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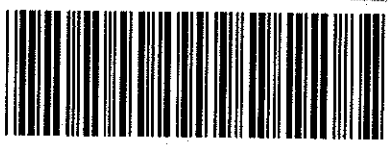

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INTEGRATING INNOVATION: THE TRADITIONAL NAHUA COFFEE-ORCHARD (SIERRA NORTE DE PUEBLA, MEXICO)[1]

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ABSTRACT.—Amerindian peoples have long adopted foreign agricultural complexes, such as sugarcane or coffee growing, which they integrated to their environmental knowledge and practices. Through a survey of the plants associated with the traditional coffee orchard among the Nahua of the Lower Sierra Norte de Puebla (Mexico), we shall try to demonstrate that far from being "disastrous monocultivation," it represents both an economic and an ecological response to increasing population pressure in a tropical montane setting. The success of this response depends on soil selection practices and on a form of caring for the coffee shrubs which the Nahua extended from their home gardens to their coffee orchards. Our native informants identified 184 plants, 87% of them useful, which grow spontaneously in the coffee-orchards or are planted there on purpose. Unfortunately, this native knowledge was not taken into account in the modernization schemes of the 70s and 80s, with very negative economic and environmental consequences.

RESUMEN.—Los pueblos amerindios han adoptado desde hace tiempo complejos agrícolas foráneos, como el cultivo de la caña de azúcar y el café, que han integrado a sus conocimientos y a sus prácticas ambientales. A partir de una encuesta sobre las plantas asociadas con el cafetal tradicional entre los nahuas de la Sierra Norte de Puebla (México), trataremos de demostrar que éste, lejos de constituir un "monocultivo desastroso," representa una respuesta económica y ecológica adecuada al incremento de la presión demográfica en un ambiente tropical de montaña. El éxito de esta respuesta depende de la selección de suelos, así como de una forma particular de cuidado de las plantas que los nahuas extendieron de sus huertos caseros a sus cafetales. Nuestros informantes identificaron 184 plantas, 87% de ellas especies útiles, que crecen espontaneamente en los cafetales o se siembran allí a propósito. Desgraciadamente, este rico conocimiento tradicional no se tomó en cuenta cuando se introdujeron a la región en los años 70 y 80 nuevos esquemas para modernizar la cafeticultura, esquemas que trajeron consecuencias económicas y ecológicas muy negativas a mediano plazo.

RÉSUMÉ.—Les peuples amérindiens ont adopté depuis longtemps des complexes agricoles étrangers, comme la culture de la canne à sucre et du café, qu'ils ont intégrés à leurs connaissances et à leurs pratiques environnementales. À partir d'une enquête sur les plantes associées à la caféière traditionnelle chez les Nahuas de basse montagne, dans la Sierra Norte de Puebla, au Mexique, nous tenterons de démontrer que cette caféière constitue une réponse adéquate, au plan écologique et économique, à l'accroissement de la pression démographique dans ce milieu tropical de montagne. Le succès de cette réponse dépend de la sélection des sols, ainsi que d'une forme intensive de culture des plants que les Nahuas ont transposée à partir des jardins domestiques. Nos informateurs ont identifié 184 plantes, dont 87% sont des plantes utiles, qui soit poussent spontanément, soit ont été intentionnellement plantées dans les caféières. Malheureusement, on n'a pas tenu compte de ce savoir ni de ces pratiques lorsqu'on a imposé, dans les années 1970 et 1980, des schèmes de modernisation de la caféiculture qui eurent de graves conséquences économiques et écologiques à moyen terme.

INTRODUCTION

For over fifty years, the dominant trend in Mexico's agricultural policy (as in most of the Third World) has been to encourage productivity increase through crop specialization and a technology package (e.g., SARH 1990). Yet, recent studies have shown the high environmental cost of this type of "modernization" in terms of pollution and desertification (Restrepo 1988:99ff.; Toledo 1985:30ff.) as well as its disappointing results regarding food production itself (Tarrío, Stephen, and Concheiro 1995). In reaction to this, a conservationist perspective has been rising, which sees "Nature" as an equilibrium and human presence essentially as a disruptive factor which has to be either eliminated (the "Natural Parks" option) or at least submitted to strict controls (the "Biosphere Reserves" option). The latter have been created in various native areas and are in principle more flexible, since they allow for the "traditional uses" of the resources by the indigenous population. However, these uses are often being quite arbitrarily defined by the administrators, more inclined to follow the government lines that to respond to local views and needs (Nigh and Rodríguez 1995:181-200). However well-intentioned, conservationist schemes often clash with the conception and practices of the people involved, particularly, although not exclusively, native peoples (see Arizpe, Paz, and Velázquez 1993). For example, in Chiapas' Montes Azules Biosphere Reserve, Indian peasants are still waiting for the "sustainable harvesting schemes" which were to be announced to them twenty years ago, when they were suddenly forbidden to cut trees in order to plant corn. In fact, detailed studies show that environmental deterioration and land conflicts, mostly due to clandestine logging and cattle-raising, *increased* significantly after the creation of the reserve (Fernández, Tarrío, Villafuerte, and García 1994).

Our perspective will be that of ethnoecology, which Toledo (1992) defined as a meeting-place for the various scholars and practitioners interested in the dynamic relationships between humans and their environments, whether they be biologists, agronomists, health or development specialists. The main interest of our research is not to salvage by-gone ways, however interesting that may be for science's sake, but to help find practical alternative methods of producing food,

medicine, and other goods and services without putting at risk the long-term productive uses of the environment (this is how we define "sustainable development") (Taller de Tradición Oral and Beaucage 1988).

First of all, regarding "resources," it has been pointed out that they do not exist per se: to be considered a "resource," a given plant, animal, or mineral has to be perceived by a human population as satisfying a given need (Alcorn 1981:221). As we shall argue later on, for a large landowner or a government development agency, a coffee plantation is a combination of basic inputs (land, water, plants, fertilizer, labor) all geared to maximize one single output: coffee. This is often considered to be the *normal* form of production: cash-cropping and the peasant coffee orchard will be considered "unproductive" in relation to it (Nolasco Armas and Toledo Ocampo 1977:36ff.). This overlooks the fact that besides the main crop people also gather firewood, plant fruit trees such as oranges (*Citrus sinensis* [L.] Osbeck) and *sapotes* (*Pouteria sapota* [Jacq.] H.E. Moore & Stern), and hunt birds and small game in coffee orchards. Thus, a variety of important resources come from the same orchard. From the point of view of economic sustainability and bio-diversity, we shall argue that traditional indigenous farming is far more adequate. In spite of the very fragmentary state of present-day knowledge of non-Western systems of resource management, it has been shown that many of them include techniques not only for preserving soil and water, but for reclaiming land that is considered eroded or exhausted by Western standards, through natural terracing, careful fallowing, and plant species combinations (García Oliva 1992; Medellín Morales 1992).

At this crucial point, the scientist's interest may meet that of the natives for whom land and its resources are neither a simple reservoir of idle wealth to be put to use for profit, nor an untouchable whole which has to be preserved at all cost from human intervention.[2] Expropriated from most of their lands for centuries, American aboriginal people are now faced with population growth and progressive depletion of various traditional resources. At the same time, resource-hungry industry puts extra pressure on them to obtain minerals, hydro-electricity, or timber, as in Canada, or to include them in agro-industrial development, as in Mexico. Many native organizations are now struggling for *the right to develop according to their own priorities,* and through the implementation of their own ecological and technological knowledge (Sarmiento 1991:94ff).

Our purpose here will be to describe how Indian farmers from the lower Sierra Norte de Puebla, in east-central Mexico, have modified positively their relationships with their environment in a context of economic and demographic pressure. Extensive farm surveys were carried on in various communities in 1969-1972 and then again in 1979-1982 (Beaucage 1973a, 1973b; Beaucage, Gobeil, Montejo, and Vityé 1982; Beaucage and Montejo 1984). In 1986 and 1987 an ethnobotanical and ethnozoological inquiry in a Nahua community from the Lower Sierra revealed a system of knowledge and use of plants and animals as intricate and diversified as that of the Huastec (Alcorn 1981) or the Highland Maya (Berlin, Breedlove, and Raven 1974; Hunn 1977). Two series of plant specimens were collected, mostly during the summer of 1986. One series of vouchers (they contain about 900 specimens each) is kept by the Taller de Tradición Oral in San Miguel Tzinacapan, the other at the Université de Montréal. Time constraints (the research

had to be done from June to August, that is, during the rainy season) prevented us from collecting most specimens in flowering or fruiting stage, a limitation we hope to correct soon through further field research.

Our previous studies on indigenous farming and animal husbandry had overlooked most of their non-farming knowledge of the rich montane tropical environment of the Lower Sierra (see Taller de Tradición Oral del CEPEC and Beaucage 1987, 1988, 1990, 1996). Regarding the plant world, our data show that, besides the basic complex of precolumbian food-crops (such as corn — *Zea mays* L., beans — *Phaseolus* spp.; squash — *Cucurbita* spp.), there is a strong persistence of other native food such as greens, wild or cultivated (see Bye 1981), mushrooms, tree pods, and seeds. The harvesting of forest products, whether they be food, medicine, fuel or raw materials, and the allocation of land between annual crops, fallows, and plantations are integrated into an agroforestal ecosystem which resembles that of shifting cultivation (Arias Reyes 1992) which used to prevail in the area before the implementation of the Liberal reform in the 19th century (see below).

At the same time, the Indian farmer has long integrated a variety of cash-crops, sometimes of precolumbian origin, such as vanilla (*Vanilla planifolia* Andr.) (see Kelly and Palerm 1952) or avocado (*Persea americana* Mill.), but mostly of foreign origin, such as sugarcane (*Saccharum officinarum* L.) (Paré 1979) or coffee (*Coffea arabica* L.) (Durand 1975; Hoffmann and Sallée 1993). The adoption of these crops was long considered due to outside forces (called "modernization" or "capitalist penetration," according to the author's ideology) on a passive Indian population. The active role played by Indian producers in adopting, integrating, and modifying these "foreign elements" into their economy and way of life is not commonly addressed. In fact, there is a considerable amount of confusion in the debate regarding what should be called "native" or "traditional", particularly in areas, such as Mexico, where the original inhabitants have been in direct contact with Europeans for centuries. Contrary to those who claim that the term should be limited to techniques or resources of precolumbian (or at most, colonial) origin, we will try to demonstrate that:

1) The generalized adoption of coffee-growing by Nahua and Totonac farmers, well into the 20th century, as an *addition* to corn-growing, was an ecological response to a double challenge: the transformation of communal titles into private smallholdings *(desamortización)* during the late 19th century, which prevented them from moving crop sites as they had done before (Ramírez, Jaímez, and Valderrama 1992:16), and a rapid population increase (Beaucage 1995:354), which challenged the sustainability of the previous short-fallow *milpa* agriculture. Moreover, the same demographic growth made sugarcane (which had been previously added as a cash-crop) non-sustainable on a large scale.

2) On the extremely broken environment of the Sierra, a clear pattern of traditional *soil-selection* emerges: on the gentler, more fertile slopes, *milpas* were interspersed with coffee orchards, while the steeper and rocky ones were devoted to coffee-growing alone, or kept for firewood, timber, hunting, and collecting purposes. This pattern helped to preserve the soil fertility and moisture and the overall sustainability of the agro-forestal system which progressively came to be mostly a *milpa*-coffee orchard system.

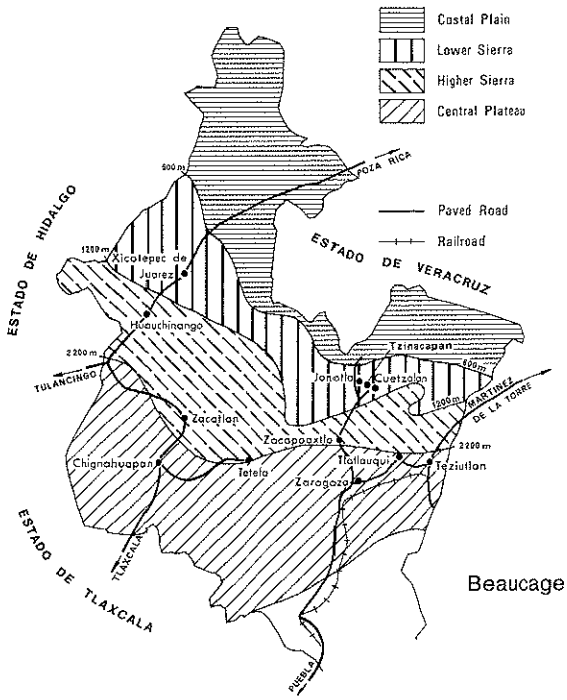
3) The native way of managing the coffee-orchard itself, far from being "disastrous monocultivation," in fact recreated on the steep slopes a diversified environment analogous to the tree cover which was being replaced (with hundreds of associated vegetal and animal species). This was made possible because of a specific pattern of plant care, including intensive "hand-weeding" of the orchards.

4) These three basic features were threatened after World War Two, when higher international prices for coffee and the improvement of the road network made the *substitution* of *milpa* by coffee orchards increasingly advantageous from an economic point of view. But it appears that the real challenge came in the mid-seventies, when the State Coffee Board (Instituto Mexicano del Café) gradually imposed in the Lower Sierra a technology-credit-marketing package which involved new coffee varieties, strict monocultivation, and a change in working patterns, together with fertilizers and, lately, pesticides.

THE ENVIRONMENT AND THE PEOPLE

The community of San Miguel Tzinacapan, where this study was carried out, is part of the Municipio of Cuetzalan, in the Eastern Sierra Madre. The area, administratively known as the Sierra Norte de Puebla, encompasses four different ecosystems (Pacheco Munguía 1969) (Figure 1):

FIGURE 1.— Ecological zones in the Sierra Norte de Puebla (Mexico)



Beaucage 1973a:119

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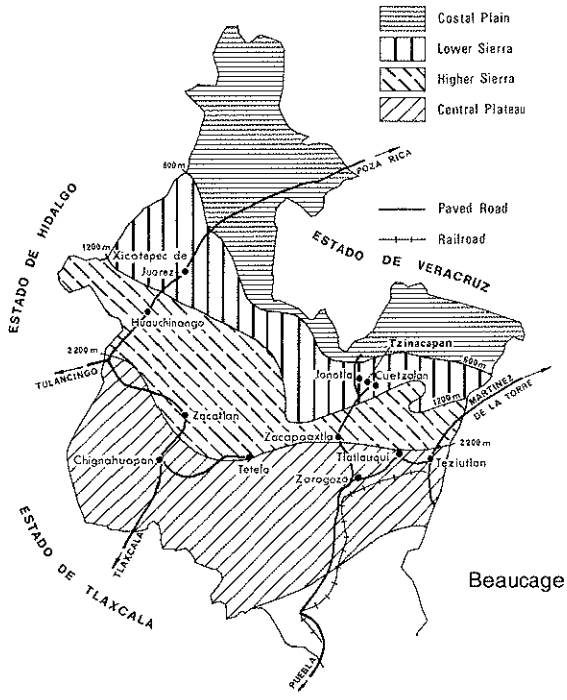


Beaucage 1973a:119

1) The central highlands, with altitudes over 2000 m, occupy the south western part. The climate is cold and dry with annual rainfall under 1000 mm. It is devoted to grain-growing and cattle-ranching, and its present, mostly mestizo population, lives in relatively large villages and towns. The main food crops are corn, barley (*Hordeum vulgare* L.) and beans, while alfalfa (*Medicago sativa* L.) is grown on irrigated plots as cattle fodder.

2) The Sierra Madre Oriental in its higher section (1500 to 2000 m) is cold and subhumid, with annual average rainfall around 1500 mm. The area was originally covered with a highland forest of oaks (*Quercus* spp.) and pines (*Pinus* spp.), with other species such as sweet gum (*Liquidambar styraciflua* L.). Only vestiges of this flora remain in deep canyons or mountain tops, since most of the land has been cleared for agriculture and pasture. It is densely populated; the farmers, mostly Nahua Indians (plus some Otomi in the Northwest) live dispersed among the hills. They grow corn, beans, and some vegetables for subsistence. Mixed orchards are planted as a complement: avocados (*Persea americana* L.), apples (*Malus communis* L.), plums (*Prunus* spp.), pears (*Pyrus communis* L.), and peaches (*Prunus persica* L.). They keep a few pigs and poultry, sell forest products (firewood, charcoal, and timber) at lively local markets and migrate to the lowlands to work as farm hands and woodcutters.

3) The lower Sierra (between 500 and 1500 m) is warm and humid (rainfall averaging between 2000 and 4000 mm a year). It was originally a zone of montane tropical forest, with such typical elements as cedar (*Cedrela odorata* L.), mahogany (*Swietenia macrophylla* King), and giant ferns (e.g., *Cyathea mexicana* Schlecht. & Cham.). Here too, the original vegetation is to be found only in the most inaccessible parts. Population is extremely dense (275 per km^2), semi-dispersed, and mostly Indian: Nahua to the north and south, Totonac in the middle. Farmers grow corn for subsistence (two crops a year are possible), coffee, "allspice" (*Pimenta dioica* [L.] Merril), *sapote*, oranges, and some sugarcane (*Saccharum officinarum* L.) for sale. San Miguel Tzinacapan, the Nahua community we shall be dealing with, is located in the southern part of this ecosystem. Approximately one-third of its 3000 inhabitants live in the main settlement *(cabecera)*, at approximately 750 m above sea level; the others are scattered in small villages and hamlets, downhill to the north (Figure 3).

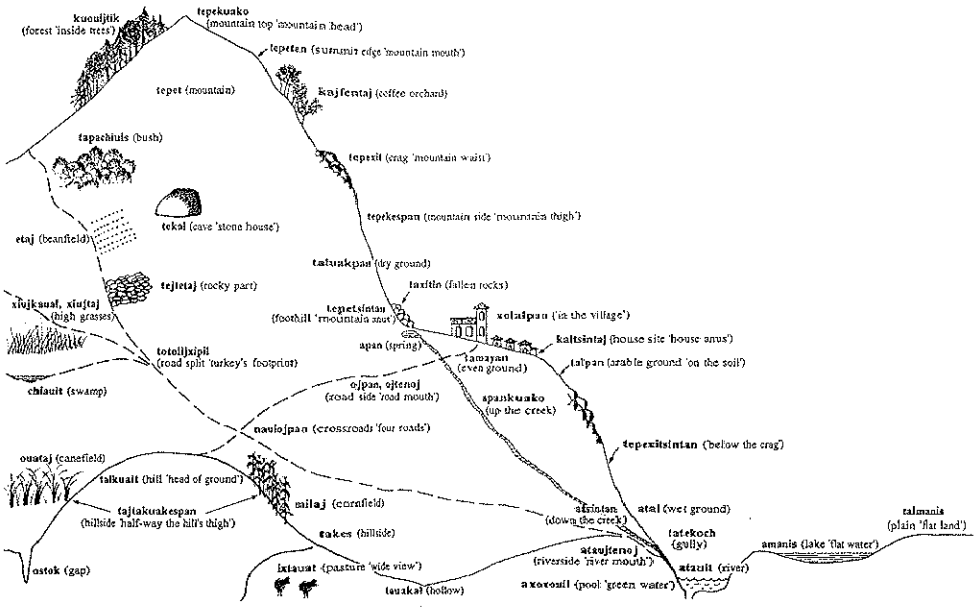
4) Further north and east, the coastal plain (under 500 m) is hot and humid (1500 to 2000 mm of rainfall per year). It was a zone of tropical forest and savannahs, which has given way to large pastures, cornfields, and plantations (vanilla, bananas [*Musa* spp.], citrus fruits). Its sparse population is mostly mestizo except to the north, where Totonac Indians predominate.

A NAHUA VIEW OF THE ENVIRONMENT

The Nahua from the Sierra have developed a very precise knowledge of the different components of their rugged environment, of its plant cover as well as agricultural potential, all of which is reflected in a rich topographic terminology. For the lower Sierra alone, we collected 31 terms referring to different geotopes and ecotopes (Figure 2). The various geotopes refer to a vertically-defined environment, its two main elements, the mountain and the river, being metaphorically

assimilated to the human body. The mountain's 'head' *(tepekuako)* is the summit; its 'lip' *(tepeten)*, the summit edge; its 'waist' *(tepexit)*, the crags, its 'thighs' *(tepekespan)*, the mountain sides; and its 'anus' *(tepetsintan)*, the foothills. Similarly, the stream *(apan, atauit)* has its source or 'head' *(apankuako)*, its 'lips' or shores *(ataujtenoj)*, and its 'anus' *(atsintan)*, which is the lower course. Rolling hills are 'heads of the land' *(talkuait)*.

FIGURE 2.—Nahuat Ethnotopography (Lower Sierra Norte de Puebla)



Plants, either wild or grown, bear a specific relation to a given niche (*ichanyojko*, 'its home'). For example, corn and cane have to be planted on proper 'soil' *(tal)*, that is on the lower and more gentle hill-sides, while coffee and fruit trees may be planted on the steeper, rockier slopes, where beans may also be sown on (burnt) shrub *(tapachiuis)*. Bananas thrive on the richer alluvial soil of the river shores *(ataujtenoj)*. The village itself is usually built on a ridge *(tatempa)*, halfway up the hillside, where permanent springs *(apan)* are to be found, with hamlets and individual farms scattered through the intensively cultivated countryside. Hundreds of toponyms are attached to the village lands, marking every topographic particularity: hill, ravine, rock, or spring, and relating it either to an animal or plant, or to some physical or supernatural trait (Taller de Tradición Oral and Beaucage 1996).

ETHNICITY AND CLASS IN THE SIERRA

Four different ethnic groups are found in the Sierra: the non-Indians or mestizos, dominant on the plateau and the coast; the Nahua, whose habitat stretches from the highlands to the lower mountain slopes; the Totonac, concentrated in the latter area and in the adjacent lowlands; and a pocket of Otomi Indians in the northwestern highlands. The Indian population of the Sierra for 1990 can be estimated at over 320,000, including about 210,000 Nahua, 100,000 Totonac and 9,500 Otomi[4]. As elsewhere in Mexico, Indian population is steadily increasing, in spite of emigration and acculturation, which affects particularly the highland Nahua.

Mestizos are a minority in most of the lower Sierra and usually dwell in the small township centers *(cabeceras municipales)* where they live off commerce and professional services; the wealthier of them control business and local administration, and own plantations and pastureland in the surrounding countryside. These holdings, although not large by Mexican standards, contrast with the tiny plots of the peasants, most of them Indians. For example, in Cuetzalan, in 1970[5], 1,122 farmers (45% of the total) owned less than one hectare, while another 1,022 (41%) had slightly over two hectares. At the other end of the spectrum, six owners had a total of 1,540 ha (Dirección General de Estadística 1975:63, 75). On the other hand, between one quarter and one third of Indian farmers in a given community own no land at all, and work as sharecroppers and farm hands. (For a detailed analysis of the social and economic structures of the Sierra, see Arizpe 1973; Beaucage 1973a, 1973b; Chamoux 1981; Durand 1975; Paré 1973).

There is little, if any, physical difference between the Indians and most mestizos. Moreover, nowadays young Indian men have replaced the traditional white *calzones* and shirts with factory-made clothes. In the lower Sierra, however, the vast majority of Indian women still wear the distinctive white skirt and embroidered blouse, wide red belt, and *huipil*. Both mestizos and Indians now live in settlements which have much in common: colonial churches and tile-roofed houses at the center, huts made of planks and cardboard at the periphery, surrounded by fruit trees and coffee groves. The basic food is everywhere the corn-cake or *tortilla*, complemented with beans, hot peppers (*Capsicum* spp.), and a variety of wild and cultivated greens (known as *quelites* in Mexico, ***kilit*** in Nahuat; see Bye 1981).

Yet, a closer look reveals that ethnic differentiation is one of the basic dimensions of social life in the Sierra. On Sunday, the market day, in a large township center such as Cuetzalan, the streets are filled with Indian people from the surrounding countryside. They speak Nahuat (see note 3) among themselves, but most will address merchants in Spanish. In fact, only the streets, the market place, and the co-op[6] house are theirs; they make short stops in the shops to purchase some goods or have a drink; then most leave town long before dark, to return to their villages and hamlets. Indians and non-Indians have talked and exchanged in a very ritualized way, but have not mixed.

Ethnic identity, in the lower Sierra, does not belong to the symbolic level of interaction alone. It entails for its members sharing a way of life, including a particular way of making a living and a particular relationship to the environment. Although both the economy and the ecology have undergone important changes

during the last hundred years, the Indian way *(masewalkopan)* is still quite differentiated from the non-Indian way *(koyokopan)*, and consciously so. In order to understand the present-day pattern of resource management, it is necessary to have a look at the historical process of interaction and conflict between the two groups, in this particular environment.

HISTORICAL BACKGROUND: THE FORMATION OF A CULTURAL ECOSYSTEM

It appears that at the time of the Spanish conquest, what is now known as the Lower Sierra did not constitute an autonomous society. Globally designated by the Aztecs as ***Totonacapan*** ("Totonac country"), it had been conquered some centuries before by Nahuat-speaking Chichimecs who divided it into various domains (De Carrión 1965:20). The stretch of land between the Tozan and the Apulco rivers, which includes Cuetzalan and Tzinacapan (Figure 3) appears to have been scarcely inhabited, forming a buffer zone between the Totonac, who lived to the north of the Tozan river, and the Nahua who settled south of the Apulco. A few generations before the arrival of the Spaniards, the whole region was incorporated into the Aztec Empire (García Martínez 1987:47).

The Spanish chroniclers of the 16th century mention the lower Sierra. Like today, the subsistence of the Nahua and Totonac was based on the cultivation of corn and other food-crops: peppers, beans, squash, and greens (González 1905:129-130). Poultry-breeding, fishing, and hunting were additional sources of food, and it is reported that "they cure themselves with many herbs which grow in the mountains and crags" *(ibid.)*. Apart from working for their local lords, they had to pay a tribute to the Aztecs: people from the higher Sierra contributed liquidambar resin and skins; those from the lower Sierra gave luxury garments made of locally-grown cotton (*Gossypium hirsutum* L.) and precious feathers (e.g., from *Trogon* spp., ***kuesaltotot;*** hence the name "Cuetzalan"). Those from the adjacent lowlands had to send salted fish, honey, and peppers (Paso y Troncoso 1980:51ff; Beaucage 1974:31-32). The only mention of trade by the chronicler refers to salt, which "they bring from Teguacan [Tehuacán], a town that is forty leagues away from here" (González 1905:130). Available data thus show that in the 16th century, Indians of the Sierra exploited the varied resources of their environment as is still done today: the land for diversified farming, the rivers for fishing, and the forest for hunting and collecting.

After the Spanish conquest, the Indians were subjected to the harsh regime of the *encomienda*. Natives were "bestowed" on a conquistador who could use their labor at will, and who was supposed to convert them to Catholicism (Gibson 1964:58-97). This regime, which allowed all kind of abuses, was of short duration in the Sierra. Because no mines were found, greedy *encomenderos* soon found better prospects elsewhere. At the end of the 16th century, Indian communities were given a semi-autonomous status *(repúblicas de indios)* under the tutelage of civil servants *(corregidores, alcaldes mayores)* (García Martínez 1987:311-319).

In spite of sparse contacts with foreigners, epidemics took a heavy toll in the Sierra as elsewhere in the New World. In the 1581 survey, all communities claim that their population had dwindled due to "fever" and "pestilence." It seems that

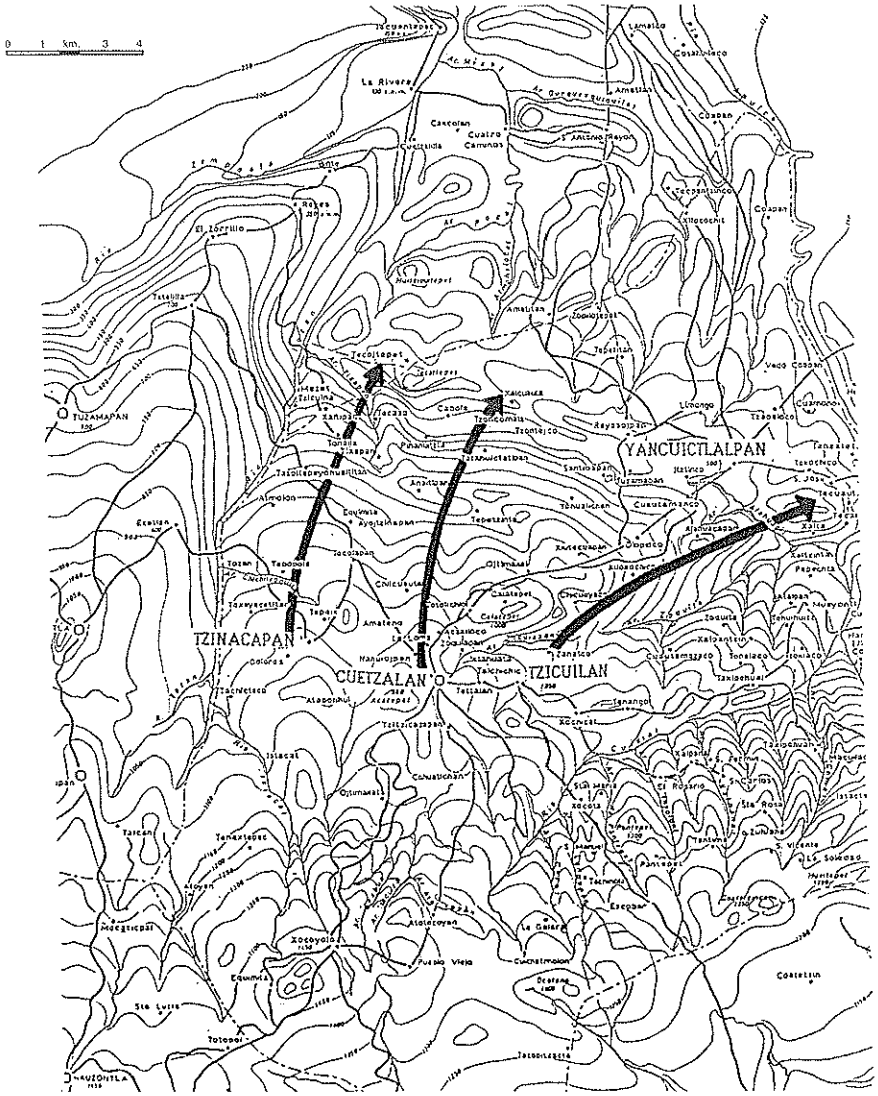
the decline was greatest in the lower Sierra and the lowlands: in both areas some communities disappeared altogether, including "Quetzalcoatl," which was located near where Cuetzalan is today (*ibid.*: 114). In the 1550s, when it received its first land grant, Cuetzalan had a total population of 240 (*ibid.*: 324, 358). From the beginning of the 17th century on, however, one can observe a stabilization and steady if small population increase among the natives. Cuetzalan already was a parish with a resident priest, and its people cultivated corn, peppers, and cotton; fished and raised chickens (*Gallus gallus*) and turkeys (*Meleagris gallopavo*) (Mota y Escobar 1940:225). In 1725, we know that there were various settlements within the parish (AGN Indios 50:f 344r); in 1788, it had 740 tribute-payers, which indicates approximately 3,700 inhabitants (AHML 26/3/1788). One century later, there are 1,470 household heads listed, which allows a total population estimate of about 7,350 (AHMC: *Padrón de vecinos*).

This growth induced a steady extension of the agricultural frontier at the expense of the tropical forest which originally covered most of the township. Generally speaking, the population moved from the three main settlements in the center downhill to warmer slopes to the north (Figure 3). Elders state that the village of Tzinacapan ("Bat Spring") was established in the foothills to take advantage of a permanent spring, since the springs to the north dry up in April-May. The people went to farm in the lower hills (between 500 and 700 m) where corn can be harvested twice a year. The exploitation of different ecological levels also allowed for a large number of crops. A 1904 document lists 58 local crops, 36 of them native, including grains, legumes, fruits, and greens (Ramírez, Jaímez, and Valderrama 1992:29-30). The "cold" area to the south of Tzinacapan, over 1000 m, supported only one crop of corn per year, and was never settled nor steadily farmed by the Indians. It was kept as a forest and used for firewood, timber, and game supply. The forested areas also provided large *Beilschmiedia* (Lauraceae) leaves for thatch, fruits and berries to collect, as well as certain staples which were eaten during periods of food shortage, such as the root of the ***pesmakuouit***, or tree fern.

This generalized exploitation of resources was made possible through communal land tenure. Colonial authorities had acknowledged the existence of communal land titles (*común de naturales*), and made them the basis of the local Indian community. Until the end of the 18th century, no one came to the Sierra to challenge it. Any Indian family could hunt, pick wild products, cut timber, and farm wherever seemed fit and an empty plot was available. An 1877 document states:

> Prior to the *Ley de desamortización* [1856 law which suppressed Church and Indian land titles], the Indian class, the most numerous, would till in small scale, sowing every year a plot without paying any rent, so as to satisfy their basic needs and, once the harvest was picked, would move to another spot where they would make another small clearing, forgetting [*sic*] the one they had made before (AHMC 12/9/1877, quoted by Ramírez, Jaímez, and Valderrama 1992:16).

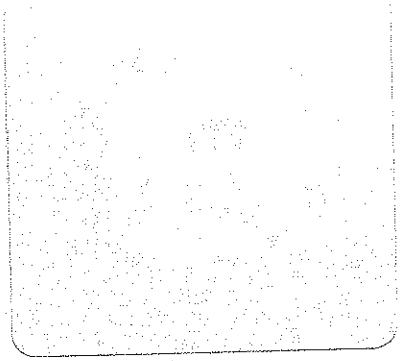
FIGURE 3.—Internal Migrations and Land Occupation: Municipio de Cuetzalan (1870-1970)



This farming system was criticized as "primitive" by the Cuetzalteco bourgeoisie, who wanted to suppress the communal land tenure that went with it; in the same way many modern agronomists consider permanent cultivation the *normal* form of farming and hold "slash-and burn agriculture" responsible for erosion and deforestation. However, anthropologists have argued for years that, in a tropical mountain rain-forest (such as the Philippines or the lower Sierra) it may be the optimal farming technique, as long as the population is not too dense (Conklin 1957). The yearly relocation of the "small plots," together with long fallow periods and rapid secondary growth, inhibits soil exhaustion and erosion. Nearly continuous rainfall, drizzle, and fog make for a thick ground vegetation (mostly *Bidens* spp.and *Melampodium divaricatum* [Rich.] DC) in cornfields at harvest time. And population, in mid-19th-century, was 54.3 inhabitants per km^2, so there was little pressure on the land.

Indians strongly resisted the parcelization of communal lands after 1860, not because they rejected "progress," but because they saw land-hungry mestizos take advantage of the suppression of Indian titles to fence off their corn lands, turning them into pastures, and to cut their *Beilschmiedia* groves to plant the first coffee orchards. The native leader Francisco Agustín Dieguillo (Palagosti) led an armed uprising which succeeded in stopping the expropriation (Thomson 1991). However, the new law finally was imposed and Indians asked for, and obtained, individual land titles *(adjudicaciones)* for their plots. This prevented massive land expropriation in this part of the Sierra, as occurred elsewhere in Mexico during the long reign of Porfirio Díaz (1876-1910). However, mestizos did grab much of the "unused" land to the south of Tzinacapan and converted it into pastures and coffee orchards.

Individual landownership allowed for the development of cash-cropping in the lower Sierra: sugarcane, and later, coffee. Sugarcane had long been known, but it seems that its cultivation increased considerably during the first half of the 20th century, as a rapidly increasing population was pushed further down the hills. There they found fertile lands and abundant firewood, needed for the transformation of cane-juice into brown sugar, the raw material for the rum distilleries opened by local mestizos. In the late 1930s, as firewood became scarce and as the road network expanded, allowing cheaper sugar to come in from Veracruz, sugarcane was progressively replaced by coffee. The causes of its success are no mystery: at post-World War Two prices, the output of an hectare of coffee orchard reached about four times that of a cornfield (Beaucage and Montejo 1984:14,18). With better roads, the region could also import increasing amounts of corn from the neighboring plateau and export its coffee overseas more easily.



PLANT ASSOCIATIONS IN THE COFFEE ORCHARD *(KAJFENTAJ)*

The ethnobotanical inquiry was carried out among 52 members of the community of San Miguel Tzinacapan, 35 men and 17 women: farmers, craftsmen, and healers. Specimens were collected with informants throughout the countryside, and interviews were conducted in Nahuat in the village.[7] We recorded 636 generic taxa, of which the Nahua explicitly associated 184 with coffee, when asked, "Where does it grow more?" (*¿Kanin semi mochiua*?) and "What grows with it?" (*¿Toni seki mochiua kampa mochiua nejín*?). The most frequently mentioned plant associate is the native Inga tree ***(chalauij)***, which gives coffee the necessary shade. Among the 184 coffee-associated plants, 128 (69%) are considered by the Nahua to be 'wild' or 'not planted' (***mochiua saj:*** 'it grows by itself'); 33 (18%) are usually planted (se kitoka: 'one plants it' or no se kitoka: 'one can also plant it') while the remaining 21 (13%) are not planted but do receive some special care (***se kikaua, mochipaujtani:*** 'one spares it', 'one weeds around it'). Thus, most associated plants, in a microenvironment supposedly altered by human beings, grow from seeds that have been brought by the wind, water, or unplanned human or animal intervention. Those which are planted are mostly post-conquest fruit trees: orange (*Citrus sinensis* L.), lemon (*Citrus limetta* Risso.), mango (*Mangifera indica* L.), while those which are either planted or protected are precolumbian plants grown for food: e.g., pepper-bush (***chiltekpin***, *Capsicum annuum* L.); ornament (e.g., ***chamakijisuat***, *Heliconia bihai* L.f.); or fencing (e.g., ***chakaykuouit***, *Bursera simaruba* L. [Sarg.]).

With reference to the native classification, 81 (44%) of the associated plants are 'trees' ***(kuouit)***, 34 (18%) are 'herbs' ***(xiuit)***, 27 (15%) are 'vines' ***(kuamekat)***, and the rest are distributed among the other 12 Nahuat "life forms" (Taller de Tradición Oral and Beaucage1987:27ff.). The environment of the Sierra and the microecology of the orchard explain why such a large proportion of the associated plant are trees: a plant that needs much sunlight will not thrive under the double screen of the coffee trees and the *Inga*; shade-intolerant plants, e.g., mandarin orange (***xokoklavoxochit***, *Citrus reticulata* L.), are planted on the edge or 'lip' of the orchard ***(kajfentajtenoj)***.

Regarding the uses of these plants, 57 (31%) are food plants (***se kikua***, 'one eats it'), 48 (26%) are used as remedies ***(pajti)***, at least 36 (19%) are used specifically as firewood ***(tikuouit)***, 18 (10%) as timber ***(kalkuouit)***, and 12 different flowers and palms as ornaments for domestic or church altars (6%). The rest either have specialized uses such as basketmaking, fences, tying, etc. (48, or 26%), or are defined as 'useless' ***(amo kualtia para teyi)*** (25, or 13%). This distribution pattern is similar to that of the 636 generic taxa identified in our general inquiry[8] (Taller de Tradición Oral and Beaucage 1987:23-24). When asked about what they get out of a coffee orchard (apart from coffee itself), people spontaneously mention 'firewood', of which an average family needs about 55 kg (three forty-pound loads) a week. Apart from fruits, which are seasonal, during most of the year, the coffee orchard will yield mushrooms ***(nanakat)***, wild edible herbs such as ***metstsonkilit*** (*Xanthosoma nigrum* [Vell.] Stellf.), herbal remedies such as ***akokojxiuit*** (*Piper sanctum* Schlecht), and various vines used for basketmaking (Table 1).

Within such diversity, there are basic associations. The most fundamental is that between the coffee plant (***kajfenkuouit***, *Coffea arabica* L.) and its 'shadow' (***yekauil***), most usually provided by the genus *Inga* (***chalauij***): *I. leptoloba* Schlecht and *I. latibracteata* Harms. (***kuamekachalauij***); *I. spuria* Humb. & Bonpl. ex-Willd. (***tiltikchalauij***); *I. xalapensis* (***atenchalauij***); *I. jinicuil* (***xonekuilkuouit***). In effect, the C. *arabica* brought to the area in the 1860s (today called *café criollo*, "native coffee") grows best under shade, which enables it to stand the short dry season (April-May) and protects its flowers and young fruit from the violent winds and showers of the late winter and summer. *Inga* has been known to the natives of the area for a long time, and is used for living fences, firewood, and even food: the inner part of its pod is a delicacy. It would appear that the first mestizo planters selected it because of its particular properties: from cuttings planted in the ground, it grows easily and more quickly than the coffee plants, and the adult tree will spread a large, umbrella of foliage 20 m above the ground. Moreover, its leaves make an excellent manure. It suffers no damage from pruning, which is necessary when the foliage becomes too thick.

Nahua and Totonac Indians also used *Inga* for shade when they started growing coffee. But there stops the parallel with the mestizos. For they had different views and techniques which oriented their utilization of the plant. First, mestizos plant their coffee trees in rows, on gentle slopes, at a distance of about three meters, for a total density of 1000 coffee plants per hectare, covered by up to 100 *Inga* trees. The yearly pruning is done after the end of the harvest (January) and the ground cleared by machete during the dry season (April-May). Apart from increasing production, pruning keeps the coffee shrubs from growing too high, which would make harvesting more time-consuming.[9] Before the introduction of new varieties in the 1970s, the same bushes were grown until their production declined markedly, that is, after 20 years. New saplings would then be matched with the old plants, the older being cut as the younger started producing.

Native coffee farming differs in five important points: 1) Traditionally, they keep their best land for corn and planted coffee shrubs on the rockier, steeper hills, as well as between houses on the village site (***xolalpan***). While successful mestizo farmers prefer to specialize in coffee and buy their corn, Indian farmers insist on the necessity of producing at least a part of their own subsistence needs: cash-cropping should be reserved for market goods. As one informant stated it:

> Nice is the life of the farmer. He plants his corn and weeds it and then he harvests it so that he does not need to buy any (Beaucage 1987:35).

2) They plant coffee saplings in 'beds' (***koyok***), four at a time, more irregularly and at a greater distance (four-five meters apart) than the mestizos. Apart from the limitations of a more rugged terrain, this technique makes for an easier picking, since the trees will bend to the outside when the branches are loaded with grain. Pickers gently pull the branches down as they work so as to make further work easier. 3) They do not prune the coffee nor *Inga* trees systematically, but cut off the overgrowth all year round, whenever they need firewood.

> First comes firewood; we need it all year round. So there is no sense in cutting all the branches at once and letting them rot. (Nahua male farmer)

4) The Indians also used to weed the orchards by hand:

> We always weed by hand. If we see some herb useful for curing or some (useful) sapling, we let it grow; if it is useless, we pull it out. (Nahua female farmer)

5) Finally, among the natives, the life-cycle of coffee plantations is directly linked with the family cycle. Indian farmers often plant a new coffee-orchard (or renew an old one) as they settle as young family heads. In the extended patrilineal family, sons (and sometimes daughters) are allocated parts of the father's lands so as to become progressively independent. This original plantation will often be kept in production up to 30 years or even more, for natives are loath to cut down a plant which is still bearing fruit ***(takistok ok).*** Since a man is not expected to engage in heavy farming labor inputs after fifty, it will be his sons, usually, who will start the coffee cycle again.[10]

As a result, Indian coffee orchards, in contrast to mestizo plantations, are interspersed with citrus trees, mangoes, *sapotes*, yucca (*Yucca* spp.), and allspice, together with the odd oak, cedar, mahogany, and any other tree which had been preserved while clearing or whose seed had been dropped by a bird or squirrel. These trees also provide shade for the coffee, and are harvested and pruned when their foliage becomes cumbersome. Around the little hut ***(xajkal)*** that is built to shelter the family during the long harvesting season (October to January), the housewife soon adds some peppers, squash, and flowers for the domestic altar. Even the "useless" plants are cut into pieces with the machete and spread on the ground as vegetal manure.

Informants explain the differences between mestizo coffee farms and theirs as follows:

> Mestizos from Cuetzalan have money, and we don't. They buy corn and firewood. They pay people to weed their coffee orchards, so they want the work to be done quickly. While *we do it by hand*, a little every day, as we go to the fields (Nahua female farmer).

The reference to economic status, while quite real, does not explain everything. Let us go back to the weeding technique which, I propose, has been crucial in giving the Indian coffee orchard its actual ecological characteristics. The weeding of cornfields ***(milmeua),*** an obviously much older practice, is done with the hoe (***tasaleuia,*** from ***salo,*** 'hoe'), various men working in a row, moving uphill; while the clearing of high grasses and shrubs ***(tauiteki)*** is done with the machete. So the hand weeding of the coffee orchards was neither copied from mestizos nor transferred mechanically from the main crops. Where did it come from?

A closer look at the plant association gives us a clue. We see that among the plants associated with coffee shrubs are 12 kinds of flowers; among them, hortensias (*Hydrangea hortensia* D.C.) and camelias *(Camellia japonica)* which are not usually planted in the bush. Moreover, when asked about the 'proper place' or 'home' ***(ichanyojkan)*** of the 184 plants, 15 of them were said to belong to the 'house site' or 'backyard' ***(kaltsintaj, kalikampa).*** This includes many of the fruit trees and the useful shrubs. An aerial look at an Indian village of the Sierra shows that the village itself is probably the most intensely cultivated area (Mathieu 1986:38). Long before the introduction of coffee, this area around the houses was already planted with fruit trees and ornamental plants and contained a small fenced garden, with

edible and medicinal herbs.[11] This is the area where weeding by hand was traditionally done, both for esthetic purposes and to enhance the growth of protected plants.

> If you clear it with the machete, it won't last long. The weeds will soon be back and choke your flowers; and make you wet with dew when you walk! (Nahua male farmer)

We suggest that, when the natives progressively adopted coffee growing during the first half of this century, they considered it an extension of the home garden ***(kalikampa)*** and applied to it the same intensive techniques. The small size of the orchards (usually under one hectare) and the fact that the labor input in coffee-growing does not interfere with the main corn cycle, made it possible. So a convergence of factors (land-ownership, local history, market trends, and most of all, Indian knowledge of intensive farming) made the traditional Indian coffee orchard (and, to a much lesser extent, the mestizo coffee orchard) a remarkably adequate substitute for the forest cover which was being removed from the steep slopes of the Sierra under growing population pressure. In a traditional orchard, one can walk on a thick layer of decaying leaves and humus and feel the freshness in the air, and, even in the dry season, hear the bees and birds buzzing and singing.

EPILOGUE: THE INSTITUTO MEXICANO DEL CAFÉ AND THE INDIAN FARMERS

In the 1970s Mexico became at once short of food and short of foreign currency to buy the industrial inputs its economy required. For the Green Revolution, which the government (and its foreign sponsors) were so proud of, never extended further than the large and mid-sized farms that produced for industry and export. As for the millions of peasant families that had been given small *ejido* plots in the hills and were supposed to feed the cities forever, they did it, until the land was too exhausted to feed their own families. In 1969 the breaking point was reached and the price of corn started to rise; wages followed, and Mexico had to buy millions of tons of grain abroad (Mérigo Orellana 1979). At the same time, the countryside, which had been relatively quiet for thirty years, saw the revival of peasant unrest (Bartra 1979).

To solve this multiple problem, the Echeverría and López Portillo governments had one basic solution: modernize the countryside so as to increase the productivity of the peasant producer. From 1978 on, especially, substantial funding and technical support was channeled to that purpose. In the lower Sierra it took the dual form of *Plan Zacapoaxtla*, a global development program with a staff of agronomists, and a coffee development program, managed by a special government agency, the Mexican Coffee Institute (INMECAFÉ). Each institution carved out its own sphere of activity: for most farmers, the co-operative (which the Plan Zacapoaxtla counselors helped to put in place) was the place to buy cheap corn and to sell allspice and *sapote*, while INMECAFÉ gave credit and bought coffee at a better price than the traditional intermediaries (Beaucage *et al.* 1982).

For the Mexican State, its scientists and intellectuals, the peasant farming problem appeared as an opposition between Science and Ignorance, Rationality and Tradition. Often, but not always, based on correct evaluations of regional ecosystems, agricultural policy aimed at substituting for peasant ways a techno-economical package designed to maximize the productivity of land and labor. The more centralized the agency, the less room was left for local technicians and administrators to take into account peasant knowledge and practices, what Bourdieu called *le sens pratique* (1980). The experience of INMECAFÉ is quite pathetic in this respect.[12]

Following the Green Revolution philosophy, this agency viewed the small traditional orchards of coffee bushes and fruit trees as unproductive. It extended credit to peasant farmers, under the condition that they should "renew" their orchards, that is, increase their size and plant them with new high-yield varieties: e.g., Mondo Novo, Caturra, Borbón. The new varieties start producing three years after planting, instead of after five, and give two to four tons per hectare instead of one. They were shorter (so, easier to reap) and needed no shade, but did need fertilizer and careful yearly pruning. Enticed by the credit opportunities and the good prices paid from 1978 to 1986, a majority of Indian farmers entered the government scheme. Much corn land was converted to coffee: in 1982, the net income for the latter was ten times higher, per hectare, than the best *milpas* (Beaucage and Montejo 1984:23-24). However, money was now badly needed, not only to buy corn at ever-increasing prices, but even to buy firewood, which was getting scarce. In the 1980s the patchwook of dense, dark green orchards and bright green cornfields was giving way to an homogeneous scene of rows and rows of new coffee plants. INMECAFÉ officials could boast that, "thanks to the State efforts and peasant cooperation," the traditional coffee orchard was almost a thing of the past.

Their reasoning worked well in the abstract: a given number of high-yield coffee shrubs per hectare, combined with a given amount and kind of fertilizer, and a given number of man-days, should produce four tons of beans instead of one. But all other plants had to be removed, since they compete with coffee for sunlight and soil nutrients; and all weeding had to be done with the machete or with herbicide. In order to have access to credit and marketing services Indian peasants had to lay aside the experience achieved by generations of farmers in this rich but delicately balanced environment, and accept the abstract logic of the developers.

However, INMECAFÉ's program depended for its success on various conditions, some of which were clearly beyond local control, such as prices of food and farm inputs and, most of all, the international price of coffee. It stuck to its policy throughout the 1980s, although it was increasingly evident that worldwide overproduction could only lead to a market collapse. This occurred in 1989, when the U.S. and the other Western countries refused to sign a new international agreement on coffee quotas and floor prices. In a matter of months, prices paid to the producer fell from $0.60 US to $0.20 US per kg. For example, 1992 prices were not high enough to pay for harvesting, let alone growing, coffee. The Mexican Coffee Institute, which had run up a multi-million dollar debt, was dissolved. As if that were not enough, a December 1989 frost damaged or killed most coffee plants above 500 m throughout the Gulf Coast region.

Eight hundred thousand families throughout the tropical mountains of Mexico were affected. Most farmers simply picked whatever coffee was left, without putting additional labor into maintenance. Those spared by the frost discovered that the new varieties had quickly-decreasing yields when the expensive fertilizers were no longer applied, and that they stopped producing altogether after 15 years, while previously they had lasted up to 30 years. Many then decided to cut down their orchards and plant corn instead, adding the risk of quick erosion. The better-off were — and still are — those whose had kept their multipurpose orchards, mostly older farmers. For their *café criollo*, under the shade of *Inga* trees, better resisted the frost, and they still could sell oranges and *sapotes* on the national market. Some younger men, ruined smallholders or unemployed farm hands, left for Mexico City or the U.S; others joined radical peasant Indian movements, as in Chiapas (Harvey 1995).

In the aftermath of the crisis, independent organizations of coffee-growers have been formed (see Hoffman 1993; Paré 1993; Tulet 1993), which try to reconcile the constraints of the market with peasant practical sense. There is a trend back to multiple-resource management, which takes into account both the fragility of the tropical mountain environment and the unpredictability of international markets (Velázquez and Paré 1993; Olvera Rivera and Millán Vázquez 1994). In the Sierra de Puebla as in the other tropical mountainous areas, coffee-monocultivation may prove in the long run to have been a big mistake, largely induced by the outside, and painfully corrected through peasant experience after the collapse.

NOTES

[1]The present paper is based on a long-term research carried on jointly by the authors in San Miguel Tzinacapan, Municipio of Cuetzalan, in the Sierra Norte de Puebla, Mexico. The Taller de Tradición Oral (Oral Tradition Workshop) includes ten Nahua Indians and two mestizos and has devoted itself for more than 15 years to the collection, transcription, translation, and publication of local oral traditions. It was established in 1980 at the initiative of a local schoolteacher, Alfonso Reynoso Rábago, and became part of the Centro de Estudios y Promoción Educativa Para el Campo (CEPEC). CEPEC is a local NGO, made of Indians and non-Indians, engaged in education and rural development: a high school, a kindergarten, a clinic, and various projects such as chicken and pig-raising, carpentry, beehives, etc. In 1986 and 1987, the Taller and Pierre Beaucage collected data on traditional knowledge and practices regarding plants and animals among the Nahua. The analysis of our ethnobiological data is still in progress. Since 1988 we have also investigated local archives in San Miguel, in the town of Cuetzalan, and in Libres, the district seat in colonial times. This research, which was carried on with the help of Carolina Ramírez, Gabriel Jaímez, and Pablo Valderrama, provided important complementary data on the patterns of land occupation in the Cuetzalan area. The acronyms AMAT (Archivo del Municipio Auxiliar de Tzinacapan), AHMC (Archivo Histórico Municipal de Cuetzalan), and AHML (Archivo Histórico Municipal de Libres) refer to these sources, while AGN refers to the Archivo General de la Nación in Mexico City.

[2]Luc Ferry (1992) has suggested that both visions, the utilitarian view of Nature and the preservationist one, in spite of their apparent antagonism, are aspects of the same ideology. On the one hand, the material world exists only to be dominated and used by man; on

the other hand, some sanctuaries have to be preserved "intact" so as to comfort Western public opinion, while massive environmental deterioration continues.

[3]Nahua Indians in the Sierra speak two dialectal varieties: *Nahuatl* to the North (Huauchinango-Xicotepec area) and *Nahuat* to the South (Zacapoaxtla-Cuetzalan-Teziutlan area). Following contemporary Mexican usage, we will refer to the people as "Nahua" and to the languages as either "Nahuatl" or "Nahuat," respectively.

[4]Our figures are based on the XI Censo Nacional de Población y Vivienda 1990 (Instituto Nacional de Estadística, Geografía y Censos 1992). The absence of any legal definition of the category "Indian" makes for a large amount of variation from one census to the other. It is also worth noting that Mexican statistics now include children under five; they were systematically excluded from the figures on Indian population before.

[5]I refer here to the 1970 census of the Dirección General de Estadística (now INEGI) since the more recent data I had access to proved to be relatively unreliable for the municipality *(municipio)* as a whole.

[6]In the 1970s a strong peasant movement gave birth to a regional co-operative, the ***Tosepan Titataniske*** ('Together We Shall Win'). By creating possibilities of social ascension to Indians, the co-operative challenged the hierarchy which existed before in mestizo-Indian relationships. As a symbol of this change, a two-story building was built in the town of Cuetzalan, where the Indians feel free to come and chat, and shelter from the rain, while in town.

[7]For a detailed methodology of the inquiry see Taller de Tradición Oral and Beaucage 1987, 1988. For the botanical identification of the specimens, we relied on the few publications available to this day for the Sierra (Martínez 1984, 1985). The expected publication of the extensive botanical research done in the Sierra under the direction of Miguel Ángel Martínez, will help the final analysis of our data.

[8]The general distribution is as follows: edible plants: 24.8%; medicinal plants: 23.6%; firewood: 13.7%; construction: 11.0%; raw material for crafts: 6.6%; ornamental plants: 9.0%; fodder: 3.6%; "other uses": 10.8%. It is interesting to note that this grossly corresponds to the pattern observed by Benz *et al.* among mestizo farmers in a mountainous, wooded area in western Mexico, although the later show a higher concentration of medicinal plants (31.7%) (1994:31).

[9]Men and boys climb the trees to pick the higher branches. Women and young children pick the lower branches and gather the ripe berries that have just fallen.

[10]A similar association between plantation cycle and family cycle has been observed by Ortiz among the Páez of Colombia (1967:214), and may be quite general as a management pattern of long-term investment (cattle, fishing gear, and plantations) among petty producers.

[11]The presence of this home garden with intensive cultivation of a combination of plants is attested in various parts of Indian Mesoamerica (Kelly and Palerm 1952:140-141; Flores Guido 1992:29-31; Caballero 1992).

[12]From the beginning in 1974, Plan Zacapoaxtla had a broader mandate, that of "social and economic development." Thus, its staff was able to reorient the original, strictly productivist perspective in a way which allowed for the participation of Indian producers. Among other initiatives, the regional co-operative, ***Tosepan Titataniske***, supplied subsidized staple foods and fertilizers, and successfully engaged in marketing non-traditional fruit crops such as allspice and *sapote*.

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BOOK REVIEW

Hunting the Wren: Transformation of Bird to Symbol. Elizabeth Atwood Lawrence. Knoxville: University of Tennessee Press, 1997. Pp. xx, 234. Illus., index. ISBN 0 87049-960-2 (cloth).

One of the strangest customs in the annals of ethnozoology is the Hunting of the Wren. Throughout most of the Celtic core areas of Europe — the British Isles, France, and probably neighboring areas (data is poor) — there was once a custom of hunting a wren (*Troglodytes troglodytes*, the "winter wren" in American English) shortly after Christmas. In the British Isles, the hunt was traditionally on St. Stephen's Day (December 26), the ceremonial day of the first Christian martyr and the day on which the British exchange their Christmas gifts. Accompanying songs referred to the wren as the "King of Birds." It was killed and brought home — often borne by two or more strong men, on a huge pole, as though it were a monster animal. Its meat or feathers were then distributed for good luck, at least in some versions of the practice.

Several folktales give accounts of why the wren is the "King of Birds," but they have rather an *ad hoc* quality. Many independent observers have come to the same conclusion: the real reason (or at least one real reason) for the wren's royal title is the fact that it sings an amazingly long and beautiful song throughout the year, even in the worst winter storms. Significantly, the wren is a "power bird" in Haida mythology too, and this reviewer (unaware of the earlier literature) reinvented the same explanation after hearing the wren's song rise clear and sweet over the howling wind and lashing rain of Haida Gwaai southwesters.

Countless variants of the hunt take place. It appears likely that the original form is the one in which meat is shared for luck. The cult is clearly associated with Celtic religion, being tightly linked with surviving Celtic culture. Lawrence airs sympathetically several theories that link it with the mysterious Druids.

Much of this book is devoted to explanations of the wren hunt. Great numbers of folklorists, ethnologists, and psychologists have speculated on the custom. Solar-cultists, survivals-hunters, symbolists, and interpreters of all stripes have utilized their ingenuity. The Freudians, of course, weighed in with truly creative sexual interpretations. For all these explanations, there is not one shred of evidence; they can be described only as flights of fancy. Every would-be decoder has taken bits and pieces of custom out of context and used them in a highly selective fashion to support a theory that, to the other decoders, seems preposterous. This book is thus a sobering read for those who would interpret culture. Not only scientists, but humanistic scholars as well, must look seriously at evidence, if they wish to contribute to something more than the wearisome history of human folly.

Lawrence is properly cautious. She invokes E.O. Wilson's hypothesis of biophilia to explain human interest in so insignificant an animal, and then works upward from the actual traits of the wren. Not only its song, but also its hole-nesting habit, its skulking ways, its dull color, and its rather weak flight are relevant to its folkloric image. She shows how these traits are observed, transformed, and symbolically used in various forms of the wren hunt. There is much left to explain, but, with the wren hunt rapidly disappearing, we will probably never know its secrets.

This book is valuable to ethnobiologists for several reasons. First, it reminds us what an incredible amount of religious and symbolic lore accumulates around animals, even in "civilized" and "rational" Europe. Second, it serves as a cautionary note about what can and cannot be explained, and how wild are the ideas of some who thought they were being "scientific." In fact, this book's greatest value may be as a sort of museum of fantasies in the name of "theory." Third, it is an excellent and sympathetic portrait of both bird and believers. Lawrence is a cautious, thorough scholar, recording with style and with detachment this strange cult and its even stranger scholarly career.

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