CHAPTER 4

"MAIZE HAS A SOUL"

Rincón Zapotec Notions of Living Matter

In the mid-twentieth century North American development agents, in partnership with their "Third World" counterparts, exported a particular version of factory farming—based on the use of mechanized equipment, chemical fertilizers, pesticides and herbicides, and hybrid seeds—to parts of the world deemed to be in need of "development." There was a dual irony to this technological civilizing mission. For one thing, the technologies were deployed to the so-called Third World before the dark clouds of the Dust Bowl—a human and ecological tragedy that has been attributed in large part to factory farming practices—had even settled. But perhaps more ironically, in the Mexican case what were later called Green Revolution technologies were ostensibly exported to increase the "productivity" of farmers who were, in a sense, the heirs of native Mesoamericans who thousands of years ago perfected modern maize—a grain that produces much more food per unit of land than wheat, rice, or barley.

The developers, described as "innocents abroad" in a thoughtful piece by Angus Wright (1984), were in some cases technicians largely unaware of their role in larger political projects, much less the social and ecological realities of rural Mexico. Some assumed that the Mexican countryside was "inefficient" or "underdeveloped," often being ignorant of the highly specialized maize farming techniques that local farmers had been evolving over 5,000 years.[1] Many were also ignorant of maize's centrality in the social, cultural, economic, religious, and psychological lives of the region's peoples. Not surprisingly, the new technologies frequently had disastrous

consequences. By the late 1970s it was clear that the Green Revolution had contributed to greater disparities between rich and poor farmers, a greater dependency on chemical fertilizers and pesticides, environmental degradation, and a loss of genetic diversity.

Remarkably, maize farming in Talea has persisted in spite of periodic policy shifts (most notably subsidies to producers and consumers) that have resulted in lower prices for consumers. Even though Talean farmers could have abandoned maize farming completely in favor of lucrative coffee cultivation, they have instead struck a balance between subsistence and cash cropping. To help understand why, here I focus on the Rincón Zapotec view of maize as living matter in the strictest sense—a view that holds maize to be so alive that it displays characteristics that people in industrialized society ascribe exclusively to humans.

Maize and Its Meanings

Maize is especially important for campesino households. It is made into tortillas, which serve as the family's subsistence base; indeed, approximately 75 percent of the calories consumed by Talean campesino families come from maize. Both women and men play a vital role in the life cycle of the crop, and from one perspective maize can be seen as an economic link that helps bind household units together. Maize cultivation is a key strategy for household maintenance.

Maize, like coffee, can be grown according to either an authoritarian logic or a democratic one (Mumford 1964). In other words, maize and coffee may be grown on large-scale plantations spanning thousands of hectares or on tiny plots of a fraction of a hectare without suffering significantly from economies of scale (Nolasco 1985; Strange 1988).

But there are differences in the Rincón. In spite of its adaptability to household maintenance strategies, coffee is exported to extraregional markets almost without exception. By contrast, maize is often planted for immediate consumption by the farmer's family or for sale in regional markets. Furthermore, in Rincón villages maize often serves as a medium for connecting campesino families to their kin, their neighbors, their village, their region, and their deities.

Three Accounts about the Soul of Maize

One frigid January evening a campesino told me a fascinating story as we husked maize in a tiny thatch-roofed ranch house. We had just finished

dinner and settled down to chat while working. The story went something like this:

> Pablo was a Talean campesino who lived in that time when little coffee was planted in the village. He was a successful farmer, a red-blooded campesino, and nearly every year he harvested enough to feed his family. But one year his mother, a widow, fell ill and was unable to earn enough money to purchase maize at the market. Pablo secretly took a couple of *almudes* of maize from his family's *costal* [straw basket used as granary] to his mother next door. But his wife—who had the ill fame of being a jealous, miserly woman—found out, scolded him, and took the maize from the widow. Pablo was a tranquil man and did not dare contradict his wife. That night Pablo and his neighbors awoke to a terrible sound, like that of a waterfall. It seemed to be coming from a corner of Pablo's house, but it ended before he was able to light a candle. Thinking that perhaps he had been dreaming, he went back to sleep. In the morning, however, he discovered that the *costal* was empty—every last kernel of maize was gone.

After relating this account, my companion paused thoughtfully for a few moments and said in Spanish, "That's why we say *el maíz tiene corazón* [maize has a heart]." He repeated himself, in Rincón Zapotec this time, perhaps sensing my confusion: "We who work in the countryside say *zhua de quie' ladxidáhua*—maize has a heart."

This is, in a sense, biologically accurate. Maize kernels do indeed have a heart (the embryo, nucleus, or germ) from which the plant germinates once it is in the ground.[2] But he meant something more; he was attributing a moral sense to the crop itself—assigning "human" qualities to a plant. The phrase takes on even more meaning when we consider that in Rincón Zapotec "heart" and "soul" are expressed by the same term, *ládxi*. Though my companion said *corazón* (Sp., "heart") there is little doubt that he also meant *alma* (Sp., "soul"). He gave another example:

> The villagers of San Juan Tabaa [three hours' walk from Talea] have had a great deal of trouble growing maize since they had the conflict with Yojobi [a smaller village near Tabaa] in the 1950s. Their lands just dried up. You see, they burned most of the village, including a great deal of maize. And the maize, you see, it has a heart, and it remembers. They say that last year campesinos from Tabaa tried plowing the earth near the site of the conflict [with Talea in 1991] but didn't even succeed in breaking ground—it was as if the soil had been made of stone.[3]

Eventually, I learned that *ládxi* is an especially significant concept for the Rincón Zapotec. Asking for the forgiveness or understanding of another is expressed as *ben ládxido zhhn* (Zap., "make your small heart big"). The

center section of a tree trunk—which is the strongest and least likely to be infested by termites—is also called *ládxi*. The phrase *búza ládxe* (Zap., "gave from the heart/soul" or "loosened from the heart/soul") is used to express the Spanish term *regalar* (to give a gift).

In a recently published account, a man from Yojobi, a Cajonos Zapotec village, tells the story of how maize inflicted punishment upon him as a child. He was storming angrily away from a milpa, carrying a basket of maize ears and intentionally letting some drop to the ground in his rage, knowing that his mother would pick up after him. Then he mysteriously tripped, and the pain lasted for months—even though the fall had not been a bad one. He learned a valuable lesson: "Later I knew that it wasn't the fall that had injured me, it was the maize, which I had scorned. That's what punished me. That's why I've never despised maize since" (Castellanos 1988:245).

Maize and Responsibility: How Maize Prescribes Reciprocity

How might we analyze these accounts? Strikingly, they each prescribe certain norms or responsibilities associated with maize—and, in a broader sense, with food in general. Pablo's story might be interpreted as a tale about the importance of supporting extended family and kin in times of economic need, perhaps to ensure that they reciprocate. It is also subject to a class analysis; that is, it might be interpreted as a lesson about the responsibility of relatively affluent villagers in lending a hand to the poorest stratum of village society, represented in this case by the elderly widow.

The Tabaa stories might be interpreted in at least three ways. Burning maize—and this might be extended to mean destroying maize in any way (for example, by letting tortilla dough spoil)—is a serious offense that should not go unanswered.[4] Another interpretation is that stealing maize—which is what the citizens of Tabaa did from the Taleans' point of view following the 1991 land conflict (see Chapter 2)—does not go unpunished, whether it is stolen from one's family, a neighbor, or another village. (The alcoholic who takes maize from the family granary in order to purchase liquor is despised by upright campesinos.) Finally, there is an implied notion in both of the Tabaa tales about the way villagers in neighboring communities should act toward one another. In a part of Mexico where land conflicts are endemic (Dennis 1987), maize is a means of linking communities together, either through market transactions or at religious fiestas, where visiting pilgrims requesting lodging are hosted and fed.

The story from Yojobi is perhaps not as obvious as the others, but upon reflection it might be interpreted in the following way: no matter how meager the harvest, no matter how poor the quality of the maize, it should be appreciated and never scorned or used as a medium for expressing anger.

Thus, maize is not only an economic good but a medium through which certain social and moral obligations and responsibilities, particularly reciprocity (toward kin, neighbors, poorer villagers, and people in neighboring villages), must be met. In this way, maize illustrates one of the key components of the fundamental concepts underlying Rincón Zapotec farming.

In all of the stories maize appears as a living being, a plant-person who can help humans meet certain moral obligations and responsibilities toward kin and neighbors. Maize is not a mere crop, but a powerful being living in the midst of humans at all times: present at festivals, baptisms, weddings, and funerals, inside churches, homes, and human bodies, surrounding ranch houses and villages. Maize is a wonderful plant-person with a long memory, a strict moral code, and an unshakable will.

Maize and the Personified Earth: Saints, Spirits, and Agriculture

So far we have considered the responsibilities associated with maize that link villagers together through a web of prescriptions and obligations, but what about other networks? Specifically, how does maize connect humans to the religious and supernatural worlds?[5]

Many campesinos claim that ill fortune may befall those who fail to fulfill religious obligations. A generation ago, one of the village's most dedicated campesinos is said to have tried plowing a milpa during the fiesta of La Virgen de Guadalupe (December 12) only to have an ox run away and break a leg. The animal had to be slaughtered. "That's what I get for working on a fiesta day; I should have known better," he told friends. Restrictions on work also apply to Sundays and many fiesta days (see Table 4.1).

A group of informants told me a similar story that occurred more recently. A campesino purchased a young team of oxen already trained to plow, but they stubbornly refused to work his land. He asked the advice of his father, who recommended that he make an offering to the image of San Isidro Labrador, the patron saint of campesinos. "Ha! I'm the only person who is the master of my animals!" answered the son. The next week he tried again, but to no avail. By this time he was desperate (it was already late in the season) and resigned himself to offer an *almud* of maize and another of beans to the saint's image in the church. Upon returning to the fields, he was successful; the oxen, he later reported, "pulled the plow by themselves." Since then he has made offerings and consistently attended Masses on San Isidro's day (May 15) and has had good fortune. It is common knowledge among Catholic campesinos that a special offering should be made to the campesino saint after purchasing a new beast of burden or team of oxen.[6]

Table 4.1. Religious Fiestas Celebrated in Talea, 1996

Dulce Nombre de Jesús	Third Sunday in January
Virgen del Rosario	Wednesday after Dulce Nombre
Domingo de Ramos	Palm Sunday
Viernes Santo	Holy Friday
Sábado de Gloria	Holy Saturday
Domingo de Pascuas	Easter Sunday
Santa Cruz	May 3
San Isidro Labrador	May 15
Santa Rita	May 22
Ascención (*Choa'zá*)	Forty days after Easter Sunday
Espíritu Santo	Fifty days after Easter Sunday
San Juan de los Lagos	June 24
San Miguel Arcángel	September 29
Todos Santos	November 1
Santa Gertrudis	November 16
Santa Cecilia	November 22
La Virgen de Guadalupe	December 12
Fiesta del Niño Jesús	December 24
Parada del Niño Jesús	December 31

In addition, campesinos sometimes offer sacrifices for adorning the Catholic church during fiestas. An informant, for example, offered several dozen corn husks which were used to decorate the long colored banners hanging from the roof of the church during the January fiesta. Several months later, his brother-in-law offered six live maize plants—transplanted from his milpa—to decorate the church's statue of San Isidro, who, like Talea's campesinos, uses an armadillo-shell basket, a digging stick, and a team of oxen. One campesino woman regularly makes offerings of flowers,

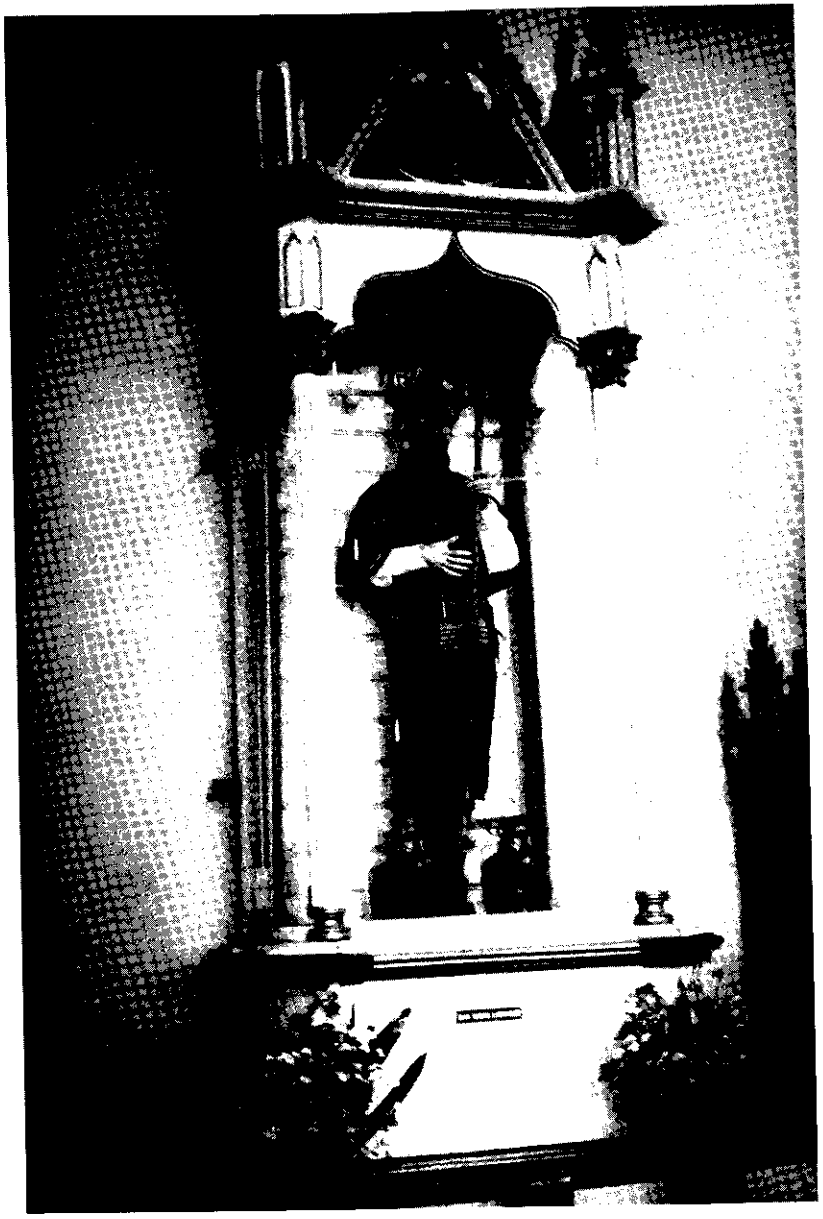

Figure 4.1. San Isidro, the patron saint of campesinos. Like Talea's farmers, he uses an armadillo-shell seed basket, a planting stick, and a team of oxen and wears huaraches. Most villagers celebrate San Isidro's day (May 15), and many offer the image maize, beans, and *panela*. *(Photo by Gabriela Zamorano)*

often from her kitchen garden, to this saint and others. Significantly, San Isidro's day coincides with the maize planting season.

San Isidro appears to be a syncretic version of the Zapotec god of thunder and rain, Cocijo. (The syncretic connections between the Virgen de Guadalupe and prehispanic fertility deities, most notably the Aztec goddess Tonantzín, have been mentioned by a number of anthropologists; it seems likely that there may be a link to the Zapotec earth deity as well.)

At first sight, non-Catholic agricultural rituals seem to have disappeared in Talea, though archival and ethnographic sources reveal evidence of a rich variety of magical rites performed in the Northern Sierra. Fifty years ago in Yalálag, spirits were said to dwell in the air, on the land, and below its surface and were connected with agriculture, food, animals, and fortune. Like Catholic saints, some of them took a material form, appearing as stone idols (de la Fuente 1949:301–302).

The earth itself was described (and by many still is) as an animate being: it painfully feels the metal blade of a plow, the burning of swidden plots, and the plucking of its fruits. It is therefore entitled to a portion of what it gives, lest it become angry. This is why even today some Serranos first pour a bit of mezcal on the ground before taking a drink. If upset, the earth might capture the soul (Sp. *alma*, Zap. *ládxi*) of a human offender, which leads to "fright" (Sp. *susto*), an illness which can only be cured with folk remedies (de la Fuente 1949:265–267).

To avoid incurring the earth's wrath, elaborate sacrifices were and are made in the Sierra. Mountain peaks, caves, forests, and lagoons were special ritual sites where sacrifices were secretly carried out to avoid the condemnation of priests and colonial officials. Across the Sierra (including the Mixe region; see Beals 1945:147) the magical rites appear to have been strikingly similar. A group of villagers—often led by a ritual specialist—took turkeys, tortillas, candles, and a combination of other offerings (puppies, tamales, ears of corn, cornmeal, eggs, cigarettes) to a site in the forest marked by a stone altar. They slaughtered the animals and poured the blood over the altar and the earth, made a petition for abundant maize, sufficient rain, and good fortune, and prepared food. (It is worth emphasizing that some of these rituals—for example, the use of sacrificial dogs—quite obviously have prehispanic origins.) Part of the food was consumed by the participants and part left at the altar. Upon returning to the village, the group frequently left candles at the Catholic church and sometimes would request a Mass from the priest. Sacrificial rituals were often conducted several times during the year in connection with critical points in the maize cycle. One account, for example, relates how Sierra farmers offered a sac-

rifice for adequate rain, followed by another for protection from birds, insects, and other pests, then finally by one to protect the milpa from high winds (Zilberman 1966:119–120).

One recent article focuses on the vital role played by women in prehispanic rituals that survived into the colonial era. According to Daniela Traffano (1998), the archival record reveals that women were active participants in rituals related to life-cycle events such as deaths, births, and marriages but also in agricultural rituals. It is significant that today nearly all of the ritual work of collective prayer to Catholic saints is done by women, though men are commonly designated as cantors. These commitments often require attending *novenas*, a series of nine prayer meetings in which the rosary is recited collectively. Apart from prayers to San Isidro and others, I spoke with campesinas who told me that they conduct their own individual private thanksgiving prayers to the earth for successful cultivation in their kitchen gardens. For example, one noted:

> Not everybody does this, but I give thanks to her—to the earth. This year, when I cleared away the old plants in my garden and prepared to plant new seeds, I spoke to her, I thanked her for the things she had given us, and I told her that I would take care of her. And I asked her to continue giving us good things. That's my custom. Once I was done, I planted my *chilitos*, chayote, cilantro, and other things.

Individual rituals like this one are a common feature in the ethnographic record. The earth is regarded as a female force by the Rincón Zapotec, which corresponds with evidence from other parts of southern Mexico, particularly Mayan and Nahuatl groups (Guiteras Holmes 1961; Nash 1970; Collier 1975:118; Sandstrom 1991).

In Yalálag, de la Fuente (1949:306–307; my translation) reported a ritual sacrifice conducted by a campesino who made use of a stone idol called the *gwálse* (Zap.) that was buried in the milpa until needed for the ceremony:

> The owner of the stone idol and the milpa sacrificed a dog no more than 15 days old or a chicken. Part of its blood was poured into the hole in which the idol normally rested and then the unearthed idol was "fed" by being soaked with the rest of the blood. At the same time, a petition was made for an abundant harvest. The campesino then returned to his home, invited his relatives to eat tamales filled with meat from the sacrificed chicken, and returned to the ranch to give the stone idol a bit of the tamales, since it could become jealous and angry.

The examples cited by de la Fuente among the Cajonos Zapotec and Beals (1945) among the Mixe closely match accounts from the turn of the eighteenth century recorded by Catholic missionaries working in the area (Zilberman 1966; Guillow 1994 [1889]).

Though de la Fuente was able to describe vital elements of the rituals, many of them had not been conducted in decades. He thought that religious syncretism was bringing an end to the rule of the mountain spirits: "The cult of the pagan spirits is diminishing and is increasingly linked to the Catholic deities" (de la Fuente 1949:265).

At first sight, the process appears to have been completed decades ago in Talea, probably because of the heavy influx of relatively acculturated mestizo outsiders in the late 1800s and 1900s. But the animal sacrifices of an earlier era appear to have undergone a symbolic transformation in the guise of a Catholic saint, San Isidro, whose day coincides roughly with the timing of prehispanic rituals in the planting season and to whom food sacrifices are made. It may well be that the saint has partly absorbed the role of the mountain spirits—he often seems to function as a lesser deity with a close connection to an earth that Talean campesinos continue to refer to as a living being.

In the Sierra the rituals continued into the twentieth century relatively unchanged. Ralph Beals (1945) found a vibrant tradition of non-Catholic agricultural rituals and animal sacrifices in the community of Ayutla Mixe in the mid-1930s, and a much more recent ethnography of the Mixe village of San Pablo Chiltepec describes a planting ritual conducted by individual farmers that bears a remarkable resemblance to those described in earlier periods (Lipp 1991:20–23). Farmers in at least one Rincón village recently attempted to reclaim the tradition of animal sacrifices. In the mid-1990s campesinos in Santa Cruz Yagavila, six hours from Talea, tried to recover a ritual in which a turkey was sacrificed, prepared as soup, and then poured into cavities at each of the milpa's four corners with tortillas and other items (Leonardo Tyrtania, personal communication, 1996). Laura Nader (personal communication, 1998) reports that such sacrifices were not unusual in the Rincón in the late 1950s.

There are more recent examples. The spring and summer of 1998 were extraordinarily dry seasons in the Sierra. For the first time in more than ten years, Talean campesinos asked the Catholic priest to conduct Mass at a small lagoon in the forest above the village in order to ensure the arrival of the rains. The site, known as *yhl shna* (Zap., "red milpa"), lies nearly two hours from Talea, near the border with the village of Tanetze. In Ixtlán, between Talea and Oaxaca City, a Mass was held in 1998 for the same purpose. These Catholic ceremonies appear to have a form and function very

similar to those of the Zapotec rain ceremonies described by de la Fuente (1964).

Another interesting case is that of the Cruz Verde or Green Cross near San Andrés Yaa, a Cajonos Zapotec village approximately eight hours' walk from Talea. Here, at a site located in the midst of an oak forest, an apparition of the crucified Christ is said to manifest itself during the fiesta days of the Santa Cruz (May 3). The apparition appears on the trunk of a cross-shaped oak tree and is located near a tiny lagoon said to have miraculous powers.[7] A young villager discovered the site in 1951; since then the fiesta has grown much larger, drawing pilgrims from the entire Sierra—Zapotec, Mixe, and Chinantec—to the sacred site in the forest. In 1997 approximately 3,000 to 4,000 people visited the site, offering cash, votive candles, and prayers. The pilgrims' petitions are symbolized by miniature images, including toy oxen, trucks, baby dolls, and houses fashioned from twigs, leaves, and mud.[8] Though the fiesta is officially a Catholic event complete with Masses said by a priest, a number of key elements link the Green Cross celebration to agricultural rituals of the past, including the timing (May 3, during the planting season); the ritual site (in the forest, near a sacred lagoon); a large group of participants; and animal and food sacrifices.[9] More than 100 Taleans have made the pilgrimage annually in the last few years, including campesinos who have petitioned the deity for healthy work animals and success in farming. If the Green Cross celebration is any indication, it seems that the mountain spirits may very well continue to hold importance for Sierra farmers into the foreseeable future.

Whether they are composed of Catholic or prehispanic elements, these rituals may be seen as magical since they attempt to deal with supernatural beings such as San Isidro, stone idols, mountain spirits, and the animate earth, all of whom possess sufficient power to ruin a maize harvest. Malinowski's constellation of magic, science, and religion is especially useful here. The campesinos' arsenal of technical knowledge, as we shall see, assists them in the cultivation of maize. The gifts of turkeys, tamales, and maize, however, are magical because they attempt to minimize the risks associated with subsistence farming, including droughts, heavy rains, blights, and high winds. The magical rites afford a measure of "tranquility for the decision-maker" (Colson 1973)—and therefore function in much the same way as the economist's statistics, elaborate rites performed by professional baseball players, and weapons testing by nuclear scientists in industrialized society (Gmelch 1994; Gusterson 1996:141–142).

On a symbolic level the non-Catholic agricultural rituals link together

nature (the forest, *guí'a* in Zapotec) and culture (the cultivated milpa, *yhl* in Zapotec). The ecological connection between forests and farming was not lost on an informant. He explained that forests are a necessary element in successful crop cultivation because, in his words, "the forest pulls [Sp. *jala*] clouds from the sky so that they drop rain on the fields below." (Perhaps this is one of the bases for rituals in which "mountain spirits" dwelling in the forests are consulted for a successful harvest.) Ecological anthropologists have explained the same phenomenon in similar terms:

> If in the Sierra Juárez there is a surplus [of soil nutrients] that permits cultivated soils to maintain their natural fertility, this is due to the enormous work done by the forests in moving the hydrologic cycle, a job that is done punctually by nature . . . There exists no technology that could replace the forest in this task. (Tyrtania 1992:40)

Thus, the conceptual categories used by the Rincón Zapotec to describe the relationship between forests and farming appear at least partially to map onto categories used by cosmopolitan science specialists.

The Zapotec campesinos' view of the earth as a living being capable of punishing those who unreasonably violate it is strikingly different from the view of many modern "development" projects that see ecosystems as simply means to an end, as media to be used for pecuniary purposes. This has resulted in the unprecedented exploitation of the southern Great Plains that led to the Dust Bowl (Hurt 1981), damage from strip mining (Ponting 1991:218–221), the environmental and public health consequences of nuclear energy and weapons programs, whether in Communist states or market economies (Ball 1986; Fradkin 1989; Feshbach and Friendly 1992), the wholesale destruction of tropical rain forests (Davis 1977), and the ecological and social upheavals caused by large-scale hydroelectric dam projects (Bartolomé and Barabas 1990). These events, which in industrialized society have become normalized to the point of becoming commonplace, would likely horrify the Rincón Zapotec, who maintain a substantive respect for the living earth.[10] Chapter 8 considers how some people in industrialized society are beginning to employ concepts that resemble those of the Rincón Zapotec to understand the earth.

Maize as Social Relations: *Gozona* and the Gift of Maize

Just as sacrificial meals of maize serve as a communion between humans and their deities, reciprocal exchanges called *gozonas* (Sp.) or *gozún* (Zap.) link together villagers. *Gozona* (known in other parts of Oaxaca as *guela-*

guetza) is a mutual aid arrangement used when labor must be pooled to realize a task, whether economic or ceremonial. Nader (1990:42) comments on its prevalence in many aspects of village life:

> It is a prestation of services, of short duration, with implied reciprocity . . . Taleans may call on kinsmen, friends, and neighbors to build or repair houses and to help in preparing land and in plowing, planting, and harvesting. Taleans volunteer gozona during weddings, funerals, and fiestas. They even carry on gozona between communities; for example, the band and orchestra from Talea have played in fiestas in Villa Alta, Yatzona, Solaga, Yalina, and Yaee . . . These communities reciprocate in kind.

Thus *gozonas* customarily include agricultural tasks, weddings, funerals, (adobe) house-raisings, *retechadas* (Sp., reroofing parties), and *padrino* (Sp., religious sponsorship) fiestas but also have begun to include newer events such as *colados* (Sp., cement roofing parties), *quinceañeras* (Sp., female coming-of-age parties), and Alcoholics Anonymous fund-raising dances. Conspicuously absent from *gozona* is cement home construction, for which wage laborers are contracted.

When carried out on farms, *gozona* is a simple affair that involves providing food (except tortillas), coffee, mezcal, and cigarettes to visiting workers. Once the days of work have been given, the host must eventually "pay back" the days upon request. When *gozona* takes place in the village, however, it resembles a fiesta—the *gozona* effectively becomes a stylized work party, not unlike the barn-raisings of the nineteenth-century U.S. Midwest. It consists of several key elements: the invitation, the food gift (occasionally accompanied by money or candles), equipment loans, work, meals, and repayment.

To illustrate how *gozona* works, we might consider a wedding party. Invitations are formally made in person by the families of the prospective bride and groom several days before the event. The day before the wedding (or sometimes two days before) invited families arrive at dawn, with a food gift of some kind—maize or beans or *panela* (Sp., unrefined sugar)—and sometimes with a cash donation. The gift is promptly recorded in a notebook which in effect becomes an IOU record for the hosts.[11] Neighbors and kin lend plates, cups, benches, tables, extension cords, canvas or plastic tarps for covering outdoor areas, and other items. After a shot of mezcal, everyone immediately sets off to work: women take turns converting the food gifts into hundreds or sometimes thousands of tortillas, tamales, and other dishes; men slaughter, dress, and boil the chickens and turkeys and run errands; and children scramble about. Except for the maize, beans, and *panela* given by the guests, the hosts shoulder nearly all expenses, though customarily mezcal and cigarettes are provided by the matrimonial *padrinos*.

Figure 4.2. Campesino preparing to dress a chicken. Most life-cycle celebrations begin early in the morning, when chickens or turkeys are slaughtered and prepared for festive meals. *(Photo by Gabriela Zamorano)*

Over the next few days, the hosts serve three meals daily. Large tortillas (measuring approximately eighteen inches in diameter) are placed in the center of the table; strips are torn off by those seated at the table, who fold them and use them to ladle the food (Sp. *comida*) out of the bowl. If the dish has chunks of meat, they use the tortillas to lift the meat neatly from the bowl. Only small children and guests from the city are given silverware—if there is any at hand. Guests are served in groups or shifts; that is, ten to forty men or women are relieved of their tasks at once in order to eat. Each shift lasts approximately twenty to thirty minutes.

Weddings are especially symbolic events, and maize tortillas form an

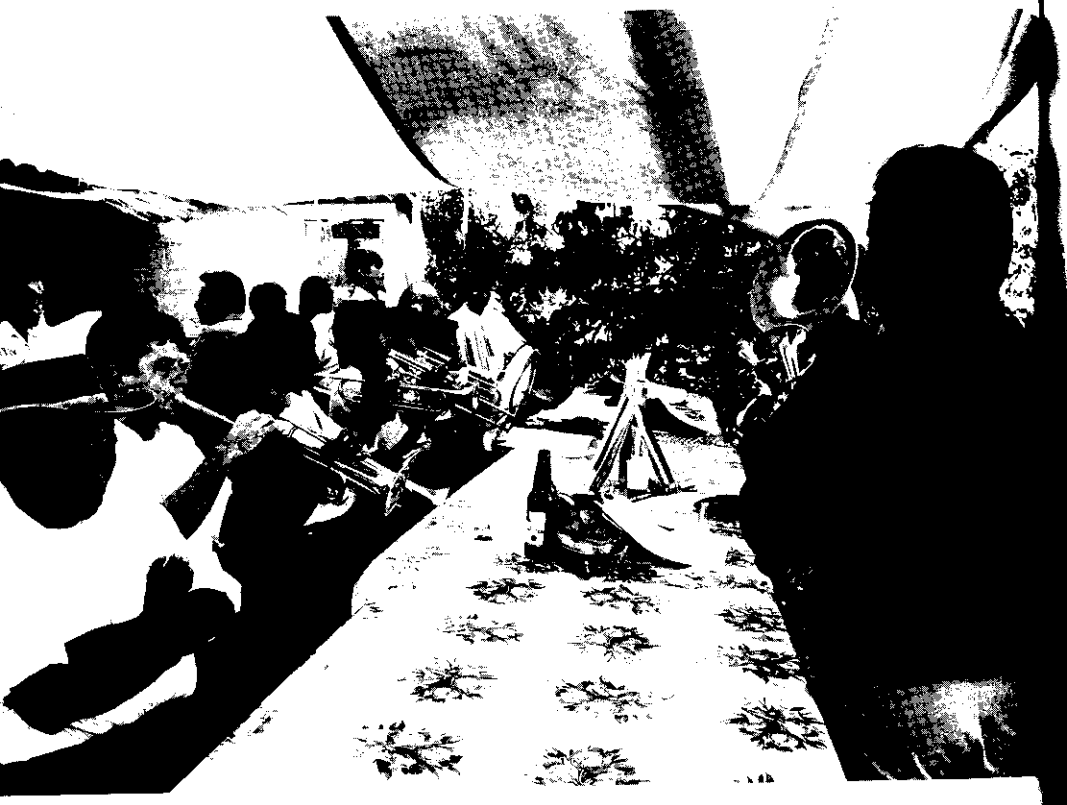

Figure 4.3. Village band playing at a wedding party. In 1998 young women and girls were allowed to participate in the group for the first time. Membership in musical groups is as much a responsibility as it is a pastime. *(Photo by Rafael Colin)*

important part of the ritual known as the *derecho* (Sp.) or delivery of the bridewealth. On the day before the wedding, representatives of the groom arrive in the late morning at the house of the bride with turkeys,[12] tall stacks of tortillas, bread, cacao, and other items. The representatives, led by the groom's baptismal godparents, biological parents, older siblings, close neighbors, and *padrinos*, are received at the bride's house, and her parents offer mezcal, cigarettes, and frequently beer. The visit is often solemn for the family of the bride, who ideally will move to a site near the groom's family. The baptismal godfather delivers a short speech; after a brief period of respectful conviviality (perhaps thirty minutes), the representatives return to the groom's house, where the fiesta shifts into high gear.

After the Mass on the wedding day, the entire procession goes to the house of the groom (usually led by the village band or orchestra) for lunch.

Both tortillas and other food (*mole* is nearly universal at Talean weddings) follow a "human chain" from the kitchen to the serving areas: the items are passed from one person to the next until they reach the tables. In the late afternoon, after music, dancing, and drinking,[13] the bride's family and baptismal godfather formally take leave of the bride, the groom, and his family. Campesinos often deliver emotion-laden, eloquent speeches. Generally the bride's parents express a strong sense of loss even though their daughter may only be moving a short distance away.

It is tempting to romanticize *gozona* as a quaint cost-sharing arrangement, but for most people it is a survival strategy, a heavy obligation that simply cannot be avoided—and a way of guaranteeing *mantenimiento*. In a typical year a family may give away more than two *fanegas* (202 kg—nearly equal to the amount consumed in two months by a family of four) in *gozona* events. These gifts demonstrate how maize forms a critical part of exchanges linking families, fictive kin, and neighbors. Villagers frequently grow the crop using the mutual-aid arrangement for pooling labor; once within the village, it arrives as a food gift delivered by invitees. Maize is transformed into tortillas by a group of women working together, is consumed by the guests, and in the case of weddings is supplemented by more tortillas delivered by the groom's family. In the end it must be repaid as a debt. Thus maize is a good that flows back and forth between networks of social relations. It is part of a complex connecting immediate and extended families, neighbors and relatives, *padrinos*, village community, church, and deities.

Maize and Agricultural Revolutions

> Columbus did not realize that the gift of maize was far more valuable than the spices or gold he hoped to find. He had no way of knowing that the history of maize traced back some 8000 years or that it represented the most remarkable plant breeding accomplishment of all time. He might have been embarrassed if he had understood that then, as now, this plant developed by peoples he judged poor and uncivilized far outstripped in productivity any of the cereals bred by Old World farmers—wheat, rice, sorghum, barley, and rye.
>
> Walton C. Galinat,
> "Maize: Gift from America's First Peoples" (1992)

Early History: Mesoamerica's Agricultural Revolution

Maize was first cultivated more than 7,000 years ago, probably near the Tehuacán Valley of Puebla, south of Mexico City (Long et al. 1989). The

earliest fossilized remains are no bigger than a human thumb. Not until about 2000 B.C. were higher-yielding varieties developed, and these were a fraction of the size of modern cobs.

By this time the ancestors of the Zapotec already had thousands of years of agricultural experience. Recent archaeological research at Guilá Naquitz, a cave site in the Valley of Oaxaca, has revealed that squash was cultivated long before maize; accelerator mass spectrometry (AMS) tests indicate that *Cucurbita pepo* was grown as early as 9000–10,000 years ago (Smith 1998; Flannery 1999). The earliest AMS date for the domesticated bean, *Phaseolus vulgaris*, in the Valley of Oaxaca is more recent (340 B.C.; Kaplan 1995), but there is evidence that by the time the first permanent settlements were established there (1500–500 B.C.) a host of food plants were already under cultivation: maize, squash, chile, avocado, cactus, the century plant, and others (Marcus and Flannery 1996).

Twentieth-century botanists have hotly contested the genesis of maize. The grain is related to a wild grass called *teosinte* (*Zea mexicana*), whose tough seeds grow in a single row and whose cob is about the thickness of a pencil. *Teosinte* does not have a husk, which means that, unlike domesticated maize, its seeds are easily able to propagate naturally. The debates center around the nature of the relationship between *teosinte* and maize. In the 1930s a popular theory was put forth by biologist George Beadle, who argued that maize had evolved from *teosinte* through genetic mutations. This was challenged by Paul Mangelsdorf (1974), who contended that *teosinte* resulted from a cross between an extinct form of wild maize and a distant relative, *Tripsacum dactyloides*. Only then did the *teosinte* backcross with its wild maize parent, leading to modern maize. By the 1970s this view dominated. Shortly afterward, however, botanist Hugh Itlis conducted studies that seemed to reaffirm the Beadle theory, which once again became the favored view among botanists—though many still hold to a version of Mangelsdorf's theory.[14]

Arturo Warman argues that no matter which hypothesis is true, the success of modern maize can only be attributed to human intervention in the collection, protection, and cultivation of a species that would otherwise have been doomed to extinction by an inability to disperse its own seeds. (A key feature of modern maize—its thick husk, which protects the fruit from harsh weather and predatory animals—makes its reproduction nearly impossible in the natural state.) Thus, whether maize emerged out of a catastrophic mutation or by selective breeding, humans helped it along, collecting its seed, replanting, and perfecting the crop over generations

(Warman 1988:47–48). In a thoughtful essay on maize and its origins, biologist Walton Galinat (1992:50–51) agrees:

> Though the first peoples of this hemisphere obviously lacked the knowledge of cytogenetics and biotechnology available today, there is every reason to believe that they possessed powers of observation and imagination equal to our own and sufficient to take this remarkable stride in plant breeding . . . Armed with this intuitive understanding of inheritance and driven by experience with famine, aboriginal planters learned not to consume the best seed but to save and sow it.

Evidence indicates that maize cultivation was a transition that took place over a period of generations or even centuries (Ponting 1991:37–38). In central and southern Mexico, it appears that agriculture was carried out by hunting and gathering groups who settled down just long enough to plant and harvest their crops before moving on again.[15] This is different from the Old World sequence, in which sedentary life preceded agriculture.

Eventually the hunter-gatherers did settle (by about 1000 B.C.). Maize soon provided the alimentary base for large ceremonial centers where food surpluses were redistributed to priests, artisans, and administrators. Agriculturalists probably continued selecting the most productive varieties of maize, and the length of cobs more than doubled before the Classic period (300–900 A.D.) began. Ambitious architectural achievements such as the city of Teotihuacán, with an area of approximately ten square miles and a population of 100,000, illustrate how increases in food production made complex societies possible. There is no doubt that maize played a critical role in the creation of Mesoamerican civilizations. In the Valley of Mexico food crops were grown in productive "floating gardens" (Sp. *chinampas*) and collected in tribute from the peripheries of the empire. Teotihuacán collapsed about 700 A.D., only to be replaced by the military empires of the Toltec (at Tula) and the Aztec (at Tenochtitlán).

All of this goes to show that humans and maize were engaged in a dialectical relationship from the beginning: humans produced maize, but maize also produced human societies. If we think of the plant as a technology, this should come as no surprise; indeed, a recurring theme in the anthropological literature is that "man makes himself" (Childe 1951) through tools and other material artifacts. A more nuanced analysis might describe how maize, the environment, and humans influenced each other dialectically (Levins and Lewontin 1985:104):

> It is impossible to avoid the conclusion that organisms construct every aspect of the environment themselves. They are not the passive objects of external forces,

but the creators and modulators of these forces. The metaphor of adaptation must therefore be replaced by one of construction, a metaphor that has implications for the form of evolutionary theory.

Thus not only was maize reliant upon humans, but humans became reliant upon the material conditions and social structures that maize itself played a part in creating. Maize, in short, engaged human society dialectically.

If we think for a moment about the idea of a living maize, maize as a plant-person, we might hypothesize that the remarkable plant breeding done by the ancient Oaxacans and continued by their contemporary Zapotec descendants (and hundreds of thousands of other Mexican and Central American campesinos) might be directly related to maize's special status as a living being with a will of its own. It seems entirely plausible that the stunning achievements of maize's domestication and improvement and the urban societies that it made possible were stimulated by the very assumptions that would be considered incorrect by modern cosmopolitan scientists. The intense symbolic, religious, and emotional significance attached to maize—the respect and even love that these farmers had for maize the plant-person—may well have led them to spend more time caring for it, improving it, nurturing it, strengthening it, and adapting it to different ecological niches over the course of generations. The legacy of this expertise survives today: more than 20,000 varieties of maize exist in Mexico and Central America.

The "Second Agricultural Revolution"

The biological species that Columbus brought back to Europe from the New World probably had more long-term impact in global terms than all of the American gold and silver combined. Alfred Crosby (1972) notes that "the Columbian Exchange" of biota had significant demographic repercussions, specifically the Old World population explosion after 1492. In many parts of Europe, Asia, and Africa maize was generally successful because it did not compete with other grains—wheat, rice, and barley—but complemented them. Farmers often grew the new crop in the off-season or on plots that might otherwise have been lying fallow. Furthermore, it enabled them to grow food on marginal lands that had previously been considered too sandy, dry, or high for wheat or rice (Crosby 1972:171):

> Its advantage over equivalent Old World plants is that it will prosper in areas too dry for rice and too wet for wheat. Geographically it has fitted neatly between the two. Its supremely valuable characteristic is its high yield per unit of land which, on world average, is roughly double that of wheat. For those to whom famine is a reality, maize has the additional benefit of producing food fast.

To drive home his argument, Crosby relates the story of how maize diffused across the Old World. Spain was the point of entry. People in many parts of the continent were slow to accept the crop, not only because the weather in most areas of Europe was too cold, but also because of a distinct cultural preference for wheat. Maize was used as animal feed in many places, and several observers considered the crop to be unhealthy, indigestible, and low in nutrition. Even so, millions of Europeans adopted it beginning in the 1500s, and many continue to do so today. Maize was particularly successful in Italy (as *polenta*), in Yugoslavia and Romania (as *mamaliga*), and, to a lesser degree, in France and Spain. The crop was popular among the poor, especially peasants, who would plant it for their own consumption—often mixing it with wheat flour to make bread—in order to sell more of their wheat crop to the rich (Crosby 1972:176–181). Maize was given a variety of names, nearly all of which disguised its New World origins: it was called "Rhodes corn" in Lorraine; "Spanish corn" in Tuscany; "Sicilian corn" in Provence; "Turkish grain" in Italy; "Indian corn" in England; and "Turkish corn" in Germany, Holland, and Russia (Braudel 1967:113). For many Europeans, the most incredible quality of maize was its astonishingly high yield. The crop produces many more kilograms of grain per hectare than other grains and a comparable amount of calories per hectare as rice and significantly more than wheat (see Table 4.2).

The fact that so many Europeans referred to maize as "Turkish" may indicate that the crop was rapidly accepted and made popular in Turkey, though this is by no means a certainty. In India terms for maize are related to the word "Mecca," which implies that it reached the subcontinent from an Islamic region. We cannot be sure of this since travelers to the Near East in the 1600s and 1700s make little mention of the crop. Today it is of secondary importance in the Near East, with the exception of Egypt, where it has been a staple crop since the eighteenth century. There is strong evidence that maize had much to do with Egypt's demographic growth (Crosby 1972:188–190).

Maize is a staple crop across many parts of Africa. As early as the 1600s observers reported that it grew "profusely" in the Gold Coast, where it was prepared by baking, and evidence indicates that it reached the Boshongo people of the south-central Congo basin in the same century. In the 1900s maize became even more critical in Africa; indeed, the crop "has become,

Table 4.2. Average Yields and Calories per Hectare of Maize, Rice, and Wheat

	KG/HA	MILLIONS OF CALORIES/HA
Maize	3,576	7.3
Rice	2,997	7.3
Wheat	2,064	4.2

Sources: Crosby 1972:175; Warman 1988:28.

for the first time, a mainstay of diet for most of east and central tropical Africa" (Crosby 1972:186–187).

But perhaps the most important Old World destination for maize and other New World crops was China, where it and other American crops were rapidly accepted: "while men who stormed Tenochtitlán with Cortés still lived, peanuts were swelling in the sandy loams near Shanghai, maize was turning fields green in south China and the sweet potato was on its way to becoming the poor man's staple in Fukien" (Crosby 1972:199). By the turn of the nineteenth century maize had become the primary food crop in many of the uplands of southwestern China. During the 1700s, the valleys of the Yangtse River and its tributaries had become heavily populated; the excess population, forced up into the hills and mountains, found that maize cultivation was an easy way to extract subsistence in the highlands. Thus, as rice cultivation in the lowlands approached its limit, "the various dry land food crops introduced from America have contributed most to the increase in national food production and have made possible a continual growth of population" (Ho 1959:191–192). Today maize is still spreading rapidly across China, often at the expense of more traditional crops such as sorghum and millet.

Warman (1988) adds a political-economic dimension to Crosby's analysis by arguing that maize was one of several elements related to the development of slavery. The wide geographic range of maize (and its high yields) meant that slaves could be fed more cheaply with maize than with wheat. The grain was also well suited for storage on slave ships. He concludes: "Slavery in Africa preceded the introduction of maize, but its expansion and exponential growth can only be explained by the American demand for it, and the role of maize in satisfying the growing market" (Warman 1988:65–80 [quotation on 80]; my translation). This might be extended to include other peoples subjected to domination in the age of empire: colonized peoples and internally colonialized peasants. In effect, Warman tells us, cheap maize subsidized the creation of empires.[16]

The diffusion of maize thus formed complex patterns over time and space. The crop spread across the Old World within a century, transforming diets, economies, and entire societies along the way. Maize and other food crops from the Americas became a part of European, Asian, and African culinary and agricultural traditions, just as coffee and sugar came to define many countries in the American tropics. Maize was used to feed slaves, peasants, and other colonized populations because it was geographically versatile and produced high yields. In the latter half of the 1800s maize cultivation was mechanized and subjected to other technological "improvements" in the United States; by the mid-twentieth century, ironically enough, it was exported to the so-called Third World by development agents.

Post-Conquest Agricultural Revolutions in the Americas

Crops flow in multiple directions. At the same time that maize spread across the Old World, local farmers in rural New Spain were incorporating Old World crops and techniques into their farming practices. In the Sierra crops such as sugarcane and techniques such as the use of metal tools, plows, and draft animals were adopted by farmers attempting to restructure their societies and economies in the wake of the Conquest. Other techniques and knowledges, particularly those related to the processing of new crops and animal husbandry, were incorporated by campesinos.

Much more recently, the Green Revolution swept Mexico, bringing with it hybrid seeds, chemical fertilizers, pesticides and herbicides, and mechanized farm equipment. In the Sierra most of these technologies either never arrived or else were rapidly rejected, with the exception of chemical fertilizers. A number of villages began experimenting with fertilizers in the late 1960s and in most cases continued using them for staple food cultivation (though in significantly smaller amounts than on factory farms, as we shall see) and even incorporated them into "hot/cold" classificatory schemes. There is some evidence that fertilizers are better at increasing yields in intercropped fields than in monocropped ones (Richards 1985:70–72). According to Talean campesinos, fertilizers effectively doubled maize yields and so played a crucial role in reducing land pressure at a time when the village's population was straining the land's capacity.

Maize and Mexican Land Reform and Food Policy

Mexican Agriculture and Food Policy

Maize, Mexico's most important food crop, has been at the center of federal agricultural and economic policies for many years. The Rincón has historically been relatively insulated from many of these policies, since the majority of villages have produced enough maize and beans for self-provisioning. Taleans turned to cash cropping early in the twentieth century, but even so most campesinos supplemented—and did not replace—their cultivation of subsistence crops with coffee. Still, to the extent that Taleans bought (and continue to buy) maize and beans from campesinos in surrounding villages or from merchants selling maize produced in the Valley of Oaxaca, they have been affected by Mexican food policies.

The topic of agriculture and food policy in Mexico is complex; indeed, entire books are devoted to the issues (Sanderson 1986; Fox 1992; Hewitt de Alcántara 1994; Barry 1995; Randall 1996). Here I have a more modest objective: to review the underlying themes in Mexican food policy that have surfaced over the course of the last century and to relate them to the Talean situation.

The balance between large and small farms has shifted over time. During the latter part of the 1800s, for example, in the era known as the Porfiriato (1884–1911), policies tended to favor haciendas at the expense of indigenous communities. On the eve of the 1910 Revolution, only 4 percent of Mexico's rural families owned land, and nationwide an estimated 92 percent of the total population was landless. Export-oriented agriculture was favored over staple food production: during the Porfiriato, export crops increased from 4 percent to 20 percent of total production, while land devoted to maize production decreased from 52 percent to 33 percent (Barry 1995:15–16). By the early 1900s Mexico was importing maize from the United States (Randall 1996:3–5). Between 1908 and 1910, for example, nearly one-third of Oaxaca's maize was imported from abroad (Ruiz Cervantes 1988:336–338). It is unclear to what extent the Sierra followed this pattern; because of the difficulties involved in transporting maize to the region, the quantity imported to the Sierra was probably lower.

The 1910 Revolution was largely a result of such inequalities. In the end, Zapatistas and Villistas insisted on land reform, formally guaranteed in Article 27 of the 1917 Constitution, which established the *ejido* system of inalienable (but inheritable) communal lands directly assigned to individuals by the federal government. Government officials reserved the right to expropriate and redistribute hacienda land for this purpose. Land redistribution was carried out halfheartedly by postrevolutionary presidents; but during the presidency of Lázaro Cárdenas (1934–1940) the process accelerated: some 20 million hectares were redistributed, more than twice as much as under his predecessors. His successors, however, slowed land reform, and new policies limited access to credit, infrastructure, and inputs for small *ejido* farmers. They helped create a two-tiered system of agriculture: small private farmers and *ejidatarios* produced staple foods (maize and beans) which provided cheap basic foodstuffs to urban consumers, while medium- and large-scale commercial farmers (including agribusiness concerns) produced export crops. Farmers on plots of less than five hectares generally continued operating at or below subsistence levels.

The Green Revolution had a number of effects in Mexico. It is clear that yields of wheat and potatoes increased dramatically, even on small farms. The problem, however, was that access to credit and technology (hybrid seeds, chemical fertilizers, pesticides, herbicides, machinery, etc.) was often much more difficult for small farmers.[17] Thus, in general, the Green Revolution favored Mexican agribusiness farms in the 1950s and 1960s.[18] In addition, maize yields did not increase significantly because in many parts of the country local farmers had already approached the biological limits of the crop. These problems were compounded by an urban bias in food policy which made consumer subsidies (such as the CONASUPO government-subsidized food stores initiated in the 1960s and 1970s) more forthcoming than producer subsidies.

Despite production increases linked to the Green Revolution, a number of factors made Mexico a net importer of grains by the 1970s. Specifically, the country's demographic explosion and land tenure and land use policies outpaced agricultural production gains. The Green Revolution's limits were reached in the late 1960s and 1970s; grain production began to stagnate, and Mexico once again began importing grains, including maize (Barry 1995).

Under the presidency of José López Portillo (1976–1982), efforts were made to reverse this trend through an ambitious program for national food self-sufficiency, the Mexican Food System (Fox 1992). It achieved moderate success for a few years but ended before the potential for increased production by small growers was realized (Barry 1995:99). Soon Mexico was again importing significant amounts of U.S. maize—approximately 20 to 25 percent of its total consumption—which served to demonstrate the "in-

efficiency" of Mexican agriculture vis-à-vis U.S. factory farming (Barry 1995:99). This would later be used to justify "free trade" policies.

By the 1990s president Carlos Salinas had embarked upon a series of dramatic neoliberal reforms. Opening up Mexico's grain market was a key priority for U.S. trade representatives in NAFTA negotiations in the early 1990s, and they succeeded. Even before NAFTA was signed, Article 27 of the Mexican Constitution was revised, halting land reform before it had even occurred in such places as Chiapas and opening the way for *ejido* privatization.[19] Significantly, many of the agricultural credits, fertilizers, and guaranteed prices for maize established in the 1980s came to an end, due in part to the terms of NAFTA.

Deregulation posed an immediate threat to farmers growing maize as a cash crop; indeed, the removal of trade barriers depressed prices as cheap U.S. corn poured into the Mexican market. To head off possible social unrest—especially in light of an imminent economic crisis—in late 1993 the federal government created the Program of Direct Support Payments for the Countryside (PROCAMPO), a system of direct cash payments to maize producers. Farmers are paid according to the amount of land they have planted for subsistence crops—about US$105 per hectare. In Talea campesinos wishing to participate in the program report the amount of land they have cultivated each year to government representatives and eventually receive checks in their names. PROCAMPO, which meets the terms of NAFTA because it is scheduled to be phased out over a fifteen-year period, has been described bluntly by some as a way of "fertilizing votes" in rural areas (Barry 1995; Bartra 1995). A number of Talea's campesinos see it this way as well. Others have been reluctant to participate, either because of the time commitment (it requires attending a number of meetings) or because they possess lands with no ownership title.

Who has benefited from "free trade"? In general, it seems that transnational corporations are poised to make big gains from economic liberalization. According to some critics, "free trade" policies are likely to increase foreign control over agribusiness in Mexico (Nader 1993), a process which began decades ago (Cockroft 1990). The Green Revolution promoted a growing dependence on inputs (notably hybrid seeds and farming machinery) supplied by foreign corporations. On another level, food processing in Mexico has been affected profoundly by the transnationals: by 1995 fully one-third of the country's food-processing industry was in the hands of U.S.-based companies, including Anderson Clayton, Ralston Purina, Pepsico, and Tyson Farms. Dozens of other European-based companies such as Unilever and Nestlé are also in the business (Barry 1995:62–64). Furthermore, new international intellectual property legislation eases the way for U.S. and European firms to claim proprietary rights over biotechnologies—a process likely to lead to "the intensification of international linkages, scientific disparities, and the furtherance of national market penetration" by transnationals (Buttel, Kenney, and Kloppenburg 1985).

Effects of Mexican Food Policies in the Rincón

In the Rincón land has not been subjected to *ejido* reforms, because for most of this century neither *ejidos* nor large haciendas have existed in the region. When the Rincón Zapotec have been exploited, it has been through labor arrangements in the region's mines or through commercial monopolies, particularly over cotton, cochineal, and coffee. Commerce, not land, has customarily been the source of economic power in the Sierra since the Conquest.

Most Taleans work plots of land smaller than five hectares, and most of those who farm grow maize—though not all households produce the maize needed for an entire year.[20] (There are notable exceptions; some growers in Talea produce more than enough maize for household consumption and sell a surplus at the local market.) Historically, extra maize has been purchased outside the community. For many years, it was bought from surrounding villages or from merchants bringing the product from the Valley of Oaxaca, but more recently it has been provided by CONASUPO government-subsidized stores. Locally produced maize is not sold to CONASUPO buyers; household surpluses are generally small and are sold in regional markets at a price 20–30 percent higher than at the CONASUPO store.

How have national food policies affected farming in Talea? Though profound changes have not shaken the village's economic core (as they have, for example, in Zinacantán, Chiapas; see Cancian 1992), there have been subtle shifts in the region that are probably related to Mexican agricultural and food policy. The delivery of cheap maize to the Rincón through CONASUPO stores probably lowered maize prices beginning in the late 1960s. Maize farming became a less profitable activity because surpluses destined for local markets were subjected to competition from cheap CONASUPO maize coming from outside the region. This probably encouraged campesinos in Talea and other villages to convert more milpas to *cafetales*, since coffee was more profitable throughout much of this period.

Another effect was the change in production that Green Revolution technologies—particularly chemical fertilizers—made possible. Though tractors, mechanical harvesters, and other such implements are scale-dependent technologies, fertilizers are not, and small farmers in Talea, Tanetze, and Yaeé began using them on a significant scale through a government program which provided credit for their purchase (Tyrtania 1992: 196). Informants report that yields nearly doubled as a result, freeing land for coffee cultivation.

Finally, informants describe a major decrease in the relative price of maize beginning in the late 1960s. In the early 1960s one *almud* (4.2 kg) of maize was worth two *mozos* (that is, two days' work at minimum wage), according to various informants old enough to have worked during that period. By the early 1990s an *almud* could be purchased with less than half a day's work.[21] In other words, relative to the daily minimum wage, the price of maize fell to one-fourth of its value within approximately a decade. This probably occurred as the combined result of increased outmigration which put a premium on labor, government subsidy programs (CONASUPO stores) which drove maize prices down, and higher yields owing to chemical fertilizers.

In light of these policies, the questions change considerably. Instead of asking "Why did campesinos in Talea (and across the Sierra) begin to shift away from maize farming?" another question seems more appropriate: "Why didn't the campesinos shift completely to coffee cultivation, since maize prices had dropped and coffee prices were at high levels in the mid-1970s?" Tyrtania (1992:194) gives us a partial answer:

> In this context [of low market prices for maize] producers . . . appear as irrational beings who are cultivating a ruinous crop, in economic terms. But the campesino who retains effective control over productive resources does not calculate his family's biological survival—derived from self-provisioning—in monetary terms.

Emiko Ohnuki-Tierney (1993) has made a similar point with regard to rice in Japan: the crop is not just a commodity consumed by a nation of economically rational actors; rather, rice carries with it a bundle of cultural, political, and symbolic meanings—including, for example, notions of food quality—that are elided by simple economic analyses. We shall consider these considerations with respect to Sierra maize later.

These things take on added meaning when put in the context of fluctuations in coffee prices. For many Taleans, the 1959 coffee price crash probably remained fresh in their minds, as did the saying "You can eat maize, but you can't eat coffee." As long as maize production was limited to household consumption, it was insulated from the effects of declining market prices, and there was little incentive to stop growing it. Generally, subsistence farming and cash cropping form a kind of assets diversification policy in which risks due to international price swings, weather patterns, illness, etc., are reduced by being spread out over a number of crops. If one crop fails, say the Taleans, we can always rely on the other. It seems that for most campesinos the answer to government maize subsidies was not to stop growing maize—it was simply to limit it to household consumption.

To summarize, in spite of the allure of cash cropping, maize farming has not disappeared in the Rincón largely because it holds special significance in the lives of the Zapotec. In the Rincón maize has a soul. Indeed, the customary Rincón Zapotec view of nature is remarkably different from the conventional view in industrialized societies, to the extent that the earth, the rivers, and individual crops such as maize are seen as animate objects and are personified. Many development initiatives might be said to "dehumanize" the earth, animals, and even human beings in the quest for raw materials (see Alvares 1992:64–69). In the Rincón humans are engaged in a reciprocal relationship with these entities, often using saints and mountain spirits as intermediaries or advocates. In historical terms, maize farming extends far into the past, and its centrality in many Native American societies is deeply rooted. Finally, activities associated with maize have as their objective the maintenance of the campesino household and lands worked by its members. Thus maize farming in the Rincón involves activities conducted by people enmeshed in complex reciprocal relationships with their families, kin, neighbors, fellow villagers, saints, spirits, and the earth itself. The very embeddedness of maize in these intricate networks has made it an essential part of campesino lives that seems unlikely to be given up soon.