

# Rural Industrialization as Development Strategy: Cooperation and Conflict in Co-op., Commune and Household in Oaxaca, Mexico

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## ABSTRACT

Cooperative rural industrialization is an important objective for many rural communities, yet few have achieved success. Evidence from the Chinantec community of Santa Cruz situated in the Sierra Juárez of Oaxaca, Mexico, suggests that village-level conflicts over resource access and intra-household cross-gender disputes over labor allocation are in part responsible. Although the production co-op must recruit labor from co-op member households and gain access to village-owned common resources, co-op members cannot compel participation, but must negotiate with households for use of women's labor and with village authorities for use of raw materials for co-op projects. The co-op had greater success at resolving household disputes than communal village disputes. Cooperativist men were able to negotiate changes in household labor allocation to accord with the needs of development project production although only after satisfying women's demands for a women's co-op project. Village communalism, however, proved much less tractable to cooperativist pressures. It is argued that despite significant barriers, adoption of labor-enhancing technologies in a co-op framework is the most practical avenue for the majority of marginalized communities. Using analysis of temporal and spatial work patterns coupled with methods of political economy, geographers may be able to make a major contribution to rural development theory and practice.

## INTRODUCTION

"People criticize us, saying, 'you work in the co-op, and earn less than I,' but we do not work only to earn money, if money was all we wanted, we would do something else, like move to the city. What we want is to live together (*convivencia*), to share among ourselves, to learn more, and to get some projects underway. He who motivates himself (*animarse*) with the idea of getting ahead (*adelantarse*) must first become well educated (*prepararse bien*)."  
[A second interpretation of this double entendre would be, "If you are motivated by the thought of making significant economic strides, be prepared for a shock."]

-Santa Cruz Co-op member 1991

Rural industrialization, or "complex" commodities production, may be argued to be the path most likely to allow rural indigenous communities to escape dependence and economic marginalization. It has become popular to champion the production of organic coffee, rubber tapping and other extractive industries (Van Hilten, 1996; Kothari and Parajuli, 1993), but a likely long- and even short-term impact of reliance upon these "simple commodity" activities is continued economic marginalization in a fickle and, in the long-term, deteriorating international commodities market (Hewitt, 1992). No one experiences the necessity of technification and rural industrialization more acutely than Oaxacan indigenous peoples who have seen their position vis-a-vis international coffee markets decline markedly in real terms over the last 25 years (Figure 1). [end p. 91]

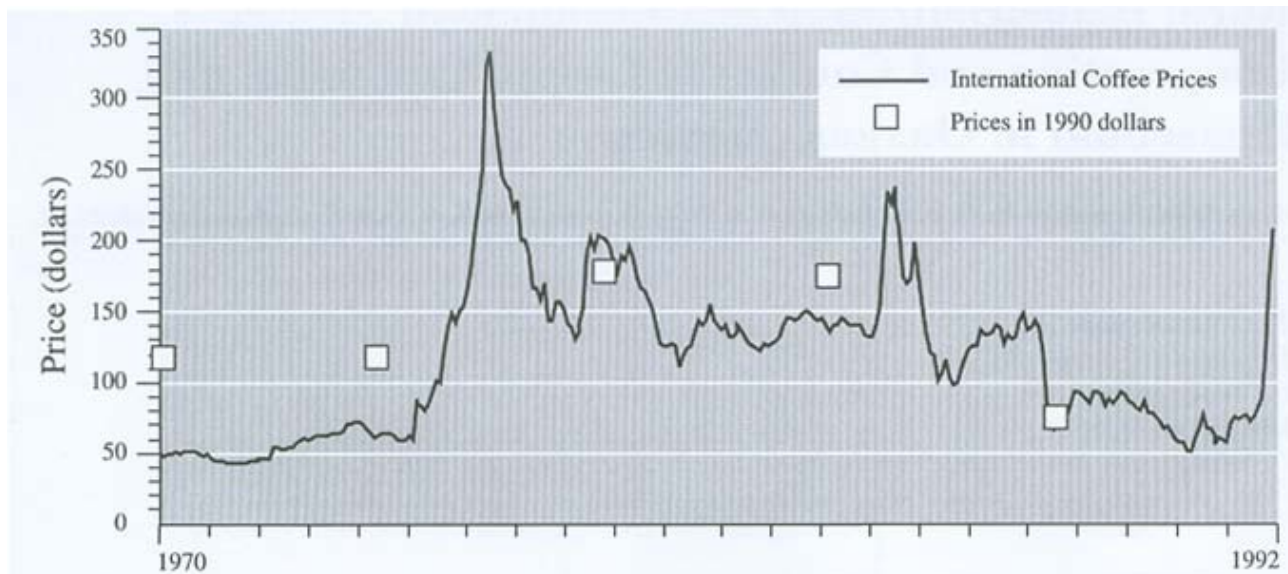


Figure 1. International Coffee Prices. Open square: 1-year average at 5-year intervals (1990 dollars). Source: WRI p. 262. Line: nominal prices, American Statistical Index 1925-5 1980 and 1993.

Rural industrialization is not, however, a simple matter of technology acquisition. Research undertaken in the Northern Oaxacan Chinantec community of Santa Cruz demonstrates that a transition to value-added commodities production, (e.g. furniture-making) requires co-op members to restructure their activities both temporally and spatially. Even household members not directly engaged in co-op production must also alter their production timing and spatiality to perform tasks which co-op members can no longer perform due to scheduling conflicts. When villagers resist changes in production organization in a concerted and systematic manner, rural industrialization projects flounder. In Santa Cruz the principal, although by no means only, focal points of resistance identified included: women in households resisting incorporation into co-op projects by withholding labor power; villagers not directly associated with the co-op withholding access to communal resources.

The multiple forms and foci of resistance to co-ops is matched only by the persistence of cooperativists. This paper presents two cases of intra-community conflict in Santa Cruz. In the first case non-cooperativist commune members act to restrict access to communal resources. While village political economy and to a lesser degree communal logic support these restrictions, the impact upon co-op projects is particularly devastating. The second case involves women's labor inputs into co-op production. Co-op projects necessarily require women's labor power, a fact which women use to leverage access to a women's separate "own account" co-op bakery.

## THEORETICAL APPROACHES TO RURAL DEVELOPMENT

Complex commodities production is but one of several development paths proposed for rural Third World and indigenous communities. Two principal alternatives are specialty "simple commodity" production for global niche markets and autochthonous development. While all are appropriate in some instances, all three strategies have significant flaws which limit their applicability. I will argue that of the three options, rural industrialization is the appropriate model for many communities. Although the various paths are not exclusive of one another, fieldwork undertaken in Santa Cruz suggests that strong tensions exist between technologically-innovative complex commodities production and either of the alternatives.

Specialized simple commodities production has received much attention recently (Ehlers, 1993; Cook, 1993). International organizations from Pueblos to People to Frontier Coffee champion the notion that "green" consumers may purchase direct from indigenous producers thereby supporting [end p. 92] indigenous peoples' cultural independence. The general argument is that discerning consumers concerned with "authenticity," "quality" and equality will purchase place-, process-, or people-specific commodities (e.g. "organic" coffee, labor intensive "backstrap" weavings) at prices reflecting the long hours required by labor-intensive "traditional"

technologies to produce these commodities. A critical examination raises important issues for both agricultural commodity and handicraft variants of this "niche-market" model. First, there must be some concern as to the absorption capacity of direct consumer markets. Organic coffee confronts this problem: most coffee grown in the Oaxacan Sierra, for instance, is organic, but only a small portion is certified. If all of this coffee were to flood into organic markets, prices would be equivalent to the prevailing New York exchange price. Second, even assuming that information represented in promotional brochures and Internet home pages is legitimate, the problem of craft industries cannot be separated from the politics of representation. Recent studies support my own fieldwork in suggesting that place-name-recognition is crucial to maintaining high product prices, yet difficult to control (Nash, 1993a; Stephen, 1993). "Indigenous Oaxacan" weavings, for instance, may be produced in India (Stephen, 1993). Weavings by Teotitlán del Valle (Oaxacan central valleys village) artisans must be protected by concerted local efforts to represent these weavings as the "genuine" Oaxacan articles. Placename-based control over a commodity has, however, enabled many weavers to exploit producers from nearby villages which supply them with materials or finished products for resale (Stephen, 1993).

Consideration of gender issues raises further concerns over labor-intensive development strategy. Coffee picking, for instance, in Santa Cruz and generally throughout Oaxaca is primarily undertaken by women, an arduous process. Men consider coffee picking to be "suave," or soft labor, but the hordes of black flies, mosquitoes, and other tiny blood-sucking insects that cloud around women as they pick belie this assessment. At the end of the day, women return from the fields with dried and fresh blood oozing from the many bites on their faces and necks. (Mutersbaugh, 1994, 135). Picking, organic or not, provides few opportunities for social interaction and educational advancement. With respect to artisan production, research indicates that women are often exploited within traditional handicrafts production as well (Nash, 1993b; Stephen, 1993). While communities may, in the short term, have little alternative to a continuation of simple commodities cash-cropping and labor-intensive handicrafts production, this is not in itself sufficient reason to champion these as long-term development strategies.

"Rural industrial" strategies, by contrast, focus on value-added production utilizing productivity-increasing technologies. Contemporary research situates rural industrialization within the context of a series of broad "agrarian questions" regarding politics, production processes, and surplus accumulation (Bernstein, 1996; Byres, 1996). "Agrarian capitalist" development models, by contrast, whether "American farmer"/unimodal (Lenin, 1936; Mellor, 1984) or "Junker" focus on innovation in agricultural (primary sector) technology and transfers to urban-based industry. This study stresses, by contrast, innovation in rural industries which in turn requires that rural workers retain surpluses currently exported to urban areas. The argument presented here in favor of rural industry is distinct, however, from a "neo-populist" position (Brass, 1996) in that it supposes that production relations in rural communities must be radically transformed and that ending economic marginality will require cooperative rather than individual family ownership of resources. That this pro-industrial stance dovetails in some respects with Mexican governmental development practice is evinced by the availability of co-op association loans and grants and by development strategists who embrace industrial planning and reject rigorous application of neo-liberal orthodoxy (Villarreal, 1990). State initiatives (e.g. equipment grants) favoring rural industrialization are, however, undercut by efforts to restrict social expenditures (Fox, 1992). The sharp reduction in school teacher's wages, for instance, has resulted in increased children's educational sojourns and concomitant increase in family expenditures.

Theories of rural industrialization which locate market-oriented development within a cooperativist context are, however, less well understood despite a long history of concern. Marx's famous letter to Vera Zasulich (Marx 1964, 142) provides only one [end p. 93] notable attempt to provide a theoretical foundation for economic articulation between village communities (Russian Mir) and national economies. Chayanov's (1925) thesis on peasant economics provided an alternative view. His populist vision, cut short by Stalin's forced collectivization, would have vertically integrated peasant households into national cooperative marketing associations. Although Chayanov's theory provides constructive insights with respect to local production organization, its household-based strategy does not fit readily with Mexican and Latin American rural economies. First, most agricultural product markets (e.g. coffee) in a global economy are beyond the ability of any Third World national or perhaps even Latin American producers' organizations to rationalize. Second, individual households cannot mobilize

sufficient labor and resources for autonomous value-added industrialization. Cooperative strategies are, for these reasons, an appropriate development strategy for many indigenous communities, even when rural industry is not a central component. (see Salinas Ramos, 1987; COPLADE, 1990). For the many indigenous areas which do not possess land resources amenable to agricultural technification, rural industrialization provides a means to build human capital, escape the terms of trade problem confronting primary commodities production, and protect cultural and ecological integrity. However, the performance of cooperatives has never quite matched the promise (Putterman, 1983; Bonin et al, 1993). Here it is suggested that problems of co-op development such as membership decline and incentive problems (Tendler, 1983) are attributable in part to inter-institutional conflicts over labor power and resources.

### ***"La Luz de la Chinantla": Co-op Rural Development & Village Communalism***

Santa Cruz is a geographically isolated Chinantec village set in the verdant rain-drenched cordillera of Oaxaca's Sierra Juárez (Figure 2). The indigenous commune is composed exclusively of *propiedad comunitaria* (common property) reaching from 600 meters to over 2,800 meters in altitude in the fifteen kilometer (N-S) by seven kilometer (E-W) north-draining watershed. Although no roadway reaches the village, coffee is exported in quantity via mule trails. Villagers, especially men, are integrated via trade into extensive social networks including government bureaucracies and rural development organizations. The apparent isolation is interrupted daily by villagers' Oaxaca trips or by visitors, e.g extension agents, religious and party officials, government bureaucrats, basketball teams from neighboring villages, and university researchers.



Figure 2. Location of La Chiantla.

Three institutions are central to rural development conflicts addressed in this paper: village households organize family-based cash crop and subsistence production, a village assembly comprised of all village men ages 18-60 undertakes village infrastructure maintenance and development and some communal production, and a co-op organization engages in rural development projects. Households cultivate market-oriented (coffee) and subsistence (corn, beans) production on swidden subsistence and coffee plots scattered through mountainous terrain (Figure 3). The approximately 120 village families hold land as usufruct which reverts to the village when no longer cultivated. As the 750 villagers are legally required to live within (centrally-located) village limits, the daily commute to swidden and coffee plots requires in some cases a four-hour round trip.

In addition to household production, male villagers between the ages of 18 and 60 are members of the village general assembly and must participate in village-organized communal labor including **[end p. 94]** *tequitos* (group manual labor on village projects) and *cargos* (village administrative work). Communal labor includes activities essential to village reproduction including infrastructure maintenance, liaison duties linking village and Mexican government bureaucracies, education management and financing, and communal commodity production. The democratic village assembly--the village cacique was deposed in the 1960s--demands men's unwavering adherence to communal labor duties. Faced with threats to communal integrity including loss of labor power due to uncontrolled migration or consensus failure arising from economic differentiation (see Cancan, 1992), the Santa Cruz assembly has acted to protect integrity by reinforcing links between usufruct rights and communal labor participation. An individual who fails to meet communal labor obligations may suffer jailing, or expulsion and permanent loss of usufruct rights.

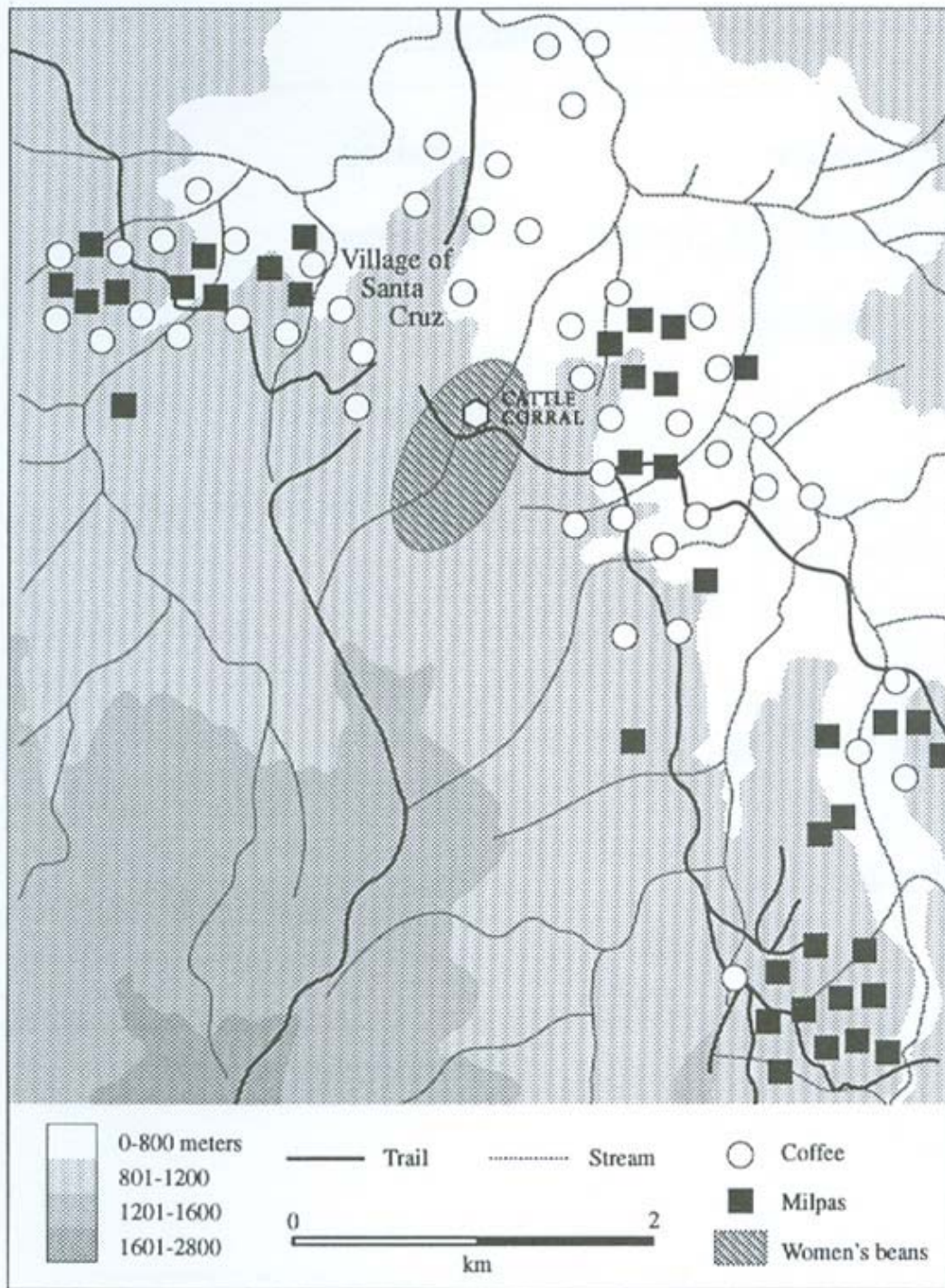


Figure 3. Agricultural areas of Santa Cruz.

Although Santa Cruz has managed to protect village-communalism, neither households nor village commune have found a solution to declining incomes. Not only has the real price of coffee trended down over the last 25 years, but the "technocratic populist" (Sanderson, 1986 p. 252) pattern of economic transfers (government subsidies) is undergoing slow yet ineluctable revision. On the one hand current Mexican neo-liberal spending policies reduce support for social services (e.g. teacher's wages, health clinic) and eliminate involvement in coffee market parastatals (e.g. INMECAFE) (Hernández, 1991) while on the other channel funds to new transport

infrastructure (Santa Cruz-Oaxaca roadway, Oaxaca-Mexico super-highway) and rural development financing (the SOLIDARIDAD government development program linked to political patronage).

Two consequences are of importance for the present discussion. First, village communality, albeit male-dominated, in Santa Cruz continues to serve as a touchstone for productive relationships. Second, since 1986 efforts have been made to initiate production cooperatives within Santa Cruz. Co-op organization is viewed by local cooperativists as a middle road between household and village communal enterprise and as an alternative to privatization. Households lack necessary human and financial capital to introduce significant labor-saving technologies, the village commune lacks the collective will to rationalize even traditional communal enterprise (e.g. beef production) let alone enter into radically new ventures such as furniture production. Private enterprise is limited within Oaxaca's village communes except where--in the absence of democratic institutions--*caciques* wield political control.

In 1986 several groups of Santa Cruz communalists joined together to form a cooperative association. Cooperativists currently account for about 25 percent of *ciudadano* families, about one quarter of villagers. Currently the co-op organization undertakes a variety of production activities (Table 1). The projects have been funded through a number of NGOs financed in part through bi- and multi-lateral aid [e.g. Inter-American Foundation, Canadian Fund] and Mexican government organizations. Several factors contributed to initial co-op formation. Some of the original impetus grew from a successful government petition to establish a subsidized rural store providing subsistence goods (see Fox, 1992). During this mobilization they became familiar with government and NGO financing for rural industries. [end p. 95]

TABLE 1. CO-OP WORKING GROUPS; ASSETS, INFRASTRUCTURE, SERVICES

Working Groups	Assets	Infrastructure	Services
Co-op General	2 Ton Truck	Co-op Building (Cement)	Veterinary
Swine Herding	Medicines, Pigs	Cement Hogsties	
Weaving	Handlooms	—	Instruction
Furniture-Making	Lathe, Table Saw, Jigsaw, Drill press, Chainsaw, Power planer Handtools	Co-op Building Electricity	Carpentry Workshop
Bread-Baking (Women)	Oven, Tables Baking Trays, Bowls,	Wooden Building	
Bee-Keeping	Hives, Bees, Protective Gear, Flasks, Honey Extractor	Wooden Building	Veterinary
Milk-Production	Cows Cheese-Making Implements Forage-Grinder	Corral	Veterinary

A second group of original cooperativists returned to Santa Cruz from Mexico City where they had worked together in a foundry. With a knowledge of government and NGO financing sources, experience in technified commodity production, and a history of participation in communal labor, these two groups joined forces to initiate a production co-op which they named "La Luz de la Chinantla." The level of capitalization is impressive as are the results of co-op labor. Many commodities have been produced and sold, contacts established with national and regional NGOs and government bureaucracies, and buildings constructed.

Initially most villagers joined the co-op (154 village families of 210), but from 1987-94 attrition induced by regional and local political opposition, household-centered gender conflicts, and intra-co-op antagonisms reduced membership to 35 member families. Since 1995 women have initiated a separate "own-account" bread-bakery working group within the co-op. As a result the organization has gained several new member families and stemmed attrition. Despite the recent resurgence, however, conflicts between co-op and village and within co-op households continue to limit project success. This "political history" of early co-op membership growth followed by sharp decline and stabilization at smaller size is common to cooperative development (Tendler, 1983). In undertaking this study I had hypothesized that the pattern of co-op decline was a result of scheduling conflicts between co-op projects and household agriculture. The combination of divergent spatial activities (co-op projects undertaken in or near the community, household production at distant sites) and conflicting temporalities (periods of high agricultural labor intensity conflict with regular co-op production) makes it difficult to coordinate household and co-op activities and leads to the abandonment of co-op activities. This thesis was revised when the centrality of gender relations became apparent: sufficient labor power is available, the question is whether and how "conjugal contracts" governing gender patterns of labor allocations may be renegotiated. The importance of disputes over resource access between co-op and village commune were also of much greater importance than anticipated. A thorough understanding of cooperative production process should thus be informed by principles of political economy and gender-development theory. [end p. 96]

## **TIME-GEOGRAPHY, RURAL DEVELOPMENT & COMPLEX COMMODITY PRODUCTION**

" ... [T]he experience of innovations and their displacement of "traditional" practices and social relations often precipitates some form of symbolic discontent, some form of cultural contestation, some form of struggle over naming, meaning or identity ... every moment in a diffusion process is simultaneously a moment in a structuring process."

Allan Pred. 1992

As Pred's observation indicates, the fundamental restructuring of everyday production activities to conform with commodity production means that other activities must be abandoned but that this does not go uncontested. Within Santa Cruz households the temporality and spatiality of co-op project production conflicts with that of pre-existing activities: it is impossible, as the case study below indicates, to undertake co-op activities without either abandoning household agricultural activities or reallocating labor power between men and women within the household.

The following case study documents two conflicts surrounding cooperative development projects in the village of Santa Cruz in the Sierra Juárez of Oaxaca, Mexico. The first dispute between the co-op organization and the village authority involves utilization of production inputs, e.g. trees for furniture-making, which are communally owned. The second examines conflicts between household and co-op as the latter seeks to mobilize men's and women's household labor for men's co-op projects. The conflicts discussed below do not exhaust the full range of disputes: conflict between cooperativists, for instance, revolving around issues of production spatiality and time-discipline is also very important. Emphasis here is placed upon 1) the pattern of dispute, negotiation and resolution which characterizes development projects, 2) dependence of co-op success upon contractual arrangements regarding village-communal resources and household labor which are highly contingent and subject to revocation by village assembly or households, and 3) the importance of scheduling conflicts between temporally regular, centrally-located co-op projects and spatially dispersed, temporally uneven and strongly gendered patterns of agricultural labor allocation.

### ***Resource Utilization in Cooperative Development: Negotiating Access to Communal Property***

"Other [non-cooperativist] villagers say "better to let the wood [large fallen pine trunks] rot than have the co-op benefit from it."

Santa Cruz Cooperativist. 1991

There are two sources of conflict between the co-op organization and the village. The co-op depends upon resources owned communally by the village (e.g. pasture for cows, timber for furniture), but there is neither a consensus in the village assembly allowing for resource utilization by sub-groups nor established procedures for valuing and regulating such use. A second issue of importance is the use of labor power. The village commune requires over sixty labor days per year from each adult male, plus appointed administrative posts. From the cooperativist perspective, village labor drafts disrupt co-op participation; from the communalist perspective, co-op projects may divert labor from village-communal production. Village labor, on the other hand, aids cooperative rural development by controlling migration, maintaining infrastructure, and inculcating a "culture of communality" which provides organizational tools for collective work management. At the village level, a "political economy of exclusion" makes unrestricted migration costly by sanctioning individuals who migrate. Usufruct of village land is linked to participation in village-communal collective labor, fines accrue for each missed *tequilo*, and, if unpaid, result in loss of usufruct. This enforced residence in the village aids the co-op by limiting labor migration which would disrupt co-op projects. Village labor drafts also play a crucial role in supporting co-op operations by building infrastructure supportive of co-op development projects. The electric powerline and transport infrastructure are clear examples, less obvious yet equally important is communal resource regulation (e.g. prohibition of pine tree damage through swidden burning) enforced by cargo administrative labor (e.g. communal goods manager) which preserves raw material inputs to co-op commodity production. Additionally, village communal culture provides labor organizational techniques used by cooperativists for project management.

Village support of co-op development is, however, counter-balanced by dynamics which [end p. 97] undercut co-op ventures. The village commune is superordinate to the co-op with respect to control of both labor power and property. All *comuneros* must supply labor power to *tequios* on demand: the unpredictable periodicity and labor intensity of which is highly disruptive of co-op activities. In Santa Cruz, communal property ownership provides the village assembly with de facto veto power over any co-op development projects which depend upon local production inputs.

The Santa Cruz general assembly and elected officers have, on several occasions, blocked access to village resources. The impact upon certain co-op projects, notably the milk-producing cattle herd and furniture production unit, has been significant. The examination undertaken here will be limited to an acknowledgment of multiple reasons for village opposition to co-op projects, and brief exploration of underlying rationales of three Santa Cruz village groups; *caciquista* descendants of ex-cacique families, "*cooperativista*" co-op members, and "non-aligned" families aligned with neither group. The most powerful group opposing co-op development is the *caciquista* faction. This group fears that co-op success will undercut future attempts to privatize communal resources. Although the *caciquista* group lost political control over communal resources in the 1970s, they still retain significant economic and political assets outside the community. These are useless unless the commune is opened through privatization to outside investment. Though powerful, the *caciquista* faction represents only a minority of *comuneros* smaller even than the cooperativist faction. "Non-aligned" *comuneros* associated with neither co-op nor *caciques* also questions independent cooperativism albeit for different reasons. Independents ask what claim the co-op has to communal resources, and whether successful cooperative ventures will deplete communal resources and undercut village integrity.

Whenever cooperativists utilize communal resources for co-op production, they are using materials which have been produced and maintained by village labor. The wood used for furniture, for instance, comes from reserves protected and maintained by villagers. For both *caciquista* and non-aligned villagers, co-op use constitutes resource appropriation. Cooperativists counter that use of communal resources is justified since cooperativists are villagers, and as such contribute their fair share of labor to village communal projects, and hence should receive a share of communal resources. Potential consequences of the co-op's position has become apparent in recent village council debates over clearing village land for pasturing of private (non-communal) cattle. Traditionally cattle have been limited to one overgrazed and eroded parcel just below the village where both communal and private cattle may forage. *Caciquista* villagers have wanted to open up private pasture, a move which would benefit those with cash to invest in low-productivity cattle ranching. This has been generally opposed in the community because of the damage that cattle do to the fragile "cloud forest" environment-villagers make explicit

reference to the situation in neighboring Zapotitlán where runaway cacique-driven privatization of cattle grazing has destroyed the local subsistence base. Cooperativists originally opposed pasture privatization, but now as possessors of a milk herd seek a compromise position which would allow extra-communal cattle pasturing by "associate" groups. Cooperativist vacillation vis-a-vis people-land relations raises the question of whether co-op members can engage in market-oriented production without eroding communal practices which sustain the local environment.

The labor question is also of special interest to comuneros: communal property is sustained by communal labor, and villagers protect this institution jealously. Under current rules, all comuneros must participate equally in communal labor with no substitutions except occasional reciprocal exchanges. The village commune asserts its labor demands through elected project heads who draw up *tequío* lists. Those who repeatedly fail to participate are jailed. Figure 4 illustrates the annual relation between household (productive) and *tequío* (reproductive) labor for males. While basic grains agriculture is driven by climatic considerations, *tequío* timing and quantity (number of workdays) is a political decision of the village assembly. Current practice accommodates short-term summer migration during the relative hiatus in agricultural production (especially when no winter corn is planted) by limiting *tequíos* during this period. Independent villagers are concerned that co-op members may change communal labor in two ways. First, cooperativists vote for communal projects [end p. 98] which aid co-op production. Recriminations have already been leveled at cooperativists for supporting the rural electrification project. Second, cooperativists may be less interested in maintaining the summer *tequío* hiatus, seeking rather to arrange *tequío* duties in accordance with co-op work schedules.



In short, independent villagers and *caciquistas* have formed a coalition against co-op resource access. Although the co-op has successfully pursued projects, such as the women's collective bread bakery, which use imported inputs (wheat flour) for local production and consumption, many projects showing good prospects for success have been sharply curtailed. Chief among the latter is furniture production. Elected village officials aligned with the *caciquista* faction have blocked use of village timber resources and attempts to bring the issue to the village assembly have been met with indifference. Although cooperativists have received thousands of dollars worth of woodshop equipment (power planer, table saws, lathes, etc.) and training financed by Mexican government institutions and NGOs, they have not been allowed to export furniture which they have produced, resulting in a lack of wages.

### ***Labor Power in Rural Development: Gender Politics and Activity Structure in Household and Co-op***

"I'm going to quit planting corn. I still plant because the co-op project [furniture-making] isn't fully operational. Corn takes too much work and yields poorly, it would be better to buy corn."  
Santa Cruz Co-op man, 1990

Labor mobilization represents a second major impediment to successful co-op commodity production. The tendency of co-ops to experience rapid early membership growth and then a precipitous decline has received attention in co-op studies (Hirschman, 1993). Tendler's (1983) study of Bolivian production cooperatives argues that "free-ridership" and "spillover effects" are primarily to blame: since members, and even non-members, receive benefits even when they do not participate fully they have little incentive to participate. The present investigation suggests that gender conflict in the household provides an alternative explanation for co-op membership decline. In a household-based economy, co-op labor must be reallocated from household production; in Santa Cruz this is certainly so, since reallocation of labor from village communal work would trigger sanctions. The periodically high labor intensity characteristic of Santa Cruz men's agricultural production coupled with spatially dispersed fields makes it especially difficult for men to undertake co-op production. Only by both eliminating some agricultural activities and reallocating agricultural tasks from men to women can free labor sufficient to simultaneously engage in household and co-op production. Santa Cruz women at first accepted an extra work burden, but then began to question and resist. Ultimately many women refused. Without women's

support, co-op ventures floundered. By 1994, however, women's resistance elicited a positive response from men: co-op funds were allocated to a women's cooperative bakery under the assumption that once women were **[end p. 99]** integrated directly into co-op decision making they would be more supportive of co-op ventures. New families joined the co-op organization for the first time in 1995 as village women sought access to "own account" income and cooperative camaraderie.

#### **TIME-GEOGRAPHIC INCOMPATIBILITY OF HOUSEHOLD VERSUS CO-OP PRODUCTION**

The study's working hypothesis supposed that co-ops follow a pattern of membership growth and then decline not because of politics or "free-riding," but due to conflicts arising from incompatible time scheduling and production spatiality between co-op and household activities. During particular periods of the agricultural calendar co-op activities would conflict with household activities consequently triggering intra-household disputes over labor allocations: men would ask women to contribute by undertaking co-op activities (e.g. cattle pasturing) which occur in greater spatial proximity to women's activities (e.g. coffee picking near village). Certain co-op projects (e.g. bee-keeping) might succeed because the production cycle would mesh temporally (periods of high bee-keeping labor intensity would complement periods of high agricultural labor intensity) and spatially (beehives can be flexibly located near agricultural fields thereby minimizing commuting time). In practice, however, even the most flexible activities conflicted with agricultural production. All co-op projects studied required temporally regular year-round labor inputs coupled with periods of high labor intensity, and spatially concentrated production sites.

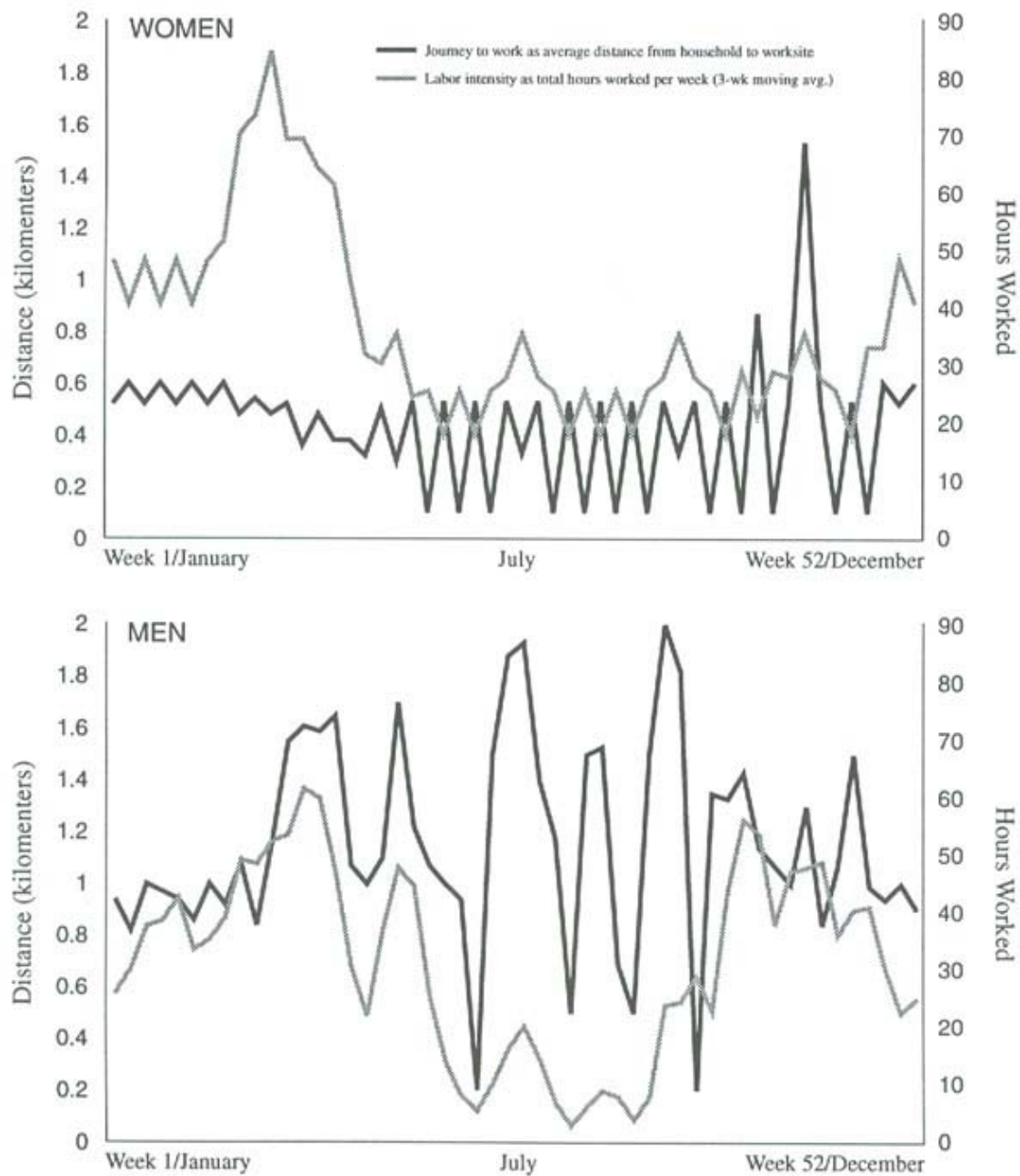


Figure 5: Male and Female Labor Intensity and Spatio-Temporality through Agricultural Calendar Year (Source: Santa Cruz fieldwork 1990-1993).

When men reduce agricultural labor to minimum subsistence production through elimination of winter [end p.100] corn planting and reduction of summer planting, men's labor intensity becomes extremely uneven and spatially dispersed (Figure 5, bottom). The observed fluctuations in labor intensity and spatial dispersion is occasioned by agro-technical and cultural specificities of Santa Cruz. First, scale reduction in agriculture is accompanied by efficiency losses. Community-to-swidden commuting distances of up to two hours (one-way) and increasing production losses associated with declining plot sizes make scale reduction to eliminate sharp labor intensity "peaks" uneconomic. Second, gender labor divisions limit opportunities for elimination of peaks through cross-gender task sharing. Women's labor shows a spatial and time-intensity distinct from men's such that they might easily take over men's agricultural tasks or village-centered co-op tasks. Women's labor intensity peaks (Figure 4, top) are relatively less pronounced than men's, and to a degree complementary, and furthermore, their village-based spatiality lends itself to participation in village-centered co-op tasks (e.g. furniture refinishing).

A third problem arises in the nature of agricultural production. Many activities associated with labor intensity peaks must be undertaken immediately to avoid loss of value. Delay of post-burn planting provides one example (Figure 5: males, May): if rains arrive before planting, ash loss results in sharply lowered yields. Opportunity cost constraints combined with gender specific task assignments generate an extremely uneven labor supply. Even during summer weeks, for instance men's spatiality and labor intensity fluctuates dramatically (Figure 5: males, July / August).

Figure 4 illustrates the problem of time-scheduling conflicts. Cattle must be tended constantly in Santa Cruz. Since fields are distant (Figure 6), cattle cannot make the journey and hence men cannot effectively attend to both household and co-op tasks, especially during the spring period of high labor intensity. Other co-op ventures present similar difficulties of time scheduling conflicts and divergent spatialities.

**MEN'S STRATEGIES FOR MOBILIZING HOUSEHOLD LABOR**

Santa Cruz cooperativist men, experiencing labor shortages, undertook a series of labor-mobilizing initiatives. Many of these strategies depended on either direct or indirect participation of women.

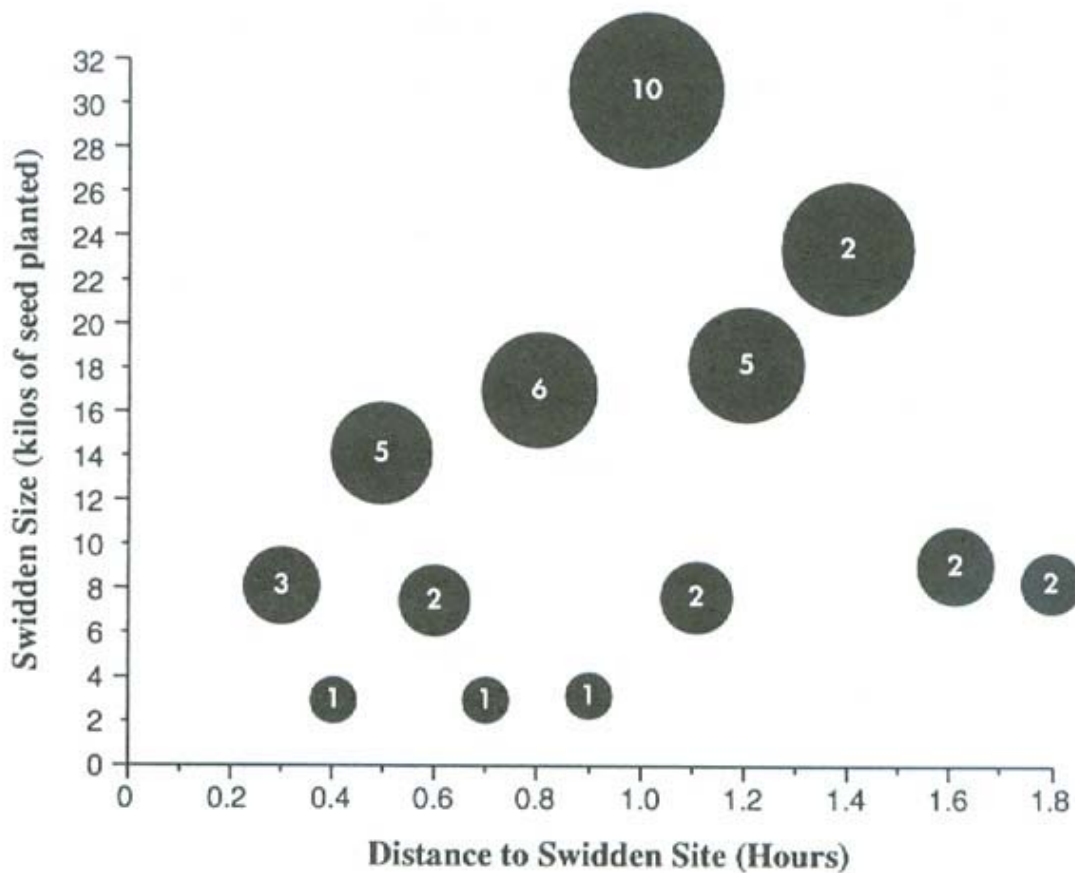


Figure 6: Swidden size by distance. Dot size = number of swiddens

During the course of the eight-year (1987-95) investigation period, however, women came to reject what they perceived as an unfair absolute and relative (to men) increase in work loads. Two male labor mobilizing initiatives which are particularly interesting from a geographic perspective include 1) a spatial reorganization of subsistence production through collectivization and technification, and 2) a reorganization of co-op task spatiality and temporality to mesh with household production. In 1994, for instance, cooperativists jointly opened a large cornfield utilizing co-op chainsaws. The logic of collectivization, especially when accompanied by technification,

is sound. Collectivization eliminates many intractable problems of swidden agriculture by saving significant commute time (participants rotate bi-weekly field inspections of distant fields) and reducing animal depredations (large plots suffer relatively less than dispersed small plots). When collectivization facilitates labor-saving technification, as in this case, labor can then be transferred from subsistence production to co-op production. Chainsaws, for instance, cut labor utilization significantly yet this technology is too expensive for all but the most wealthy households. Collectivization is, in a sense, a communal provision of labor and factor markets. By developing an "internal" intra-co-op labor market co-op members are able, ideally, to reduce transactions costs, increase food security, and free up labor for "sideline" co-op industries. Women, however, opposed collectivization and demanded that their husbands continue to plant individual household plots because, according [end p. 101] to one co-op man, women did not want to relinquish individual control of the household subsistence fund.

A second strategy seeks to save labor by combining household and co-op production. The logic of task integration is compelling. In many cases spatial proximity of co-op and household tasks encourages labor-saving task combination which is inefficient when energetics and resource utilization are considered. Co-op project time-geography (i.e. the time-space organization of artifacts, persons and materials necessary to undertake a production task) can be compared with that of a household activity to see whether they are compatible. Cattle-pasturing combined with coffee-picking provides an interesting case where task integration resolves a crisis in labor allocation, yet is uneconomic. The recommended practice for milk production in the co-op is to corral the cattle and provide them with cut and milled forage. During the coffee season, however, women and to a lesser degree men pick coffee in plots relatively near the corral (see Figure 5). The ample herbaceous vegetation provides plenty of forage, so rather than tend the cattle in the corral, they are taken to the coffee plots to graze. This would seem an ideal integration of household and co-op activities but for the excessive energy consumed by cattle movement. The trail climbs up and over many ridges, and, by the time a cow has traveled even the short distance from corral to coffee plot and back again, a tremendous amount of energy has been consumed. Milk comes out "non-fat" as they say in the village. Healthful perhaps, but not ideal for small-scale cheese production.

#### **GENDER IMPASSE AND THE WOMEN'S CO-OP BAKERY**

In 1993-94 co-op members constructed a bread-baking oven, the first co-op investment in a women's "own account" co-op venture. Several factors contributed to this policy change: first, women requested their own co-op project; second, women had withdrawn their labor from, and demanded that men quit, several co-op projects; third, men had observed, during Oaxaca NGO meetings, that some organizations sent women delegates; fourth, funding organizations criticized the co-op for not incorporating women and expressed an interest in financing women's projects. The co-op invested approximately US\$500 in an oven and materials and the bee-keeping working group contributed a wooden building to establish the women's cooperative bakery working group.

Despite short-term problems stemming from an uncertain local market for bread, a lack of knowledge of baking techniques, and the high cost of importing flour into the community, the women's bakery has been a resounding success. Although *tortillas* made from maize are the principal subsistence food, bread is an important luxury item, usually consumed with a warm bowl of coffee in the afternoon. In a year of operation the bakery has paid off capital costs including beehive oven and building purchases, has paid operating costs including wood (heating) and flour purchases, and has paid fully one-half of women's labor costs. The success of the women's baking co-op--comparable to the most successful of men's projects--is due to several factors. The women's project is, in a sense, a very local form of import substitution industrialization: a well-developed local market for bread satisfied by traveling *coyote* merchants has been taken over by the co-op venture. Women exploit their understanding of the village market and utilize familial networks to sell a large part of their production on consignment thus avoiding production surpluses. The project fits well with the spatial logic of women's household production: women's tasks are predominantly village-centered and the village bakery location allows women to undertake bakery tasks in concert with household tasks, e.g. childcare and coffee drying. Women's most important extra-village activity, wood-gathering, can likewise be combined with wood-gathering for bakery ovens.

#### **CONCLUSION**

Cooperative rural development which seeks to organize new forms of production in indigenous communities

confronts significant obstacles. This study has focused upon internal difficulties in negotiating access to raw materials within a communal property context and mobilizing labor within a household production regime. This is not to deny, however, the crucial role played by extralocal institutions and actors in limiting local success. The power of regional caciques to control trade and government transfers is all too well documented (Hernández, 1991), as is debilitating surplus extraction (Deere and de Janvry, 1979). Any challenge to this historic pattern must come in part from the communities themselves. [end p. 102]

The local history of the Santa Cruz co-op is still being written, but certain conclusions may be drawn. First, labor mobilization (i. e. getting co-op members to participate) is a significant problem for co-ops. This research demonstrates that, in Santa Cruz at least, women's labor is a key to co-op success and can only be effectively mobilized through cross-gender renegotiation of household labor obligations. Strategies of joint co-op and household labor organization reduce scheduling conflicts by increasing labor availability for co-op tasks during peak periods of household production and by locating particular co-op tasks near to household tasks. These strategies to develop cooperative industrialization, however, are insufficient. A significant change in gender relations is necessary. More than just a matter of reassigning a few tasks within the household, the experience of Santa Cruz suggests that women want and demand a share of decision-making and the option to control their own independent co-op production projects.

Second, cooperativists must negotiate access to village resources. While cooperativists have been reasonably successful in directing village labor to infrastructure projects which benefit co-op industrialization, they have been less able to obtain permission to use village resources for market-oriented commodity production. Cooperativists have been successful in opening communal land for cattle pasture, yet the consequences of this initiative quite possibly include loss of long-term ecological sustainability if the grazing area is not sharply restricted. In the more promising and sustainable area of furniture production the co-op has had little success in gaining access to communal timber. Although the village assembly voted to direct the village commissioner<sup>1</sup> to reach a resource agreement, this official has made no effort to negotiate access.

Santa Cruz villagers voice a unanimous desire to keep some cultural traditions and to incorporate labor-enhancing technologies. The question is which traditions to keep. A successful application of communal labor practices may, within the context of renegotiated gender relations, provide insights into problems of technifying complex commodity production and perhaps of improving village livelihoods.

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## **NOTE**

1. The commissioner is the top village official, appointed by the village assembly.

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## RESUMEN

Aunque la industrialización rural a través de cooperativas es uno de los objetivos más importantes de muchas comunidades rurales, el éxito obtenido por las mismas es escaso. Los conflictos que surgen a nivel comunitario en referencia al acceso a recursos, y las disputas entre miembros de familias y entre los sexos sobre la distribución laboral, son factores que influyen en el funcionamiento de dichas cooperativas, tal y como lo demuestra la experiencia de la comunidad de Chinantec en Santa Cruz ubicada en la Sierra Juárez en Oaxaca, México. Aunque la producción de la cooperativa necesita la mano de obra de las familias miembros al igual que necesita acceso a los recursos comunitarios, los miembros de la cooperativa no pueden imponer la participación. La mano de obra femenina debe ser negociada con las familias mientras que el uso de materiales para los proyectos cooperativos debe ser negociado con las autoridades de la comunidad. La cooperativa ha sido más efectiva en la resolución de conflictos familiares que en la de conflictos a nivel comunitario. Los cooperativistas pudieron negociar la distribución laboral de las mujeres de acuerdo con las necesidades productivas del proyecto luego de satisfacer la demanda de las mismas para la implementación de un proyecto cooperativo para mujeres. Sin embargo, las presiones de los cooperativistas no dieron igual fruto a nivel comunitario. Tal y como lo indica el presente trabajo, la adaptación de tecnologías que promueven la mano de obra en el marco cooperativista es la solución más viable para la mayoría de las comunidades que han sido marginalizadas pese a los obstáculos que enfrentan. Utilizando un análisis temporal y espacial de modelos de trabajo junto a métodos de política económica, los geógrafos pueden hacer importantes aportes a la teoría y práctica del desarrollo rural. [end p. 105]