her people to manioc and its cultivation, and took her to wife. She became pregnant and gave birth to the Sun, but was burned to death in doing so. *Kashíri's* stay on earth ended in the following way: He began taking his nephews (the sons of his sister) on hunting trips into the forest, where he slaughtered and ate them. Finally, he was found out, his brother brother-in-law threatened to kill him and he escaped by rising up into the sky, where he now resides. *Kashíri's* cannibalistic tendencies continue: the waxing of the moon is understood to be the filling of *Kashíri's* belly with the souls of the dead that he has succeeded in capturing. *Kashíri*, then, is a god, but he is not a god that, at present, does good, and it will be the fate of many Campas to be consumed by him.

Sometimes the Campas use the term *Tasórentsi*, with what appears to be a capital *T*, to mean not "god" but "God". When they do so, it is usually possible to determine that they are in fact referring to the Sun, commonly called *Katsirinkáiteri*, "he who is hot", but spoken of in a theological context as *Pává*, "our Father". And it is true that the paramount god of the Campas is *Pává*, the Sun. From *Pává* all good things flow—warmth, light, the useful products of the Earth, the good order of the universe. The Campas are forever grateful to him, thank him, and at their festivals dance with panpipes in his honor.

According to Campa mythology, *Pává* was born hereon Earth, a Campa among Campas, but gave off so much heat that he burned his mother to death. The young *Pává* matured rapidly, his body heat also increasing until it became clear that he would incinerate the Earth if he were not raised to the sky. The manner in which this was accomplished varies in different Campa accounts. According to one version, *Pává's* mother's father carried him in tongs to the western end of the Earth, where *Pává* was set in his trajectory. Another states that a number of different flying creatures attempted to carry *Pává* to the sky, until at last one species of bird, *kentíparo*, after wrapping *Pává* in layer after layer of new cushmas³ to protect themselves from the heat, succeeded in the difficult task. Yet another version describes how *Pává* ascended to the sky with many of his terrestrial entourage by means of a cable (vine) connecting Earth with sky, after the very tiny hummingbird *neorónke* carried one end of the cable up to the sky and attached it there. In any event, today *Pává* is a celestial being, rising at *Otsitiríko* in the east and setting at *Irimáka* in the west. How *Pává*—or any of the celestial beings for that matter—returns from west to east, remains a mystery to the Campas; they readily admit that they do not know how this is accomplished.

One other deity should be described. The Campas believe in a technological genius held captive by the Caucasians: it is he who prevades the Caucasians with their superior material culture. This personage is *Inka*, originally an important man among the Campas, who rode out a flood on a raft but was swept down to *virakócha* territory and taken into custody. His attempts to return to Campa territory have failed thus far, because the Caucasians do not want to have the technological imbalance between themselves and the Campas reversed. Time may be on the side of the Campas, however: *Inka* never dies.

Generally speaking, the goodness of the good spirits lies in their *being* good, not in their *doing* good. They are paragons of virtue, of chastity, of beauty, of excellence, and so they are admired and revered by the Campas. They personify the Campa ideal, an ideal toward which some Campas may strive but which most Campas recognize they could never begin to approach. By contrast, the good spirits are not expected to do anything good for humankind: they come and go as they will, they appear and disappear as they will, they are contemptuous of human frailty, and no Campa expects any good spirit to come to his aid no matter how desperate his circumstances.

3. "Cushma" is the local Spanish term for the cotton robes worn by the Campas and neighboring tribes. The Campa name for the garment is *kitsárentsi*. When new, it is clean and white, with woven stripes, to be worn only on special occasions. Once soiled, it is dyed brown and used for everyday wear, becoming increasingly dark, dirty and tattered.

The demons, or evil spirits

Demons are called *kamári*, and they are legion. The term *kamári* is used more broadly to refer to anyone or anything repugnant, malevolent, or reprehensible.

If the good spirits keep themselves aloof from mere mortals, all demons consider human beings (i. e., Campas) their legitimate prey. Indeed, it would appear that the hordes of evil spirits in the universe are driven by an insatiable urge, automatically triggered, to attack and inflict maximum damage upon any human being they encounter. The breeze of a passing demon (*atántsi kamári*) causes sickness; the attack of a demon, or the mere sight of one, causes instantaneous or rapid death, or a form of a madness in which the victim does himself physical injury until he is finally killed by his own people out of fear.

Sharinkavéni, the netherroost stratum of the universe, is the abode of vast numbers of demons, ruled over by the Lord of Demons, *Koriosh(i)píri*. The existence of *Sharinkavéni* for the Campas was reported over two centuries ago (Adam, 1890), and so is very likely an indigenous belief. There is one other stratum where demons abound: *Kamavéni*, the Earth. Here on Earth they inhabit, not the ends of the Earth as do the good spirits, but Campa territory itself. Close by, lurking in the forests and teeming in the waters, they are an everpresent danger. Among the demons of the Earth the Campas distinguish many different kinds.

The élite among the demons are the *mankóite*. These demons reside within the great cliffs of Campa territory. They are described as human in form, but with mane-like hair, dressed in old cushmas, with a red parasitic plant (*anánta*) instead of proper red macaw feathers stuck in their wicker crowns. The *mankóite* are powerful demons; their powers approach those of the gods. A Campa who sees a *mankóite* can expect instantaneous death. Usually, however, the damage done by *mankóite* is sickness resulting from *atántsi* (the breeze of their passing). Living as they do in the cliffs overlooking the rivers, their specialty is capturing the souls of children voyaging on the rivers with their elders.

The *katsivoréri* are demons that live in caves in the hills and go abroad at night. Each *katsivoréri* is a small, black creature with wings, carrying on its back a smaller companion. From the demon there emanates a light, which can be seen flying through the air as the demon makes its nocturnal forays. The demon will attack any human being it encounters, holding him with its powerful grip and driving its gigantic penis into his body, thereby killing the victim or transforming him into another *katsivoréri*. The nocturnal lights that the Campas identify as *katsivoréri* may be a natural phenomenon: ball lightning.

Sashinti is another type of demon, one distinguished by its extreme thinness. To the Campas, thinness is a bad quality, probably because they associate thinness with the emaciation due to sickness. When a *sashinti* appears to someone, it "breaks" his body into pieces, then reassembles and blows on them to revive him. The victim, remembering fully what happened to him, returns home to sicken and die rapidly.

The *irampaváto* demons raise *opémpe* toucans (*Ramphastos cuculiferi*) as domesticated fowl. An *irampaváto* will appear to a man alone in the forest in the form of an attractive woman, perhaps looking like his wife, but with an *opémpe* on her shoulder – and excite coitus. Afterwards, the demon informs the man of the truth, he is frightened into helplessness, and the demon beats him to death. The victim later revives and, with full remembrance of what happened, returns home to sicken and die rapidly (alternatively, the victim may become insane). This demon can also appear in the form of a man to a woman with the same results.

A *míroni* (or *amimíro*) is a demon that takes the shape of a large tapir or mule with huge eyes and a gigantic penis or, alternatively, of a little old man dressed in an old cushma, carrying a walking stick and possessing the same genital abnormality. In either form it is a powerful demon. It will attack a solitary man in the forest, driving its member into his body. The victim dies, then arises as a female *míroni*. This demon attacks only men, since it is frightened at the sight of women's breasts, which appear to it as immense penes.

A *kasónkati* demon likewise will appear as a large tapir or mule, or in human form. This demon has a hole in one or both knees, into which it blows to produce a fearful noise. The *kasónkati* like to kill people by crushing their bones.

The *korínto* are man-devouring monsters as big as houses. They are no longer to be found in Campa territory, shamans long ago trapped them all in a cave near the headwaters of the brook *Tsikiréni*, a tributary of the Ene River. It is said that when the world ends all the houses will be transformed into *korínto*, which will then go about swallowing Campas.

Water demons include the *imposhitóniro* and *shonkatíniro*, which live in the whirlpools and bad passes of the river, where they wait to drown and eat voyagers passing by. The father of the *shonkatíniro* is *Tsomiríniro*, who collects the souls of drowned Campas in his stomach, then transforms them into *virakócha* to be the husbands of his daughters. There are, in addition, the *keátsi*, spirits in human form living in the rivers and lakes. The *keátsi* are not demons categorically: some are good and some are bad. When a drowned person's soul does not return to make noises, it is presumed that the person still lives, but has joined the *keátsi*.

In the foul places of the rivers and brooks reside demons in the form of zungaros marked with longitudinal stripes. They collect food wastes thrown into water and with these materials practice witchcraft, bringing sickness to whoever ate the food originally. A rainbow is the smoke from the campfire of one of these demons or else is the demon's cushma, for the Campas are undecided on this point. Both the demons and the rainbow are called *oyéchari* or, alternatively, *tsaviréntsi*⁴.

Another partially visible demon is the little whirlwind or dustdevil that kicks up dust and leaves, and swirls around the clearings of the Campa settlements from time to time. This category of demon is called by any of the following terms: *kaviónkari*, *tiviónkari*, *shinkírereri*. It commonly causes *atántsi* sickness.

A number of insects are demons. The morpho butterfly (*Morpho* sp.), called *sánta* or *ankáro*, is a demon. The owl butterfly (*Caligo* sp.), called *maatsarántsi* or "old clothes", is a demon. Its name derives from its color it has the khaki-color of old cushmas and is supposed to be what becomes of the old clothing of a bad person when he dies. The adult ant lion or *shiénti* (Fam. Murmeleonidae), with its thin body, is a demon. All these insects cause sickness. In addition, the scorpion (*kitóniro*) is a demon, and all verminous insects are believed to be of demonic provenience.

A number of birds are demons. All owls (*mamáro*) are demons. The vulture (*tisóni*) is a demon. A large bird of rapine, black with a white breast, called *aróni* (unidentified), is a demon. The khaki-colored hummingbird *tsúsanti* is a demon (unique among the hummingbirds). There is also supposed to be a demonic bird associated with the demon *sashínti*, a bird called *machémporo* or, alternatively, *ishitáshi sashínti*, "the mat of *sashínti*". Some other species of birds are also believed to be demons.

A number of animals are demons. These include all jaguars (*manítí*), bats (*pihíri*), and rabbits (*kíma*).

The Campas have also taken over the wide-spread *pish(i)táko* belief of the Peruvian Highlands. According to the Campa form of this belief, there are diabolical Caucasians in the towns who kill Campas to extract the grease from their bodies for use in automobiles and airplanes. The Campas, indeed, cast a suspicious eye on all Caucasians. For the Campas, there is something demonic about Caucasians: they are powerful, yet not benevolent, they are wealthy, yet not generous; are they human, are they mortal? There appears to be a tendency for the Campas to consider the *virakócha* as *mankóite*.

4. Zungaros are the giant catfish of these rivers. They do not have longitudinal stripes. The stripes ascribed to the demons of this category are imaginary, then, and probably relate to the stripes of the rainbow on the one hand and, on the other, to the vertical stripes on the cushmas worn by the Campa men.

Witchcraft constitutes a special category of demonic activity. The Campa term for witch is *mátsi*, and the Campas believe in the existence of both human and nonhuman witches. Nonhuman witches are the various species of ants and bees. These take food refuse and exuvia to their nests to practice witchcraft upon them, producing sickness in the individual from whom the materials came. The symptoms vary with the species of ant or bee involved. When someone falls ill, and the shaman's diagnosis is that a particular species of ant or bee is causing the sickness with witchcraft, the members of the community will go out to search for the nests of these insects in the vicinity, to destroy them and hopefully destroy the materials being used for witchcraft.

Human witches are almost always children, usually girls, who bury such materials as pieces of mat, bones, and manioc cores around the house, these materials then enter someone's body and make him seriously ill. Children are seduced into witchcraft by any of a number of species of demonic insects and birds. The katydids *shíinti* and *tsináro* (Fam. Tettigoniidae) and the cricket *tsivivínti* (Fam. Gryllidae) are demons that teach witchcraft to children. There is also supposed to be an insect that only witches can see, called *tsempokirírítí*, that does the same. The birds *tsiváni* (the chicua, *Piaya cayana*) and *eentiopéti* (unidentified) likewise are demons that teach witchcraft to children. When these demons appear to children for this purpose, they appear in human form. A child approached in this way is innocent but defenseless, and once it becomes a witch it is a social menace. When a shaman diagnoses an illness as being due to human witchcraft, he designates some child in the community, even in the victim's family, as the witch. The child is treated brutally and forced to dig up the materials it has buried. If the victim recovers, the accused child may be let off with a warning to cease and desist from further witchcraft; if the victim dies, the child is killed or traded to the Caucasians.

The demons of the Campa universe are both real and imaginary beings that embody some combination of repulsiveness and harmfulness. The qualities which the Campas identify as demonic can be pointed out with particular clarity in the demons that are not wholly imaginary. Whatever can do serious physical harm to human beings is a demon: thus jaguars and blood-sucking bats are demons. Whatever is extremely thin, thereby recalling the emaciation due to severe illness, is a demon: therefore the extremely thin *shiénti* (adult ant lion) is a demon. Whatever has the khaki-color of decay—the, color that the Campas call *kamára* (or *kamárari*)—is a demon: therefore the khaki-colored hummingbird *tsúsanti* and the butterfly *maatsarántsi* are demons⁵. Whatever

5. *Kamára* is a color category that includes the various shades of cream, khaki, tan, brown, olive drab, and lead. The term is translated as "khaki" in this paper as a simplification.

appears to be other than it is –whatever presents a false appearance– is a demon: therefore the katydids *shúnti* and *tsináro*, insects that look like leaves, are demons. Whatever would serve as a bad example for human imitation is a demon: therefore *tsiváni*, a bird that is not only ugly in Campa eyes but also a slovenly nest-builder, is a demon. These are the qualities that, in various combinations, are attributed to the imaginary demons as well: the imaginary demons do the greatest harm in inducing sickness, madness and death; if they wear clothes, it is old clothes (*maatsarántsi*) with their characteristic *kamára* color; and one important category of demons –*sashínti*– is distinguished precisely by its extreme thinness. Certain other characteristics are repulsive or even frightening to the Campas, and are attributed to some of their imaginary demons. These characteristics are old age, with its decay and presentiment of death, and excessive sexuality: thus, some demons are seen as little old men, and some are visualized as possessing enormous genitalia. The Campas themselves, of course, do not make such interpretations as these: they are content to recognize their several categories of demons with their distinguishing characteristics. But Campa demonology does appear to lend itself to this kind of interpretation.

In their lives, the Campas are beset by dangers, sickness and death. The demons of their universe stand as conceptual embodiments of all the terrible forces in the world that make the life of man poor, nasty, brutish, and short. In terms of these personifications the Campas can at least think and attempt to defend themselves.

The nature and destiny of the human soul

Every Campa is mortal – he will die. But within him is his soul (*ishíre*), which can leave his body in dreams, etc., while he is alive, and will survive his death to join one or another of the hosts of immortal spirits. An individual's soul looks like him, though normally invisible. The soul is centered in the heart– indeed, the same term is used for both: *noshire*, "my soul, my heart"⁶. The soul is what animates the body, if the soul remains away from the body for any considerable length of time, as when it is captured by demons, the individual will waste away and die. For short periods the soul can leave the body without ill effects, as when one's soul goes abroad in one's sleep, or when a shaman sends his soul on a flight to distant places. One point of interest should be noted: an individual says that *he* has gone here or there in his sleep, a shaman says that *he* has flown to distant places. This appears to express a belief that an individual's soul *is that individual*. Indeed, the Campas say the body is only the "clothing" or "skin"

6. An alternative term is *nasánkane*, with the same double meaning.

of the soul. Generally speaking, Campa thought seems to vacillate between a view of the soul as something that "I" have (thus, "my" soul) and a view of the soul as the essential "I".

When a Campa dies, he (i. e., his soul) may join the good spirits as a *manínkari* if he was sufficiently good in life. However, with their strong sense of human frailty, the Campas consider it far more likely that a deceased individual's soul (*ishíre*) will become a malevolent ghost (*shirétsi*, "unpossessed soul"), revisiting the settlement where it had lived and attacking the living. For this reason, the Campas commonly abandon a settlement where someone has died, moving some distance to establish a new residence. *Shirétsi* can wander the forests in their human, though normally invisible, shape at least for a time; they can join one or another category of demons, becoming one of their number; or, alternatively, they can become *peári*. A *peári* is the soul of a dead person, or any demon, that takes the form of a game animal or game bird: it looks like that animal or bird but it is not – it is a demon. When a hunter bags an animal or bird and discovers that it has no body fat, is infested with worms, or has pustules, tumors, patchy fur or unhealthy-looking organs, he knows that it is a *peári*, and consequently unfit for human consumption. The suffix *-niro* is used to refer to a particular *peári*: a peccary is a *shintóri*, a *peári* in peccary form is a *shintoriníro*; a deer is a *maníro*, a *peári* in the form of a deer is a *manironíro*; etc. The suffix *-niro* means "looks like", and from this primary meaning there derives a chain of other meanings: "has the appearance of, but is not really", "false", "demonic".

The soul of a Campa attacked by a demon will, when the Campa dies, become a demon of the same type. When a witch is executed, its soul joins the particular class of demons that taught it witchcraft and becomes one of them. To prevent this from occurring, the corpse of a witch or madman is sometimes cremated, with the understanding that the potentially dangerous soul will be destroyed by the flames along with the body. The souls of those who, in their lifetimes, committed such heinous offenses as incestuous fornication, are punished by torture in *Sharinkavéni* by *Koríosh (i) píri* and his demon cohorts. In the end, the tortured soul is eaten by the demons or becomes one of their number, or else is purified and joins the *manínkari*.

The Campa cosmos

In Campa thought, the universe in its present form came into existence through a series of transformations and, sometime in the future, will be destroyed by the will of *Pává*. The Campas take as a premise that the universe has not always been as it is today, that it has gone through a developmental process. To this they add a thoroughgoing

transformationism: for them there is no such occurrence as a creation of something out of nothing, but only a transformation of something out of something else. Consequently, in their thinking, the original condition of the universe was not Nothingness but Somethingness. The general structure of the universe existed to begin with, as the stage on which all the dramas of Campa mythology would be acted out. And, when the curtain goes up, the actors are already on stage: the primal Campas, human beings living here on Earth but immortal, many with powers exceeding those possessed by mankind today. There were some special features, later to be changed: the sky was much closer to the Earth, and the Earth spoke. Whatever else existed in the universe at that time is indicated only sketchily in the mythology, but it was an impoverished universe lacking many features that would come into existence only with the passage of time through transformation. Campa mythology is largely the history of how one after the other of the primal Campas came to be irreversibly transformed, each into the first representative of some species of animal or plant, or into some astronomical or terrain feature. The mechanism of change in each case is either the action of a transformer deity, or auto-transformation. The development of the universe, then, has been primarily a process of diversification, with mankind as the primal substance out of which many if not all of the categories of beings and things in the universe arose, and with the Campas of today as the descendants of those ancestral Campas who escaped being thus transformed. Mortality came also to be added as a feature of human life and, with the cumulative occurrence of death, the Earth gradually ceased to speak. The widening gap between mortal life and that of the good spirits was punctuated by the moving apart of the sky and Earth. When the present universe is destroyed, the Campas will be destroyed with it and a new world will take its place, with immortal inhabitants. The sky will be close to the Earth, and the Earth will speak once again.

And what is the nature of the universe in which the Campas find themselves? It is a world of semblances, thus, for example, what to us is the solid Earth, is airy sky to the beings inhabiting the strata below us; and what to us is airy sky, is solid ground to those who inhabit the higher strata. It is a world of relative semblances, where different kinds of beings see the same things differently: thus, human eyes normally can see good spirits only in the form of lightning flashes or birds, whereas *they* see themselves in their true human form, thus, in the eyes of jaguars, human beings look like peccaries to be hunted; etc. It is a world in which there exist beings with powers out of all proportion to their appearance, the most extraordinary powers that the Campas can imagine, and powers which the Campas themselves lack: thus, for example, the gods, though visualized as human in size and form, can bring

about sensational transformations simply by expressing their will, or with a puff of breath, and have the physical strength to throw up mountains. It is a world operating according to certain mechanical principles of the sort we would call magical: thus, as a form of direct magic, the expressed will or puff of breath of a being with the requisite power will have its effects, thus, as a form of homeopathic magic, during pregnancy both prospective parents will refrain from eating turtle meat, for fear that to do so would make their child slow-moving and slow-witted; thus, as a form of contagious magic, a witch supposedly utilizes someone's food refuse or exuvia to strike him with sickness; all of these are examples of "action at a distance", the distinguishing characteristic of magic. It is a world, again, of transformations, and of beings and things passing in and out of visibility, in and out of tangibility. It is a world which, for the Campas, is one of death, of debility, of sickness, of tragedy, because "mere mortals" –the Campas– are the weakest of beings, and in constant danger of being crushed by the greater forces of the universe. Yet, despite their profound understanding of their predicament, the Campas laugh, act vigorously, grip life, and survive.

It would be easy to dismiss the cosmological thinking of the Campas as false in its assertions of fact, as absurd in its premises, as childish in its simplicity. But to do so may be an error. We must recognize that the Campas, like every other human group, have attempted to make sense out of existence, have had to do so on the basis of limited information, and have succeeded brilliantly on that basis and for their purposes. They may personify forces that we would view as impersonal, but this permits them to think concretely instead of vaguely about matters that affect them intensely. What would be the point of telling the Campas that a diseased game animal is not really a demon, when that animal *is* unfit for human consumption, i.e., is inimical, and when the central meaning of *kamári* is "deadly"? What a clarity that can best be obtained from simplicity, the Campas have incorporated into their cosmology a number of fundamental moral concepts of the utmost relevance to the human predicament: they distinguish between good and evil, dividing the beings of the universe into two great hosts on that basis, and they revere the good while despising what is evil; they recognize the difference between good and bad actions, wishing that their actions could be only good but knowing that bad actions are all too easy – and their mythology is full of cautionary tales about Campas transformed into lesser creature as punishment for objectionable behavior; they have intuited the contrast between chastity and lust, cosmologically expressing their admiration for the former and their contempt for the latter by the way in which they describe the anatomy as well as the actions of the good spirits and the demons of their universe; they have grasped the essential ingredient of human dignity, that of acting properly and with pride

in self, rather than corruptly and ignominiously. The Campas do recognize their own imperfections and limitations, and consequently in the ideal cosmos of their imagination they place themselves in an intermediate, secondary position, caught between the cosmic forces of good and evil, and far less mighty than both.

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COMERCIO Y COLONIZACION EN LA ZONA DE CONTACTO ENTRE LA SIERRA Y LAS TIERRAS BAJAS DEL VALLE DEL URUBAMBA, PERU

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La cultura y la economía son los factores que han separado tradicionalmente a los pueblos serranos sedentarios de los Andes Centrales de las tribus seminómadas de las selvas tropicales del Este: El contacto en el pasado entre estos dos grupos acabó en un intercambio de mercancías y en la expansión de los andinos hacia el territorio de sus más primitivos vecinos. En épocas recientes, los procesos de extinción, aculturación y migración han desdibujado la fisura geográfico-cultural que antaño caracterizó la ocupación humana en los dos medios contrastantes.

El marco ambiental

En el Perú meridional este contacto tuvo lugar en cinco de los principales valles ribereños (los del Urubamba, Kosñipata, Marcapata, San Gabán y Tambopata), que conectan a la sierra, de clima templado, con la selva húmeda baja. Los habitantes de la selva penetraron en uno u otro momento en estas depresiones hasta los valles mientras las condiciones tropicales prevalecieron. Las fuentes etnohistóricas y los datos recientes sobre el valle del Urubamba revelan la dinámica del contacto inter-cultural aplicable, a grandes trazos, a otros valles orientales limítrofes de los Andes Centrales.

El río Urubamba corre a través de diferentes zonas en su curso hacia el norte, para confluir con el río Ucayali, importante tributario del Alto Amazonas. El clima y la vegetación natural de la depresión del Urubamba cambian del ichu de la sierra a arbustos de clima templado a 3,700 metros sobre el nivel del mar. A los 2,300, esta faja se convierte gradualmente en un bosque semitropical cubierto de nubes (*Ceja de Montaña*).

A 1,500 metros, el fondo del valle y las laderas inferiores se cubren con una vegetación boscosa tropical que deviene gradualmente más alta

y densa conforme se va internando uno más adentro en el valle. A 650 metros, aproximadamente, domina ya la vegetación lluviosa de la selva alta.

Los impasables rápidos del río Urubamba impiden que las embarcaciones puedan servir como medio de transporte entre las zonas altas y las bajas. Tan sólo al norte de Cocambilla (750 metros) se ha utilizado el río para la navegación, pero aún en este tramo, el viaje en bote resulta azaroso durante gran parte del año, debido a la velocidad de la corriente y a los rápidos. Todo intento de navegar directamente hasta la confluencia con el Ucayali tropieza con el temible Pongo de Mainique, una sucesión de veinte kilómetros de desfiladeros de rápidos y agitados remolinos traicioneros que obligan a efectuar peligrosas maniobras o que deben sortearse con gran esfuerzo.

A lo largo de una extensión de más o menos 150 kms. al norte de Huadquiña, la facilidad de acceso y el atractivo agrícola del valle del Urubamba crearon una zona de contacto cultural más extensa que las de otras partes de la *montaña* peruana (Fig. 1). La gente de las alturas, desde los agricultores de la época pre-incaica hasta los actuales mestizos, se ha asociado con los naturales de la selva tropical en esta faja ribereña que pertenece hoy a la provincia de La Convención. Hasta bien avanzado el siglo veinte, se llegaba del Cuzco a la zona de contacto por sendero de huella; primero practicando un largo rodeo sobre el paso Málaga y después de 1890 a través del mismo valle del Urubamba. Posteriormente se construyó un ferrocarril de vía estrecha hasta Machu Picchu, en 1927, que llegó a Huadquiña en 1951 y a Chaulay en 1966. Hacia fines de la década del 60 se terminó de construir una carretera, que une el Cuzco con la zona de contacto.

Los habitantes

No cabe duda de que los pueblos de la meseta alta del valle del Urubamba llegaron a poseer una cultura superior a la de los habitantes de la selva adyacente muchos siglos antes de la era cristiana. Sin embargo, más de un milenio después, el Imperio Incaico, altamente organizado, había extendido sólo en forma marginal su hegemonía en el Antisuyo. La pequeña porción de selva bajo dominio de los Incas era la constituida por tierra montañosa, ya que aquéllos no penetraron al Este lo suficiente para encontrar la clásica monotonía de las llanuras amazónicas. Los pueblos primitivos de la selva, conocidos en conjunto como los Anti, eran totalmente diferente de los Incas, tanto en lo concerniente a la cultura material como a la no material. Se movilizaban en pequeños grupos y sus medios de subsistencia eran la caza, la pesca, la recolección y cultivos de roza ocasionales. Con la conquista española llegó una cultura extraña, que alteró en forma drástica los patrones indígenas de la *mon-*

taña, del Urubamba. Prontamente diferenciaron los españoles a los *indios cristianos* de la sierra, que hablaban quechua, de los *indios bravos*, o *infieles*, de la jungla. Tanto los españoles como los indios quechuas—ambos habitantes de las serranías por preferencia ambiental—efectuaron exitosamente cambios profundos y duraderos en la antropogeografía de la montaña del Urubamba.

Comercio entre la zona alta y la baja

Período anterior a la Conquista. Las grandes diferencias culturales entre los serranos y los *Antis* no constituyeron obstáculo alguno para el comercio, toda vez que cada uno de estos grupos poseía bienes que en su mayor parte no podían obtenerse en la otra región. En realidad, ha quedado ya bien establecida en la historia cultural de los Andes Centrales, la existencia de una larga tradición de intercambio entre las zonas tórridas de la selva a oriente y de los territorios a occidente. En la árida costa se conocían, desde el período preincaico, una serie de productos y animales de la *Montaña* (la selva), tales como coca, monos y plumas de guacamayo.

En una época muy posterior, los incas comerciaron con las tribus selvícolas, permutando con ellas diversas clases de maderas, tintes vegetales, medicinas, alimentos y adornos (Jiménez de la Espada, 1, 1965: 192). La madera sumamente seca y durable de la palmera *chonta* (*Bactris ciliata*) fue uno de los productos de las llanuras más codiciados por los incas. La rígida madera de este árbol se utilizó para la fabricación de lanzas, clavos y macanas, así como para mangos de aparejos agrícolas, anzuelos y tablas para techos.

También se obtenía de la *montaña* plumas de pájaros tropicales de brillantes colores, cuyo valor estribaba en que se las usaba en las grandes ceremonias imperiales.

Los productos provenientes de la selva que, de acuerdo con la tradición serrana, vinieron originalmente de oriente, pudieron haber sido traídos a la sierra en el período incaico. Los serranos de esta zona conocían probablemente grasas animales, miel de abejas silvestres y resinas olorosas y medicinales. Los colorantes y condimentos tropicales genipa (*Genipa americana*), annato (*Bixa orellana*) y palillo (*Escobedia scabrifolia*), pueden haber sido, junto con la vainilla silvestre, la cáscara de *Aniba* con sabor a canela, y el cacao, vendidos a la gente de la sierra. Aunque los incas producían algodón, pueden haberlo adquirido igualmente de las tribus selvícolas. La farmacopea de los habitantes del Tahuantisuyo incluía plantas tropicales medicinales con propiedades purgativas y afrodisíacas, especialmente el wanarpo (*Jatropha ciliata*) (Santa Cruz 1968: 289).

Es probable que ciertos frutos, como el maní, la palta, la guayaba, la chirimoya y la piña, hubieran sido traídos al Cuzco para la nobleza y para un consumo más amplio en ocasiones especiales, por ejemplo el festival del Inti Raymi.

Puede ser que, hasta mediados del siglo XV, la coca haya constituido uno de los más importantes artículos de comercio con los *chunchos*, los que, probablemente, fueron los primeros en cultivarla. Tal vez fueron los Machiguengas, una de las pocas tribus selvícolas que cultivan y usan la coca, los que la hicieron conocer a los pobladores de las zonas altas.

Período posterior a la Conquista. Dos tribus de *Antis*, los Machiguengas y los Piro, comerciaron con los habitantes de la sierra en el valle del Urubamba. Los Machiguengas (conocidos antiguamente como los "Mañaríes"), constituyen una sub-tribu que se separó de los Campas, de dialecto Arawak, cuyos territorios tradicionales limitan al Oeste con los de los serranos. El primer contacto de que se tiene mención entre los españoles y los Machiguengas del Urubamba tuvo lugar, probablemente, en 1572, luego de que la derrota de Túpac Amaru franqueó a los españoles el ingreso a la zona (Levillier, 1925: 437). Los Machiguengas usaban la *cusma* (una especie de camisa de corte abierto), cazaban y sembraban mandioca, maíz, maní y frutas (Ocampo, 1907: 235). Estos agricultores tenían una organización tribal débil. Mas o menos hacia el siglo dieciocho, los Machiguengas ya habían adquirido algunos rasgos de cultura material de los serranos (Quevedo, 1900: 483, 492). El intercambio de los Machiguengas con los habitantes de las zonas altas se asentaba sobre bases casuales, pero bastante sólidas.

El otro grupo *Anti* del Urubamba era el de los Piro (o Chontaquiro) quienes, en el siglo diecinueve, habitaban las márgenes del río Sepahua, hasta cerca de la desembocadura del río Paucartambo (Steward, III, 1948: 540). Probablemente emigraron del río Ucayali al Urubamba en un pasado histórico (Menéndez Rúa, 1948: 73). Los Piro poseían una organización tribal bien cohesionada, con una agricultura y una economía de recolección más diversificadas que la de las tribus vecinas (Farabee, 1922: 55). Eran excelentes remeros y astutos comerciantes; a ellos se debió, probablemente, la difusión de elementos de la cultura material de la sierra bastante al interior de la hoya del Alto Amazonas.

Algunos de ellos hablaban quechua. La influencia occidental entre los Piro se inició a fines del siglo diecisiete, por obra de los misioneros españoles (Markham, 1859: 179), pero su conversión al cristianismo no se completó sino a comienzos del siglo veinte.

Estos aborígenes, de fértiles recursos, remontaban anualmente el Urubamba, atravesando el pongo y nueve series de peligrosos rápidos, para comerciar con los serranos (Maúrtua, VII, 1906: 198). En razón de

la fuerza de la corriente, que hacía imposible la navegación durante la estación lluviosa, remontaban el río en canoas cuando bajaba su nivel; aún así les tomaba tres meses la travesía a contracorriente, mientras que el regreso lo hacían en quince días (Miller, 1836: 176). El intercambio de mercancías y, algunas veces, las hostilidades con los machiguengas a lo largo del trayecto, motivaban frecuentes interrupciones del viaje (Alvarez, 1960: 72).

Las primeras apariciones de los Piro para comerciar con los serranos, de que se tiene noticia, tuvieron lugar en 1711 (Scipión, 1903: 97), aunque la evidencia más importante de este intercambio data del siglo XIX. Era costumbre que el comercio entre los Piro y los serranos se llevase a cabo en la unión ("El Encuentro") de los ríos Urubamba y Yanatile. En 1835, Miller (1836: 176) observó a 200 ó 300 piro que habían remontado el río y dispuesto sus mercancías en ese terreno llano y abierto. Algunos Piro continuaban río arriba para vender sus productos en la Hacienda Echarati, durante la festividad de Nuestra Señora del Carmen, del mes de julio (Lavandais, 1851: 1025). Todos los fundos de la zona de las inmediaciones se familiarizaron con estos conatos comerciales de los Piro durante esta época del año (Fry, 1889: 41).

En el período posterior a la conquista se permutó una gran variedad de productos de la montaña por mercancías serranas. Animales vivos (monos, loros y otros pájaros); animales muertos (pieles de jaguar, plumas de papagayo); comestibles (cacao, vainilla, pescado seco) y objetos de artesanía (telas de algodón y ropa confeccionada con éstas, arcos y flechas, semillas de chaquira y hamacas de fibra de árbol); todos estos productos fueron objeto de comercio (Gonzales, 1833: 50; Lavandais, 1851: 1025; Miller, 1836: 176; Alvarez, 1960: 72-3; Wiener, 1880: 351; Raimondi, 1898). Muchas plantas medicinales de la región, tales como la zarzaparrilla, la quina y la quinaquina (*Myroxylon* sp.) eran altamente apreciadas en la sierra por sus virtudes curativas. No era menos ávida la demanda de remedios de valor terapéutico más dudoso, como la uña pulverizada de .tapir, que se tomaba contra la epilepsia. Las resinas olorosas que se obtenían de los árboles silvestres se apreciaban como incienso, y la cera de abejas servía para fabricar velas para las muchas iglesias de la sierra (Coba, I, 1956: 270; Tschudi, 1847: 280).

También fueron llevadas a la sierra la manteca de manatí, para la cocina, y el aceite de tortuga, que se empleaba para iluminación (Fernández, 1952: 251). A veces, hasta niños fueron vendidos en estas ferias (Wiener, 1880: 351).

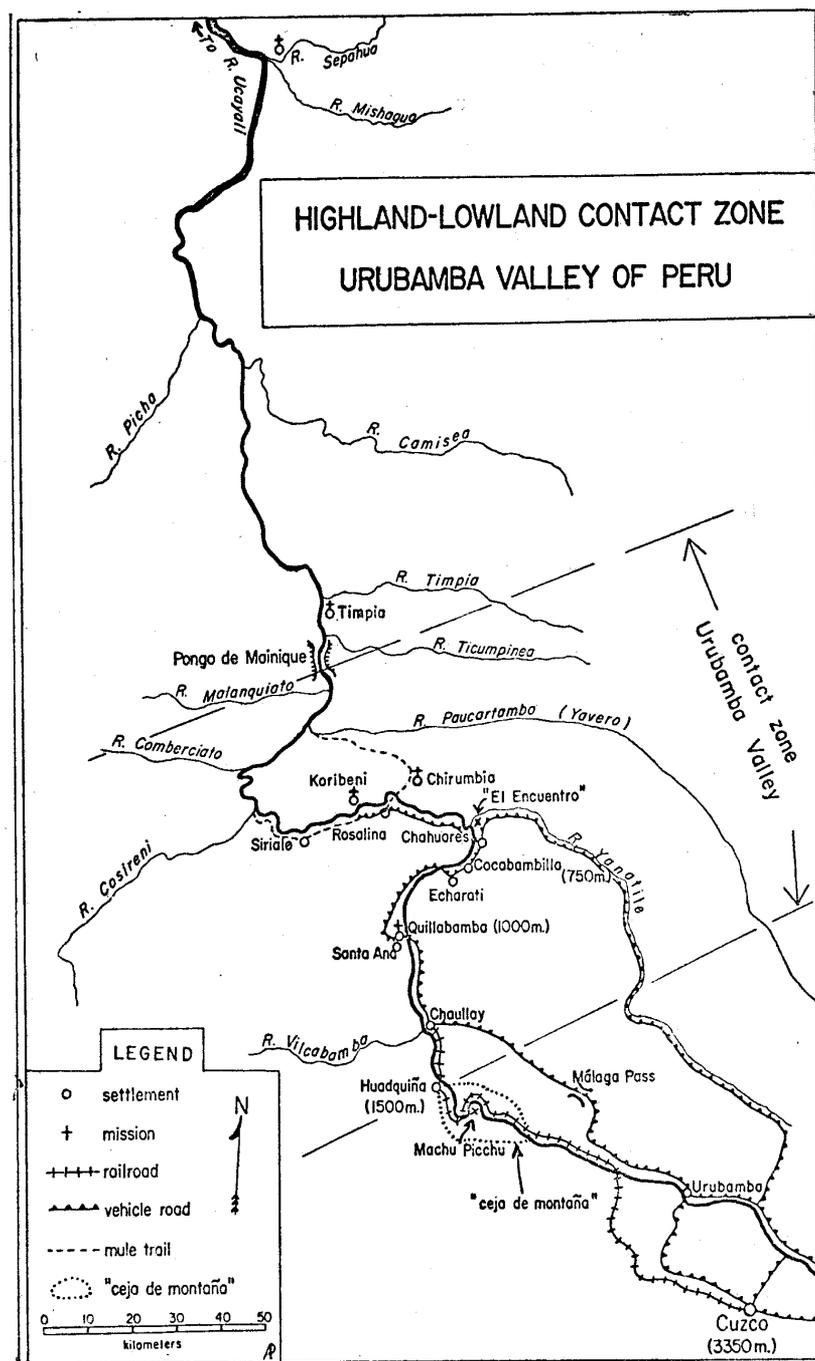
A cambio de estos productos exóticos, los indios de la sierra proporcionaron a los de la selva artículos de metal muy codiciados por éstos: hachas, machetes, cuchillos, tijeras, agujas, y, algunas veces, armas

de fuego. Se negociaban igualmente objetos de menor valor utilitario, tales como espejos, botones, sonajas y cuentas de vidrio, junto con tejidos de lana y vestidos confeccionados con estos tejidos. Entre los alimentos más apreciados por los selvícolas se encontraban la sal, el alcohol, el queso, las tortas y las cebollas. Aparentemente, este intercambio permitió a los Piras gozar de los beneficios de la civilización tal como se la conocía en la sierra en ese entonces. En 1874 (Buendía, 1874: 265), algunos representantes oficiales de los Piras viajaron a Santa Ana para solicitar al gobierno peruano asistencia en la construcción de pueblos, caminos y otras comodidades de la vida moderna.

Al llegar el siglo XX las ferias anuales en la zona de contacto habían ya desaparecido. El tráfico de esclavos, llevado a cabo por los traficantes del caucho, desbarató los patrones de comercio largamente establecidos entre los Piras y Machiguengas, y los andinos (Farabee, 1922: 61). Algunos Machiguengas continuaron comerciando a través de las misiones o adquirieron bienes del exterior trabajando en forma periódica para los serranos. También aproximadamente por esta época, los serranos ya habían penetrado en estas zonas cálidas, para apropiarse directamente de productos exóticos, tales como incienso y tintes vegetales. En la actualidad, el intercambio sistemático de bienes en el valle del Urubamba entre los Piras y los andinos ha desaparecido; el que se efectúa entre los Machiguengas y los serranos se ha comercializado en alto grado. El café, cultivado en los centros misioneros y destinado al mercado exterior, ha llevado al establecimiento parcial, entre los Machiguengas, de una economía basada en la moneda.

Pre-conquista. Establecimiento en la zona

Por lo menos hasta el período incaico, el establecimiento humano en el valle del Urubamba por sobre los 1500 metros de elevación se asentó sobre una base firme; da fe de ello la gran cantidad de vestigios que prueban sus conocimientos arquitectónicos, agrícolas y de ingeniería. Empero, es difícil encontrar evidencias indubitables de ocupación incaica por debajo de, aproximadamente, 1500 metros. Uno de los factores que determinaron el fracaso de los incas en incorporar plenamente la zona de contacto del Urubamba en su esfera de colonización, fue el exagerado temor que éstos sentían de los *Antis*. Este pueblo poseía entre los andinos una reputación legendaria de salvajismo y canibalismo, pero esta reputación era sin lugar a dudas exagerada (Cieza de León, 1959: 61; 297; Garcilaso de la Vega, 1963: 21) e, indudablemente, jugó un rol importante en la decisión de los serranos de renunciar a establecerse en la *montaña* del Urubamba. Ello puede explicar igualmente la construcción de Machu-Picchu, una ciudad fortificada situada estratégicamente y destinada a la protección del centro nervioso del imperio,



junto al Cuzco, contra cualquier posible intrusión de los habitantes de la selva.

Además de los extraños y temerosos *chunchos*, otros vecinos temibles de la selva pueden haber influenciado la idea que, de esta zona, tenían los andinos. El jaguar, el oso de anteojos, el pecarí y el vampiro, al igual que la anaconda y las venenosas bushmaster y fer-de-lance, deben haber infundido verdadero terror en los habitantes de la sierra, como lo infunden en la actualidad. Miríadas de insectos mordedores y aguijoneadores que poblaban los territorios húmedos y tórridos producían verdaderos sufrimientos. Un gusano endémico que se aloja en los músculos (sotuto), provocaba dolores agudísimos (Cobo, I, 1956: 338). La más temible entre las diferentes enfermedades tropicales que prevalecían en la zona de contacto era la leishmaniasis (uta), caracterizada por una grotesca desfiguración cutánea. También infestaron a los incas, cuando se aventuraron en las zonas tropicales, la enfermedad de Chagas y, probablemente, la fiebre amarilla. El Antisuyo debe haber sido un territorio extraño y carente de atractivos, para aquéllos acostumbrados a las alturas, más frías y saludables.

La falta de habilidad de los incas para enfrentarse con la base de recursos de este medio ambiente, tan dramáticamente diferente, y poder mantener, sin embargo, su modo de vida habitual, puede haber constituido otro verdadero obstáculo para su establecimiento en la zona de contacto. La agricultura, sobre las bases firmes y altamente productivas conocidas en la sierra, era difícil, cuando no imposible. Las parcelas de tierra cultivada no podían usarse en continuidad debido al agotamiento del suelo y a las devastaciones periódicas provocadas por las hormigas que hacían que los rendimientos de las cosechas fueran inciertos. Tampoco podían cultivarse los productos alimenticios de la sierra, como la papa y el maíz, ni mantenerse permanentemente en la zona a los auquénidos. Es probable que los incas hayan sido en extremo inflexibles en sus métodos agrícolas como para poder adoptar el sistema de cultivos de roza migratorios de los *Antis*.

Sin embargo, todas estas reservas de los incas sobre las selvas orientales no impidieron el interés que se suscitó por este extraño medio ambiente. Pachacútec, al frente de sus soldados, entró al territorio de los *Antis* al norte del Cuzco, más o menos en 1440, con el fin de ganar más súbditos y bienes para el imperio. Los arqueros del ejército imperial eran, todos ellos, indios de la selva, ya que los incaicos mismos no usaban arcos y flechas (Rowe, 1946: 275); muchos pueden haber sido Machiguengas de la selva del Urubamba. Dado que la coca era muy apreciada entre los andinos, fueron enviados grupos de agricultores a la zona de contacto del Urubamba, para poder disponer de abundantes provisiones de esta hoja. Probablemente se efectuaban emigraciones e inmigraciones continuas y de las plantaciones de coca, para di-

simular la posibilidad de contraer enfermedades tropicales. Aunque se ha encontrado cerámica incaica en la zona de contacto, la ausencia de ruinas incaicas de importancia hace pensar que los incas fundaron pocos establecimientos permanentes en la región, si es que fundaron alguno. Luego de la derrota del nuevo Inca Túpac Amaru en 1572, en la selva del Urubamba, desapareció la influencia andina en la zona por debajo de los 1500 metros, y algunos *chunchos* pudieron haberse retirado a ese vacío. Sin embargo, el establecimiento machiguenga del valle del Urubamba, al sur de la unión con el río Yanatile, siempre ha sido, probablemente, disperso.

Período posterior a la Conquista: interés incaico en las zonas tropicales del Urubamba

Haciendas. Hacia fines del siglo dieciséis, los españoles comenzaron a establecer feudos en la zona de contacto del Urubamba, enfrentándose inmediatamente con el problema de la escasez de trabajadores agrícolas.

En un comienzo se trajeron negros para que se ocuparan de las labores del campo (Ocampo, 1907: 239), pero queda la duda sobre si sucumbieron, se mudaron a otros lugares o fueron absorbidos. Durante el período colonial, los Machiguengas no eran lo suficientemente numerosos o accesibles, o bien no estaban dispuestos a trabajar en las haciendas. Posteriormente bajaron los indios de la sierra a trabajar en las de azúcar y coca, aunque el temor a los reptiles y a las enfermedades era tan grande entre ellos que, en muchos casos, fueron llevados a la zona de contacto contra su voluntad (Lizárraga, 1968: 60, 64). A partir de 1650, los jesuitas establecieron haciendas comerciales en la zona como un medio para ayudar a financiar las muchas escuelas que tenían en la sierra; ellas no constituían misiones. Por la época en que fueron obligados a abandonar el Perú; en 1768, los jesuitas poseían algunas de las más prósperas haciendas en el valle entre Huadquiña y Cocambilla (Menéndez Rúa, 1948: 31). Hasta la apertura de una trocha a Chirumbia, en 1804, Cocambilla era el límite del "mundo civilizado".

Después de la Independencia se logró esforzadamente establecer algunas haciendas en tierras otorgadas por el gobierno peruano como una forma de pago de deuda. Estas haciendas de frontera penetraron en el territorio de los machiguengas y, por primera vez, se estableció un amplio contacto con los Chunchos en esta región. El Conde de Sartigues, que viajó por esta parte de la zona de contacto en 1834, observó que los hacendados obsequiaban vacas, cerdos y aves para asegurarse buenas relaciones con los Machiguengas (Lavendais, 1851: 1029). Se emplearon algunos trabajadores Machiguengas, cuando se les pudo conseguir (Bowman, 1916: 42), ya que el trabajo de los quechuas era más

costoso en la zona de contacto que en cualquiera otra parte del departamento del Cuzco (Buendía, 1874: 265).

Misiones. La misión constituyó otra de las fuerzas importantes en la modificación de los patrones aborígenes en la *montaña* del Urubamba. Ya en 1538 se otorgó a las órdenes religiosas un privilegio real para "civilizar y evangelizar" estas tierras. En 1572, un grupo de expedicionarios españoles, bajo el mando de Martín García Loyola, erigió una capilla en Santa Ana, en territorio de los *Antis* (Ocampo, 1907: 235). En 1715, una exploración río abajo conducida por el jesuita Cristóbal de Quevedo (1900) resultó infructuosa en su empeño de operar conversiones duraderas. En realidad, 'no se hicieron esfuerzos para llevar a cabo una actividad misionera de importancia entre los *Chunchos* hasta que en 1798 los franciscanos llevaron a 44 Machiguengas a su nueva misión de Cocambilla (Maúrtua, VII, 1906: 198). Empero, algunos años después, este centro desapareció como consecuencia de dificultades operacionales y de su ubicación marginal con respecto del núcleo principal de los Machiguengas, río abajo. Aún más efímeros resultaron los intentos franciscanos para establecer dos misiones al norte del Pongo (Izaguirre, VIII, 1928: 318).

La organización misionera más estable en la zona de contacto ha sido la de los dominicanos, quienes llegaron primero a Santa Ana a fines del siglo dieciocho, luego de la expulsión de los jesuitas. Luego, en 1900, la Santa Sede designó oficialmente a los dominicanos para evangelizar toda la región del Urubamba y de Madre de Dios.

Su primera misión entre los *Chunchos* se fundó en 1902, en Chirumbia, en 1918 se establecieron otras misiones cerca del río, en Koribeni y en Timpia. La misión de Sepahua, al norte del Pongo, fue organizada en 1947. Los sacerdotes y los hermanos llevaron a cabo frecuentes visitas a los Machiguengas que vivían en pequeñas agrupaciones fuera de estos centros misioneros. Además, los dominicanos mantenían en Quillabamba, iglesia, hospital, internado para niños y niñas, museo, granja experimental y centro de comunicaciones radiales. Muchos niños Machiguengas fueron enviados allí desde el interior ("adentro") por los misioneros.

En la actualidad, aproximadamente el 80% de los Machiguengas han sido convertidos al cristianismo y hablan algo de castellano; el 20% restante se halla bajo diferentes grados de influencia dominicana. Con excepción de algunas familias aisladas, los Machiguengas han abandonado su modo de vida original por obra, en gran parte, de la actividad misionera. En el primer año de establecida la misión de Chirumbia, todos los Machiguengas usaban la tradicional *cusma*; hoy en día ninguno de los que viven en Chirumbia, y muy pocos de los de Koribeni usan este indumento (Fernández, 1952: 56). Estas dos misiones también sir-

ven actualmente a los campesinos quechuas que han inmigrado a la zona.

Recolección de quina y caucho. El interés de los andinos por la *montaña* del Urubamba aumentó considerablemente hacia fines del siglo pasado, cuando la quina y el caucho cobraron valor en el mercado mundial. La búsqueda frenética de estos productos provenientes de árboles silvestres trajo como consecuencia una alta tasa de mortalidad entre los Machiguengas y su desplazamiento territorial. Entre 1850 y 1890, la quina ("cascarilla"), del árbol chinchona, fue objeto de una implacable explotación al sur del Pongo (Castelnau, 1853: 290). Algunos establecimientos –Koribeni, Rosalina y Chahuare– sirvieron como centro de recolección de la corteza. Con anterioridad a 1895, se realizaban en Rosalina ferias periódicas de quinina (Fernández, 1952: 18).

Entre 1880 y 1910, el caucho se obtenía de árboles silvestres en el valle del Urubamba: el *jebe fino* (*Hevea brasiliensis*), al norte del Pongo de Mainique, y el *caucho* de calidad inferior (*Castilloa elástica*), al sur del Pongo. Los traficantes del caucho que venían de la sierra esclavizaron a los Machiguengas, obligándolos a recolectar y procesar este producto en provecho de aquéllos (Bowman, 1916: 12); en esta forma devastaron íntegramente muchos establecimientos nativos a lo largo del Urubamba (Farabee, 1922: 1). Para escapar de los buscadores de caucho, muchos Machiguengas abandonaron el valle principal durante esta época y se refugiaron en las colinas altas o en valles laterales aislados (Bingham, 1914: 213). Otros Machiguengas resistieron a los intrusos foráneos agrupándose alrededor de Fidel Pereira, su mestizo patriarca y protector, que llegó a controlar algunas partes del río, estableciendo allí su feudo. Aún hoy en día al sur del Pongo, sus hijos ejercen influencia. La escasez de indios selvícolas para la recolección del caucho fue compensada llevando a la selva *serranos* sobre todo después de 1900, cuando se abrió una trocha de acémilas de 130 kms. entre Rosalina y el Bajo Urubamba.

La penetración de buscadores de caucho, misioneros y agricultores, diezmó la población indígena de la selva, creando condiciones sociales propicias para la difusión de enfermedades mortales. Los dos principales asesinos entre los *Chancho*s fueron la malaria y la viruela. Hasta la década de 1880 se habían registrado cuatro grandes epidemias de malaria. El último y más serio brote de malaria en el valle del Urubamba duró de 1932 a 1936 y ocasionó, una seria mortalidad y un grave retroceso de toda actividad humana en la zona de contacto.

Reciente inmigración de "Cholos". La colonización espontánea llevada a cabo por campesinos cholos en el territorio tradicional de los Machiguengas ha variado el carácter cultural de la zona de contacto del Urubamba más que cualquier otro proceso reciente. Ya desde el siglo

XIX, los serranos quechuas fueron inducidos a emigrar a las partes altas de la zona de contacto, cuando los hacendados entregaron a los arrendatarios (arrendires) pequeñas parcelas de tierra a cambio de trabajo en la hacienda. A partir de 1904, una ley de colonización promovió la adquisición de tierras más alejadas, valle abajo, de la zona de la hacienda. Desde que se erradicó definitivamente la malaria, hacia 1940, los campesinos de las alturas comenzaron lentamente a movilizarse aún más lejos valle abajo, colonizando las tierras utilizadas primitivamente por los Machiguengas para la caza y la siembra. Esta migración se aceleró después de 1955, en que la creciente hambruna de la Sierra volcó a más quechuas en la zona. La construcción de una carretera a Koribeni en 1958 y un puente moderno sobre el Urubamba, en Chahuares, en 1962, facilitó este movimiento.

Todas las tierras que conforman la extensión lineal de frente del valle del Urubamba hasta el Pongo de Mainique han sido asignadas ("lotizadas") a alrededor de 350 "denuncios". Muchos *serranos* trabajan en sus chacras de la selva únicamente de mayo a octubre, antes de regresar a la sierra para la siembra. Durante este período, cosechan café, cacao, achote y productos de panllevar, además de lo cual hacen la limpieza de una pequeña extensión adicional de tierra para cumplir con las disposiciones de la ley peruana sobre inembargabilidad de hogares. Sin embargo, menos del uno por ciento de la tierra denunciada está sembrada con productos de panllevar.

En la década pasada, los campesinos andinos (llamados *Puñarunas* por los Machiguengas) han solicitado también tierras al norte del Pongo, y por lo menos 4000 personas de origen serrano ocupan actualmente las que se encuentran entre el Yanatile y el Siapa. Esta migración quechua ha estrangulado a la gente de la selva, especialmente entre los ríos Yanatile y Cosireni, donde, menos de un cuarto de la población es de origen Machiguenga. Como ejemplo puede citarse a Sirialo, donde actualmente todos sus habitantes son quechuas, mientras que en 1806 una expedición franciscana encontró en este lugar tan sólo *Antis*. Casi la totalidad de los Machiguengas al sur del Cosireni viven en las misiones de Koribeni y Chirumbia o bien trabajan como peones en haciendas, y su vida económica y social ha sido arrastrada a la órbita del *cholo* de Quillabamba y Cuzco. Si a esto se añade los bajos niveles de salud de los Machiguengas (Kuczynski, 1946: 27-8), se podrá apreciar cuán problemática es la perspectiva de que, en el futuro, este pueblo conserve su identidad.

Sumario y conclusión

En la zona tropical de contacto del Urubamba se han producido cambios importantes en el comercio y la población, bajo el impacto de la

dominante cultura andina. Aunque los Incas tenían ciertos intereses en esta área, no fue sino con posterioridad a la Conquista española que, en busca de tierras y de conversiones, comenzaron los andinos a modificar seriamente la antropogeografía de la zona.

El intercambio formal de bienes que había tenido lugar entre los *Serranos* y los *Chunchos* durante un período de por los menos 200 años, se había detenido ya al finalizar el siglo XIX. Por esta época, igualmente, el número de Machiguengas había disminuído considerablemente, debido a la alta tasa de mortalidad. La distribución de estos pueblos selvícolas ha variado, conforme los andinos se han ido introduciendo en su territorio y los han ido empujando más lejos valle abajo. En el siglo XVIII, se encontraban algunos *Antis* viviendo en Cocambilla, esto es, bastante río arriba; actualmente el habitat tradicional de los Machiguengas, fuera de las misiones, comienza tan sólo en Comerciato.

El tercer cambio consiste en la desintegración de los Machiguengas, consecuencia de la influencia occidentalizante de los misioneros, agricultores, traficantes caucheros y colonizadores cholos. La división, respetada por mucho tiempo, entre los "civilizados" *Serranos* y los "bárbaros" *Chunchos* ha perdido validez en el valle del Urubamba. Únicamente en algunos valles laterales aislados (cabeceras) mantenían unas pocas familias Machiguengas su acervo cultural original. Probablemente, la duración de todos estos procesos se habría acelerado notablemente si en las arenas del río Urubamba se hubiera encontrado oro y/o si hubiera ocurrido algún importante conflicto intercultural, como sucedió en algunos otros valles. Es evidente que los bosques tropicales del Urubamba, que durante tanto tiempo actuaron como una barrera contra la penetración cultural, continuarán transformándose, junto con sus habitantes aborígenes sobrevivientes, al ritmo que se acentúa la presión de la región occidental del país.

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