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**CATTLE, CORN AND CONFLICT
IN THE MEXICAN TROPICS**

by

DANIEL J. BUCKLES, B.F.A., M.A.

**A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfilment of the requirements for the degree of
Doctor of Philosophy**

Department of Sociology and Anthropology

**Carleton University
Ottawa, Ontario
July 21, 1989**

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CATTLE, CORN AND CONFLICT IN THE MEXICAN TROPICS

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ABSTRACT

The purpose of this dissertation is to explain the impact of developments in the cattle and oil industries on the Mexican peasantry, using a remote Indian community in southern Veracruz as an example. The appropriation and abuse of communal land by ranchers and struggles for survival by peasants raise many practical and theoretical issues relevant to peasants throughout Mexico and in other countries where arable land is being turned into pasture.

This case study illustrates a three-fold argument concerning relations of conflict and exploitation in the Mexican countryside. The first part of the argument emphasizes the *variable* forms of subordination of the peasantry to a system of production based on the antagonism of capital and labour. The analysis shows that the expansion of the cattle industry has resulted in the development of relations of unequal political power and the emergence of significant class differences within the community. These changes have occurred, however, without the complete separation of peasants from control over some means of production.

The second part of the argument chronicles the struggles of peasants to maintain control over vital aspects of subsistence production. In contrast to studies that ignore peasant action and focus only on the inequalities and injustices suffered by peasants, the case study shows the active role peasants have played in the transformation of political and economic structures. Local land reform won by peasants has resulted in a complex and highly

fragmented class structure and a concrete alternative to full proletarianization. However, land reform cannot be attributed only to the resistance of peasants to capitalist penetration of the local economy. Analysis of the political history of land struggles in Pajapan indicates that peasants were able to make use of the tensions between state capital (i.e. the state-owned oil industry) and a weak branch of ranching capital to force concessions from the Mexican state and the cattle ranchers.

The third and final part of the argument shows that capitalism is subject to self-induced contradictions and limitations that prevent the full realization of the process of proletarianization and undermine long-term economic development. The destruction of the environment, the chronic underdevelopment of agricultural technology and the concentration of wealth in privileged regions and sectors of the world economy create significant costs and inhibit the maximum accumulation of capital. Capitalism is far from the perfect machine for profit accumulation and economic production idealized by most theorists on the left and right. Rather, it is characterized by problems of resource mismanagement, self-induced limitations on production and contradictory forces of capital growth and misgrowth.

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CHAPTER ONE

Introduction

Since the 1950s, the cattle industry in Mexico has quadrupled in size. This poses a very serious threat to those many peasants whose land is being appropriated and frequently abused. This dissertation examines the impact of cattle ranching on the politics, the economy, and the environment of the Gulf Nahua of Pajapan, an Indian population of approximately 10,000 people inhabiting a remote corner of southern Veracruz (see Map1.1). The Gulf Nahua are among the last of a large group of Nahua speakers in southern Veracruz who have been displaced from the best agricultural land and gradually absorbed into the wider Mestizo society. The 19,180 hectares of communal land occupied by Pajapeños is all that remains of a much larger Indian land base in the region.

The dissertation clearly shows that the development of cattle ranching in Pajapan has degraded the environment, undermined local food self-sufficiency and contributed to extreme inequalities in the distribution of economic and political power. Mestizo ranchers from regional urban centres first introduced cattle onto the communal land of Pajapan and supported the development of a rancher class within the community. The communal land tenure system and political institutions of Pajapan were manipulated by the emerging class of local ranchers to gain control over the best quality communal land and convert it into pasture. This forced peasants in

search of land to cut down the tropical rainforest, resulting in severe soil erosion and other environmental problems. Although the peasant population far outnumbered that of the ranchers, the peasants lacked economic and political resources and despite periodic government intervention the wealthy and politically influential ranchers were able to delay equitable land distribution for many years.

In the late 1970s, a series of events provided an opportunity for landless peasants in Pajapan to voice their demands forcefully at a national level. Riding a wave of high international oil prices, the state-owned oil industry announced plans to expand. To make way for a new industrial port to serve the existing petro-chemical industries in southern Veracruz, the Mexican government expropriated approximately 20,000 hectares of land northwest of the port city of Coatzacoalcas, including some 5,000 hectares of Pajapan's communal land. The expropriated land was the best quality land in Pajapan and most of it was occupied by ranchers. While ranchers in Pajapan protested the expropriation, peasants began to press for land reform in exchange for their support of the industrial project. The media and national political organizations drawn into the controversy surrounding the industrial project added their voices and resources to the peasants' demands.

Faced with organized opposition, the government acted quickly to resolve what was becoming a troublesome delay in the development of an important national project. Land not affected by the expropriation was redistributed among 905 *comuneros*, individuals

with legally-recognized rights to the communal land. This favoured the majority / peasant population at the expense of the local cattle ranchers. Cattle interests were of little importance in the national context, hence peasants were able to use government plans for industrial development against the dominance of the cattle industry. Ironically, shortly after peasants won the land reform, the port project was cancelled because of falling oil prices and Mexico's massive external debt.

Prior to the reform, the development of the cattle industry in Pajapan had forced many peasants out of agriculture and into other sectors of the rural and urban economy such as construction, fishing and petty trade. Class differences which soon developed within the community resulted in the unequal distribution of land, cattle and other productive resources. The land reform forced established ranchers to sell many head of cattle as they no longer had easy access to extensive tracts of communal land. It also enabled peasants who had lost food self-sufficiency to return to subsistence corn production. Landless peasants, dependent upon wage earnings in the rural and urban economy, became relatively independent small-scale commodity producers supplying local and regional markets. Some of them began small-scale cattle ranching on their own.

Despite important gains resulting from the land reform, peasant agriculture still remains underdeveloped. Most peasants lack the financial and technical resources necessary to develop the potential of their land. In many cases the land they received was of poor quality and depleted by years of pasture production. As a result of

these limitations, many *comuneros* are forced to rent part or all of their land to the ranchers who once directly controlled the communal land. While reform has restricted the concentration of wealth in land, the cattle industry continues to develop under the control of a minority of powerful ranchers.

The reform also had a limited impact on the many peasants who remained landless. As *comuneros*, the older peasant families had legally-recognized land rights and received parcels. Many of Pajapan's younger residents were not *comuneros* and therefore did not receive land. These landless peasants continue to work as peones for ranchers or engage in a variety of part-time activities including petty trade, craftwork, construction and fishing.

The development of the cattle industry in Pajapan has had a major impact on peasant forces of production and the environment. Corn fields and rainforest have been converted into pasture, thereby contributing to the destruction of one of Mexico's last remaining tropical rainforests. The total amount of land dedicated to food agriculture and the size of individual milpas have declined. Fewer households engage in multiple cropping and the amount of regrowth available for crop rotation is greatly reduced. Furthermore, the system of cattle raising that has displaced food agriculture in Pajapan relies more on the extensive use of land resources than on the application of technology and labour. Most importantly, soil erosion and overgrazing are undermining the long-term prospects of the agricultural economy and contributing to significant environmental degradation.

Theoretical implications of the case study

The purpose of this dissertation is to explain the impact of developments in the cattle and oil industries on the peasantry, using Pajapan as an example. The appropriation and abuse of communal property by ranchers and struggles for survival by peasants raise many practical and theoretical issues relevant to peasants throughout Mexico and in other countries where arable land is being turned into pasture. Under what conditions do specific forms of agricultural development appear? How should one characterize the structures of production and exploitation established by incorporation into the capitalist system? Who benefits from increased agricultural output? These questions guide the research of Pajapan's political and economic history and provide an analytic link to the broader processes of rural change.

The hardships of life in the Mexican countryside beg explanations that are not forthcoming from the liberal view that traditional societies will eventually evolve toward the income levels and modernity of industrialized countries. Neither are they adequately explained by Marxist analyses based on the assumption that the transition to capitalism will result in the formation of a rural capitalist class and a rural proletariat. The persistence of the peasantry and continuing social, economic and political injustice exposes the weaknesses of both liberal and Marxist predictions and the Mexican government's own revolutionary proclamations of coming economic prosperity. In the real world of the poor, the term *la crisis* is now coined to describe the tenor of virtually all aspects

of rural and urban life in Mexico; it could also be used to describe the state of social scientific thought on questions of rural poverty and underdevelopment.

The argument made in this dissertation builds on a broad tradition of critical development theory including dependency theory, the Marxist and cultural ecology approaches to 'modes of production' and various formulations of a neo-Marxist theory of capitalism.¹ The problem examined in this literature is whether or not rural poverty and economic underdevelopment is an immanent feature of the capitalist system or a transitory phase that will eventually give way to the progressive development of capitalist forces and relations of production. Theorists examining this issue argue either that the capitalist transformation of the peasantry is complete and fully realized or that the transition to capitalism is 'blocked' by a variety of historical and structural limitations. The former argument characterizes the peasantry as a social class fully integrated *within* capitalism while the latter implies that the peasantry survives *outside* of capitalism as a separate social class, neither proletarian nor bourgeois, but rather belonging to a pre-capitalist mode of production.

Both arguments, the full integration thesis exemplified in the work of André Günder Frank, Immanuel Wallerstein and the Latin American dependency school and the articulation from without argument made by many neo-Marxists, share a teleological bias;

¹ cf. Frank, 1969; Wallerstein, 1976, Cardoso and Faletto, 1972; Talyor, 1979; Vergopolous, 1979; Hindess and Hirst, 1975.

great store is placed in the assumed needs that capitalism must satisfy. The controversy revolves around the degree to which peasant agriculture contributes to the maximum accumulation of surplus-value on the unchallenged assumption that this end is inherent to capitalism. Theories of capitalist development which focus on the principle of *maximum* profit accumulation are inevitably forced to explain variations in the development of peasant forces and relations of production as evidence of the incomplete penetration of capital or functional deviations from the formal logic of capitalism. In the end, capitalism always gets what it needs, either in the short term through the distorted reproduction of peasant forms of production useful to capital or in the long term through proletarianization.

The Pajapan case study illustrates a three-fold argument that differs from the articulationist and integration arguments presented by most analysts of Third World problems. Building on the theoretical and empirical work of Chevalier (1982, 1983), it attempts to redefine the debate over whether peasants are exploited from within or articulated from without by recognizing the 'polymorphous structure' of capitalism and its inherent weaknesses. The first part of the argument emphasizes the *variable* forms of subordination of peasant labour to a system of production based on the antagonism of capital and labour. The analysis of Pajapan shows that the development of the cattle industry has resulted in the emergence of significant class differences within the community and the greater integration of peasant forces and relations of

production into the wider market economy. These changes have occurred, however, without the complete separation of peasants from control over some means of production. The processes of land appropriation and proletarianization are only two of numerous forms of capitalist exploitation observed in Pajapan.

The second part of the argument acknowledges the resistance of peasants to full capitalist exploitation and their struggle to maintain control over vital aspects of subsistence production. In contrast to studies that focus only on the inequalities and injustices suffered by peasants, the analysis of Pajapan shows the active role peasants have played in the transformation of political and economic structures. The complex and highly fragmented class structure in Pajapan and the persistence of peasant forms of ecological adaptation are partly the result of peasant resistance to the appropriation of their land and the gains made from the reform. Access to land has provided them with a means of survival and a concrete alternative to full proletarianization. However, peasant gains cannot be attributed only to the resistance of peasants to capitalist penetration of the local economy. The reform required the intervention of an external force to challenge the power of ranchers. The analysis of the political history of land struggles in Pajapan indicates that the Mexican state did not intervene on behalf of the wealthy (ie. ranchers) or simply as a mediator between classes in conflict but rather, it intervened *on its own behalf* by protecting both the political interests and economic base of state capital (ie. the oil industry). Peasants in Pajapan were able to make use of the

tensions between state capital and a weak branch of ranching capital to force concessions from the Mexican state and the cattle ranchers.

The third and final part of the argument postulates that capitalism is subject to self-induced contradictions and limitations that prevent the full realization of the process of proletarianization and undermine the long-term development of the forces and relations of production. The concentration of wealth in privileged regions and sectors of the world economy, low levels of peasant technology and productivity, and destruction of the environment do not result from problems of economic backwardness or optimal profit accumulation as both liberal and Marxist scholars would argue. While capital growth is by definition a central feature of the capitalist system, it is misleading to explain the evolution of capitalism by consideration of this end only. The alternative argument illustrated by the Pajapan case is that problems of rural underdevelopment create significant costs and inhibit the maximum accumulation of capital. Capitalism is far from the perfect machine for profit accumulation and economic production idealized by most theorists on the left and right. Rather, it is characterized by contradictory forces of capital growth and misgrowth inherent to the capitalist system.

Order of Presentation

The dissertation proceeds from a general overview of the region to a detailed analysis of the politics, economy and ecology of Pajapan,

ending with a theoretical discussion of the issues raised by the case study. Chapter Two examines the political and economic history of southern Veracruz with a focus on the regional development of the cattle and petro-chemical industries. It examines the forces of capitalist development integrating Pajapan into the wider society and provides the broader context for a more detailed analysis of the impact of cattle ranching and the oil industry on the community of Pajapan. Chapter Three examines the politics of land use and the long struggle by peasants to regain control over land occupied by local and outside ranchers. The political actions of peasants and the response of the Mexican government to demands for land reform have had a significant impact on the economic structure examined in subsequent chapters. Chapter Four is a detailed analysis of class structure and the development of variable forms of peasant subordination to capital. The structural articulations and disarticulations characteristic of the Pajapan economy are shown to be effects of peasant resistance to full proletarianization and the contradictory tendencies of capitalist growth and misgrowth. The polymorphous structure of capitalism and its inherent weaknesses is also shown to have an impact on ranching technology and modes of peasant adaptation to the environment examined in Chapter Five. This chapter analyses the impact of class struggle on the development of the forces of production in peasant agriculture, fishing and cattle ranching. The three-fold argument of capital growth, class struggle, and endemic mismanagement illustrated by the Pajapan case is situated in Chapter Six within a specific

theoretical context, namely, Mexican debates informed by general theories concerning the development of peasant forces of production and the relationship between economy and the environment. This is followed by a concluding chapter establishing the links between politics, class and labour processes examined in the dissertation.

The Research Method

The analysis of land reform and the impact of the cattle industry on the Gulf Nahua of Pajapan is based on 10 months of field work in Pajapan by a three-person team of researchers including myself, Dr. Jacques Chevalier and Mr. Dominic Caouette. The project was started in 1984 by Dr. Chevalier and myself with the support of a SSHRCC grant of \$40,000 to which Carleton University added another \$2,000. The purpose of the research was to gather and analyse detailed information on the impact of current developments in the Mexican cattle-raising and petro-chemical industries on both the economy and the socio-cultural fabric of the Indian population. The study examines many central issues in the social scientific discipline: the causes of underdevelopment, the role of self-employed labour in hinterland economies, and the response of indigenous culture to alien forms of livelihood and social relations.

My contribution to the broader research project, embodied in this dissertation, has been to undertake the analysis of ecology, economy and politics among the Gulf Nahua. Mr. Caouette (1988) has made an important contribution to analysis of the politics of land reform

while Dr. Chevalier has focused on questions of social structure and culture. A wide range of research materials were collected by the team during three-month field trips in 1984, 1986, 1987 and a three week trip in 1988. Another field trip is planned to report the findings of the research to the local population and update the analysis prior to preparation of the final manuscript for publication by the fall of 1990.

The data base includes surveys, interviews, archival research, and participant observation of many aspects of life among the Gulf Nahua (see Technical Appendix for details). Information on the distribution of wealth in land, cattle and other means of production was gathered along with an occupational profile of the population. A general economic survey was conducted in 1986 based on a large sample of households in the village of Pajapan (N 592). Complementary surveys and interviews with peasants, fishers and ranchers were conducted (N 62). Each interview was designed to cover in greater detail aspects of the local economy not examined in the general survey. A census of all households in the fishing village of Jicacal (N 74) was conducted in 1984 along with a survey of over 200 lagoon fishers from Pajapan, San Juan Volador and Jicacal. All 12 owners of ocean-going fishing boats in the Mestizo village of Las Barrillas were also interviewed in 1984.

A census of all stores in Pajapan, detailed interviews with store owners in the village, several studies of petty trade in fish and fruit and a series of interviews with key informants on the history of commerce in the area also form part of the data base. A local

history of schools, churches, medical services and transportation was undertaken along with interviews of craft workers and skilled tradespersons including carpenters, bakers, butchers, and midwives. This data was collected in 1986 by myself and Dr. Chevalier with local assistants.

The data base for the analysis of the politics of land reform is composed mainly of interviews and archival research conducted during a three month period by Dominic Caouette, a Masters student who joined the research team in 1987. To Mr. Caouette's data and analysis I have added archival research and interviews of my own conducted in 1986 and 1988 to cover the early history of land politics in Pajapan as well as aspects of the struggle for land reform not already documented. The research questions and interviewing procedures were developed in a collaborative fashion by the research team. Many government documents and published materials were also collected between 1984 and 1988. My four years of research experience with problems of rural underdevelopment while living in Mexico and contacts made by me with Mexican academics and bureaucrats provided important background and facilitated the team research process.

The broader data base includes detailed information on many aspects of Gulf Nahua culture such as kinship, the civil-religious hierarchy, mythology and sorcery. This material was collected by the research team and is being analyzed by Dr. Chevalier. This research will form part of an integrated analysis of the relationship between ecology, economy, and culture among the Gulf Nahua.

During our trips to Pajapan we were well received by the local population. Most villagers did not perceive us as a threat to local interests and spoke with us very frankly, even about delicate issues. We were recognized by virtually all villagers and frequently greeted in the Nahuatl language as we walked about the community. Although our command of Nahuatl was limited, our interest in the language and attempts to learn were an important factor distinguishing us from Mexican outsiders and facilitating our rapport with the local population. The absence of any apparent affiliation with local, regional or national interest groups also made it easier for us to collect archival data and conduct interviews with government bureaucrats, union leaders, and peasant organizers.

CHAPTER TWO

The History of Southern Veracruz

Introduction

Southern Veracruz is a very troubled region and the Gulf Nahua live on the eastern edge of it. For a century, peasants, ranchers and industrialists have been engaged in a struggle that has transformed Southern Veracruz into one of Mexico's most important economic centres. The process of economic growth has involved the expansion of cattle ranching in the countryside and the development of the petro-chemical industry in urban centres. Both activities have been effective means of capital accumulation and provided the productive base for the diversification of the regional economy. Economic growth has nevertheless been accompanied by contradictory processes of class struggle and capital misgrowth. The peasants of southern Veracruz have resisted the usurpation of their property and incorporation into the rural and urban proletariat. Furthermore, regional capital has been unable to overcome technical and ecological limits on the development of the forces and relations of production. The cattle industry is not efficient and oil production is dependent on imported technology and unstable international markets. These problems impose significant limitations on the subordination of peasant labour to capital and have resulted in ecological destruction unrivalled in Mexico.

This chapter examines the process of economic growth (and misgrowth) in southern Veracruz. The purpose of the analysis is to explain the regional context of the cattle and oil industries. This provides important background for subsequent analyzes of the political and economic history of Pajapan. It covers five historical periods beginning with the land policies of the 19th century when national and state legislation forced Indian communities to divide their land into private properties, thus permitting the concentration of land ownership by a few non-Indian ranchers and land speculators. Extreme inequalities in the distribution of land reached their peak at the turn of the century under the dictatorship of Porfirio Diaz and resulted in the Mexican Revolution of 1910-1921, the second period examined. Peasant resistance to the forcible usurpation of their property ended the political domination of Porfirio Diaz and his supporters and resulted in the formation of the Veracruz Peasant League, a peasant movement that swept Veracruz during the 1920's. During this period, some land redistribution occurred in southern Veracruz but eventually gave way to the resurgence of the politically and economically powerful cattle ranchers.

During the 1930's, ranchers expanded their landholdings and extended their political influence into virtually all corners of southern Veracruz. The stimulus for the development of the cattle industry was increasing demand for beef in regional and national urban markets. The industry quadrupled in size over a number of decades and had a significant impact on the environment and the distribution of land. This period of expansion was followed in the

1970's by the rapid development of the petro-chemical industry in Coatzacoalcos and Minatitlán. Industrial development and regional population growth provided an impetus for beef production and the diversification of the regional economy. The boom in the petro-chemical industry ended, however, when oil prices dropped in the early 1980's and the Mexican government was confronted with massive debt and political crisis.

Southern Veracruz includes three distinct regions: the Papaloapan watershed, the Tuxtla Mountains and the Coatzacoalcos watershed (see Map 1.1). This analysis focuses on the Coatzacoalcos River basin and the southeastern portion of the Tuxtla Mountains. The river basin drains the flat flood-plain of marsh and mangroves near the Gulf coast. Low hills surrounding the Coatzacoalcos River and its tributaries gradually rise to the Tuxtla Mountains where a moist submontane rainforest still covers the peaks. The climate throughout the area is hot and wet with relative humidity above 80 percent during most of the year.

Urban centres with a total population of over half a million are located along the Coatzacoalcos river (Coatzacoalcos, Minatitlán) and on the adjacent high ground (Cosoleacaque, Jáltipan, Chinameca, Acayucan). Three sparsely populated municipalities, Soteapan, Mecayapan, and Pajapan, cling to the Tuxtla uplands. Soteapan is a community of Indians who speak Zoque-Popoluca while Mecayapan and Pajapan are Nahuatl-speaking villages. These municipalities have

a total population of approximately 40,000 and are the only remaining concentrations of Indian people in the region.¹

Land Policies of the 19th Century

The Coatzacoalcos River was one of the first points of landing for Hernán Cortés. It was here in the city of Jáltipan that he encountered *La Malinche*, his translator and mistress. With her assistance, he was able to establish communication with Moctezuma and develop a deep insight into the strengths and weaknesses of the Aztec Empire, which made possible the subsequent Spanish invasion. After the fall of Tenochtitlán and the establishment of Spanish rule, Cortés laid claim to a vast area from the Papaloapan river to Coatzacoalcos. This region had supplied tribute of cotton and other goods to the Aztecs and continued to do so under the descendents of Cortés for 300 years (Azaola Garrido, 1982:32).

The large Indian population living in the area at the time of contact with the Europeans suffered greatly from disease, forced labour and the loss of land to Spanish hacendados. Population declines in Veracruz have been estimated at between 60 and 90 per cent. In addition, repeated attacks by English and French pirates during the 17th Century forced the Spanish and Indian population inland. Unhealthy living conditions and epidemics of malaria and other diseases resulted in the abandonment of the coastal port of

¹ Approximately 50% of the people in the tiny municipality of Zaragoza located in the heart of the industrial area are also Nahuatl speakers.

Espíritu Santo (Coatzacoalcos) and the establishment of a regional administrative centre in Acayucan (Münch, 1984:27). By the end of the Colonial period, the region was very sparsely populated although it continued to be one of the most important cotton producing areas in Mexico (Azaola, 1982:39).

Following independence from Spain, the regional economy suffered a gradual decline in cotton production as comparative advantages shifted to La Laguna and the United States (Azaola, 1982:40). Although extensive natural pastures favoured the cattle industry, production was limited by transportation problems and very low regional population densities. Despite an abundance of good land, the shortage of agricultural labour also restricted the development of plantation agriculture. As a result of these problems, the regional economy continued to stagnate during the first half of the 19th century.

Economic growth in southern Veracruz was spurred on by the prospects of inter-ocean commerce across the narrow strip of land separating the Gulf of Mexico and the Pacific. During the California Gold Rush of 1849, a coach service was established between the two coasts. The government of Porfirio Diaz built docks and port facilities at Coatzacoalcos on the Gulf coast and Salina Cruz some 280 kilometres across the isthmus. In 1894 a rail link was established between these cities. With transportation assured, vast tracts of land in the districts of Acayucan and Minatitlán became the object of land speculation for a variety of activities including cattle raising, plantation agriculture and the exploitation of precious

woods. The discovery of oil in the region during the construction of the railway added to the frenzy of land buying.

Land policies aimed at breaking up Indian communities facilitated the concentration of land ownership in the Isthmus. National and state legislation against communal ownership of land was initiated in 1813 under the colonial regime and reached its peak in 1889 (Florescano Mayet, 1984; Salamini, 1971). Indian villages that refused to divide and sell their communal lands were threatened with legal actions and the loss of all land rights. The systematic theft of Indian land was justified by the 'backwardness' and 'misery' of Indian communities. The rule of Indian elders was considered despotic and the maintenance of community institutions, especially communal land, the prime cause of their poverty. Legislators argued that private property and the integration of Indian populations into the wider society would result in a sustained process of economic development and 'elevate the Indians into useful citizens'. In fact, the objective was to create a rural and urban population of dependent farmers, share croppers and wage workers.

During the same period, the Mexican government promoted the colonization of Mexico's humid tropics and arid north (Revel, 1971:147-157; Azaola Garrido, 1982:56-72). French colonists arrived in the Coatzacoalcas area in the 1830's but the colonies they established were abandoned after a few years because of disease and inadequate support services. The early land colonization policies did not result in long-term settlement or sustained economic development and were replaced in 1883 with the 'ley de

baldíos'. This legislation declared that all lands without formally recognized title and specific boundaries were properties of the state. It gave land companies complete freedom to survey and appropriate these lands for resale. The companies received one-third of the land area under the condition that they would promote colonization of the land. The rest of the land surveyed was sold or retained by the state. In 1894 a new law introduced by Porfirio Diaz gave virtually anyone with surveying skills the right to identify and claim 'unoccupied' lands and lifted all limits on the amount of land that could be owned by one individual. It also weakened the obligation of land companies to colonize the land.

The land policies introduced by both national and state legislatures did not eliminate all communal land or result in the immediate colonization of uninhabited areas. The impacts were piecemeal and were influenced by many regional and local factors. Florescano Mayet (1984:16) argues that the application of the reform laws against communal land during the early and mid 19th Century was weak in many parts of Veracruz because of the political instability of the period. The local authorities applied the laws in some areas and not in others. In many cases, powerful ranchers applied their own 'land policies' by forcefully appropriating Indian land.

The assault on Indian land in southern Veracruz has been well documented in Acayucan where, in 1781, the Hacienda Cuatotolpan occupied three *leguas*¹ of the village communal lands (Azaola

¹ A legua equals approximately 5,575 metres squared.

Garrido, 1982; Florescano Mayet, 1984:14-16; Salamini, 1971:8; Baez-Jorge, 1973:73; Martínez Hernández, 1982:25-26). The *hacendado*, José Quintero, was the head of a powerful ranching family that controlled some 118,000 hectares divided into a number of *haciendas*. The expansion of Hacienda Cuatotolpan, later renamed Corral Nuevo, continued throughout the 1800s under the Franyuti family and later under the control of Cházaro Soler, one of the most powerful families in the state of Veracruz. While some land was taken illegally, vast areas were purchased following the forced division of communal lands. By 1910, Hacienda Corral Nuevo encompassed some 88,516 hectares over an area extending from the edge of the town of Acayucan to the village of Soteapan in the Tuxtla Mountains. Other *haciendas* owned by the Franyuti family totaled approximately 44,893 hectares.

The land use laws were devastating for Indian communities in the Isthmus. Land companies operating in the area surveyed territories that had no legal property title and sold the land to foreign companies and a few powerful Mexican families. Romero Rubio, the father-in-law of Porfirio Díaz, acquired some 149,404 hectares of land in the Districts of Acayucan and Minatitlán, including most of the communal lands of Soteapan and Mecayapan. These lands were later sold to Lord Cowdray, an Englishman in partnership with the Mexican government to build the railway. The lands held by his companies (Veracruz Land and Cattle Company, Mexican Real Estate Company, El Aguila) totalled some 177,110 hectares. Other foreign beneficiaries of the land policies were William Randolph Hearst

(106,000 ha.) and Carlos David de Ghest (56,690 ha.). José Limantour, the minister of Hacienda in the Díaz government, controlled 50,000 hectares bordering Romero Rubio's land and the Sanbourns of Mexico City owned large *haciendas* in the area. Azaola (1982:104-116) estimates that half of the District of Acayucan, 295,551 hectares of a total surface area of 594,000, was in the hands of four families living in the area and four foreign companies. Approximately 532,050 hectares or almost half of the District of Minatitlán was owned by eight foreign companies and six Mexican families. A large portion of the remaining lands were controlled by medium-sized *haciendas* with between 1,000 and 10,000 hectares dedicated to cattle ranching and plantation agriculture. These *latifundistas* controlled the best quality lands as well as regional commerce and transportation.

The territories acquired by the large *latifundistas* were initially exploited for their dense stands of tropical forest. Beginning in 1870, precious woods including mahogany, caoba, panoviete, zalzafrez, and osocol were cut for an American sawmill in Minatitlán (Azaola Garrido, 1982:37,42). In less than thirty years the accessible areas were completely logged out, producing a temporary economic crisis in Minatitlán. Some coffee plantations were established on the deforested lands (Foster, 1942:15) and vast areas were converted to pasture for cattle raising. In 1909 an oil refinery was established in Minatitlán by Lord Cowdray's company "El Aguila", initiating a boom in the urban economy. The port of Coatzacoalcos also developed rapidly when plantations in central

Veracruz began exporting sugar to Europe. By 1910 these two cities had replaced Acayucan as the major economic centres of southern Veracruz (Salamini, 1971:5; Nolsaco, 1980:133-135).

The division and sale of southern Veracruz's "unoccupied" land occurred without the knowledge or consent of the Indians living in the area. It was not until Soteapan and Mecayapan began to divide their communal lands in response to the law of 1893 that they realized the full extent of their loss. It was to be the largest division of communal lands undertaken in Veracruz and included some 87,587 hectares. Under pressures from hacendados such as Romero Rubio, the survey commissioned by the Indians was declared invalid by the courts. In 1902 at a meeting in the state capital among the Governor, an official from Soteapan and representatives of Romero Rubio, the Indian claim was reduced to 19,476 hectares with Romero Rubio retaining the right to decide which lands were to be granted to villagers. The agreement was never honoured and the lands were subject to further expropriations by Romero (Azaola Garrido, 1982:87-95).

The concentration of land under the control of large and medium-sized *haciendas* resulted in extreme poverty in the rural areas. Some 94 per cent of the population of the state of Veracruz had no land of their own and worked for very low wages as day labourers on plantations or as woodcutters. Many lived on *haciendas* as indentured *peones* tied to the *hacienda* through a system of debt-peonage: they had access to a small plot of land for cultivating corn in exchange for free labour. Indian populations living in more

isolated areas claimed by *haciendas* were forced to pay exorbitant rents to farm the land or face deportation to distant states. Those who could not pay with money, paid with agricultural produce or labour on the *hacienda*.

Legal action taken by Indian communities against the *hacienda* owners was usually undermined by corrupt local and regional courts. When the protests turned to violence, they were mercilessly crushed and the population subjected to additional military service as punishment for resisting the regime (Martínez Hernández, 1982:24-26; Salamini, 1971:7; Revel, 1980: 158; Azaola, 1982:121).

Corruption in the legal system strongly favoured the wealthy. Legislation introduced in 1895 levied personal taxes on workers while companies and land owners paid little or no tax. The labour policies of the Porfirio regime disavowed any role in the regulation of owner-worker relations, leaving the door open to decreases in real wages of approximately 30 per cent (Azaola Garrido, 1982:126).

During the Porfiriato, peasants displaced from their land in rural Veracruz and in the central plateau of Mexico migrated in massive numbers to urban centres in search of employment. Meanwhile, southern Veracruz experienced a dramatic population increase from 7 people/km² in 1878 to 25 people/km² in 1910. The immigrant population arrived in urban centre and villages along the railway where they worked for low wages in construction and services. The oil refinery at Minatitlán and the docks of Coatzacoalcos were surrounded by shantytowns of their makeshift homes while elite Mexican and foreign workers contracted for skilled, well-paying

jobs lived in fully serviced compounds constructed by the oil company.

In summation, the land policies of the 19th century were an instrument of capital used to usurp the property of the rural population and 'free' their labour for incorporation into an expanding agricultural and industrial economy. Powerful ranchers and *hacendados* also made use of extra-legal means to gain control over Indian land. These actions succeeded in displacing peasants and creating an urban proletariat while at the same time laying the foundations for a violent backlash by the exploited population. The massive disruption of the rural population and extremely poor working and living conditions in the urban centres eventually erupted in a wave of discontent that swept across the nation and ushered in the Mexican Revolution of 1910-1921.

The Mexican Revolution 1910 - 1921

The Mexican Revolution joined the economic discontent of the rural and urban poor with the political ideology of the Mexican anarchist Ricardo Flores Magón. The Mexican Liberal Party (PLM) was formed in 1900 by Magón and other Mexican intellectuals and by 1906 had committed a wide variety of groups including workers and an emerging middle class to the armed overthrow of the dictatorship of Porfirio Díaz. Although the party faded from the political and military scene during the early years of the Revolution, it provided an impetus to the armed struggles that followed.

Southern Veracruz was the scene of an important harbinger of the more generalized national uprising to come. In 1906, Indian peasants from Soteapan and Acayucan, under the leadership of a few mestizo workers from urban centres, launched attacks on Acayucan. The leaders were members of the Mexican Liberal Party and were responding to calls by Magón to organize peasants and workers against the political and economic foundations of the Díaz government. The revolt mobilized many peasants but failed militarily because of a lack of arms. The rebels were pursued into the Tuxtla Mountains and many were captured or killed. Politically, the uprising was extremely important because it allied peasants, workers and the middle-class and signalled to diverse groups of Liberals around the country that armed struggle had begun (Salamini, 1971:11; Azaola Garrido, 1982:117).

Following the rebellion of 1906 in southern Veracruz, the centre of military conflict shifted to central and northern Mexico. A movement led by Francisco Madero forced Porfirio Díaz to flee the country and peasant armies were formed in Morelos and Chihuahua. Veracruz was nevertheless an important staging ground for both revolutionary and counterrevolutionary forces. The Liberals and Maderistas were prevented from gaining power by Victoriano Huerta whose counterrevolutionary army controlled the state of Veracruz for several years. When he was finally ousted, the urban centres of Veracruz became a military and political stronghold for the Constitutionalist army of Carranza, a conservative leader of the revolutionary movement. Throughout these struggles, the

countryside in Veracruz was controlled by small bands of rebels supported by regional merchants and landowners (Salamini, 1971:12-17).

The land tenure system in Veracruz remained largely intact despite the rural unrest. While the Mexican Liberal Party under Flores Magón had demanded fundamental reforms such as the breakup of *latifundios*, restitution of peasant land, wage increases and shortening of the work day, the policies of the Díaz regime were not fundamentally challenged by Madero or Carranza. Salamini (1971:18-19) notes that land reform legislation was only introduced by Carranza when he "was on the verge of being defeated by his populist adversaries, Zapata and Villa." While Zapata ordered his troops to "seize and reclaim their lost lands", Carranza's reforms were implemented only when he considered it politically expedient.

Peasant mobilization around land reform was weak in Veracruz during the revolution and no strong peasant-led political organization emerged at a state level. Some peasant leaders attempted to organize peasants into agrarian communities and unions but their efforts "were not successful because of the staunch, organized opposition of the powerful landowners of the state." (Salamini, 1971:17). Land continued to be concentrated in the hands of a few *haciendas* and foreign companies resumed economic activities once the region had been pacified.

The Veracruz Peasant League

The Mexican Revolution came to an end in the early 1920's when Obregon and then Calles formed a military and political alliance among various factions and sectors of Mexican society. Armed peasant movements led by Zapata and Villa had been contained by the more professionally organized federal armies and stability was restored. The land reforms introduced to gain the support of the peasantry ground to a halt or proceeded very slowly through cumbersome legislative and legal proceedings. The main objectives of the central government shifted from winning the support of the peasantry to stimulating economic growth, often at the expense of peasants and workers. But as Salamini (1971) notes, the years of struggle had resulted in the development of a political consciousness and level of organization in the Mexican countryside and urban centres that could not be ignored.

In the mid-1920's a new breed of regional political leader began to emerge who capitalized on the frustrations of the peasantry. These caudillos who usually were from urban, middle-class backgrounds or had considerable exposure to a modern urban environment became instrumental in mobilizing and organizing peasants, as well as other proletarian groups, into leagues and syndicates to secure and maintain control over state or regional politics.

Veracruz in the late 1920's and early 1930's was the centre of one of the most radical and successful of the regional peasant movements of the post-Revolutionary period. Under the leadership of the State Governor, Adalberto Tejeda, the Veracruz Peasant

League emerged as a powerful political and military force. The movement drew heavily on the experience of trade-unionists who had organized workers in the industrial areas of central Veracruz during the Porfiriato and following the victory of Madero. Railroad workers, longshoremen, sailors and artisans in the Port of Veracruz had been among the first workers to organize. They were followed by textile workers in the Orizaba region and workers in the tobacco factories of Jalapa, Cordoba, and San Andrés Tuxtla. The House of the Workers of the World based in Mexico City organized the oil workers of Minatitlán and Tuxpan so effectively they were able to cripple the oil industry during a strike in 1919. When Tejeda lifted all state restrictions on organizing activities, organizers from all these worker based movements began to unionize rural day labourers concentrated on *haciendas* surrounding major urban centres. Anarchist reading circles were formed and unionizing activity spread to tenant farmers and 'free' peasants. In Minatitlán, leaders of the oil workers organized peasants following a strike in 1926 (Salamini, 1971:26-28).

The peasant movement received support from the Mexican Communist Party. In 1919 Marxist reading groups were formed in the Port of Veracruz where some of the main leaders of the peasant movement received political training. Ursula Galván, a carpenter from the Huasteca in northern Veracruz and member of a Veracruz reading group, began to organize agrarian committees throughout the state. Galván and his associates advocated a political-legalist strategy for agrarian reform in Veracruz. This was based on the

belief that "unlike urban workers, landless peasants had not developed class consciousness and were not economically prepared to undertake an armed struggle against the landowning classes." (Salamini, 1971:29). They encouraged the formation of agrarian committees to petition for the establishment of *ejidos* organized along cooperative and communal lines. They also demanded more equitable rent and wage contracts with landlords and employers while at the same time supporting the gradual takeover of municipal governments by democratic means. The peasant groups were initially supported by the urban-based syndicalist movement in Veracruz but eventually developed an independent political and organizational base (Salamini, 1971:29-33).

The peasant movement underwent a decisive turn in 1923 when Adolfo de la Huerta, a minister in the government of Obregon, led a revolt of generals in several states, including Veracruz. General Sanchez, the chief of military operations in Veracruz and a rancher with extensive land holdings, had been providing arms to the *guardia blanca*, a paramilitary force recruited by hacendados to resist the implementation of agrarian reforms. He joined the Huerta revolt and took over most of the state of Veracruz including Jalapa, the state capital and the Port of Veracruz. The rebels were defeated a year later by federal troops loyal to Obregon, with the assistance of peasant battalions organized by the Veracruz Peasant League and Adalberto Tejeda.

The successful suppression of the revolt forced a grateful but reluctant Obregon to support the military arm of the peasant

movement and strengthened the leadership of Tejeda. Tejeda continued to encourage the formation of agrarian committees and the development of a state militia and peasant guerrilla force to implement the agrarian reforms of the government and protect peasant organizers from the *guardia blanca*. His reelection for a second term ushered in the 'golden age' of agrarianism in Veracruz, a time when the Veracruz Peasant League organized numerous tenant farmers, sharecroppers and minifundistas into collectives to make petitions for land.

Salamini (1971) reports that most of the reforms were implemented with relatively little violence and only occasionally did the government have to employ the civil guard and peasant guerrilla force. One reason for this is that Tejeda's approach to agrarian reform was gradual and legalistic, and thus vulnerable to delays by landowners who won temporary suspensions of land expropriations pending appeals. Landowners and merchants had formed the Union of Cattle Ranchers and Farmers to resist the changes and conservative trends in the federal government weakened the reform process. While some 614,763 hectares of land in the State of Veracruz were granted provisionally under Tejeda to 88,548 beneficiaries, only 457,732 hectares were finally distributed by Presidential decree.

When Tejeda left office, the power of the Peasant League was quickly undermined and coopted by a national government anxious to disarm and control the peasant population (Salamini, 1971:83-99). Peasant resistance to landowners lost political and military support

at the state level, leaving the door open to the concentration of land ownership by a few ranchers supported by their own bands of *pistoleros*.

The Emergence of the Rancher Class

The economy of southern Veracruz was weakened during the many years of social unrest from 1906 to 1921 and suffered an additional blow when the price of sugar dropped sharply during the 1920's. International markets for tropical forest and agricultural products also underwent a crisis when they were replaced by synthetic substances. Foreign investments in Veracruz declined dramatically. Even the oil industry, an island of relative stability throughout the Revolution, faltered from 1922 to 1937 as a result of labour unrest and the world economic crisis. Only the cattle ranchers, with their very low labour costs and expanding regional markets in Coatzacoalcos and Minatitlán seemed to hold their own economically (Revel, 1980:126,131,189; Nolasco, 1980:136).

The cattle industry in southern Veracruz began to boom during the late 1940's. It has grown steadily ever since as a result of significant changes in techniques of production, markets and the land tenure system. Cebú, a cattle species better suited to the tropics than the traditional criollo, were introduced into the Acayucan area in the 1920's along with new varieties of pasture. These changes facilitated increases in stocking rates from six hectares per head of cattle to two hectares or less and allowed for

better use of seasonally flooded land. Demand for beef and milk in the large population centres of central Mexico increased rapidly and new roads were constructed to connect Coatzacoalcos, Minatitlán and Acayucan with them. A road to Soteapan completed in 1964 also opened the Tuxtla uplands to the development of cattle raising. Ranchers responded to these technical and commercial opportunities by expanding herds and increasing the amount of land under production. From 1930 to 1960, the number of cattle in the state of Veracruz increased by 62 per cent and the amount of pasture by 89 per cent (Revel, 1980:345).

Divide and Conquer

The development of the cattle industry received significant support from the government both through policies of direct social control and as a result of legislation favourable to medium and large scale ranches. From 1933 to 1937 the state government was in shambles as a result of the decline of Tejeda and numerous political assassinations of peasant leaders and politicians. Miguel Alemán, a native of Acayucan, emerged as State Governor under the patronage of President Lázaro Cárdenas. The first task Cárdenas gave Alemán was to bring the independent peasant movement in Veracruz under the control of the National Revolutionary Party (PRN; later reorganized into the PRI, Partido Revolucionario Institucional).

The peasantry was the most independent of the three sectors of the national party (workers, peasants and business) and could not be counted on to support the party's political hegemony. Cárdenas

adopted a strategy to divide the peasant movement through factionalism and then bring its various segments into the Congreso Nacional Campesino (CNC), a newly-formed national peasant organization affiliated with the PRN. Non-peasant party officials were placed at the head of state-level peasant leagues and key CNC positions to ensure their loyalty. In short, the peasant movement was coopted and transformed into "a bureaucratic peasant agency, fully integrated into the PRI, only nominally representing the peasantry" (Salamini, 1971:140). The decline of the peasant movement in Veracruz gave cattle ranchers and large landowners free reign to reassert their control over the political apparatus and undermine social reforms (Salamini, 1971:108-140).

The *guardias blancas* were active in the 1930's and 1940's during a bloody era of political assassinations and terror. Peasant guerrillas had been disarmed by the federal armies in 1932 and 1933 on the grounds that the countryside was quiet and that federal troops could implement government policy. Without the protection of a military arm, however, peasant leaders were assassinated. The most notorious of the *guardias blancas* was The Black Hand, a group of gunmen controlled by the cattle rancher Manuel Parra, owner of the Hacienda of Almolonga. His professional *pistoleros* assassinated members of agrarian committees and prevented peasants from gaining access to lands on his *hacienda*. The Black Hand also offered 'protection' to other local *hacendados* and controlled the countryside in much of central Veracruz. "Neither state or federal officials nor the federal army dared to interfere with his activities because of

his close connections with important public officials, including General Pablo Quiroga, former secretary of war and co-owner of Almolonga, and Governor Vázquez Vela" (Salamini, 1971:131-132).

Counter-reform Legislation

Historically, cattle ranchers throughout the State of Veracruz have delayed and thwarted the agrarian reform. Initially they used article 10 of the Constitution of 1917 to seek judicial orders of prohibition protecting their land from Presidential land grants issued under the Agrarian Code. While technically these judicial orders delayed expropriations for up to one year, the Secretariat of Agrarian Reform was flooded by so many that even longer delays were common. In 1931 the law was changed because the system could no longer handle the numerous requests. In 1937 the already ineffectual law of 1931 was replaced by powerful legal provisions limiting the petitions of landless peasants. President Cárdenas introduced the first *certificados de inafectabilidad*, certificates of immunity to land reform granted to cattle ranchers on the grounds that Mexico was suffering a crisis of underproduction in the cattle sector. He argued that the conversion of private ranches into *ejidos* would deepen the crisis. Between 500 and 800 *certificados de inafectabilidad* with a duration of 25 years and totaling between 6 and 9 million hectares were issued to ranchers. In effect, the certificates legally perpetuated some *latifundios*, in direct violation of the Agrarian Code (Rutsch, 1984:35).

Cárdenas also introduced counterreform legislation concerning the creation of ranchers associations. In the same spirit of unification that eliminated the independent peasant movement in Veracruz, the 'law of ranching associations' gave exclusive state recognition to three levels of organization, the National Ranchers Confederation, Regional Ranchers Unions, and Local Ranchers Associations. Ranchers could not organize outside these associations. While the division and cooptation of the peasant movement weakened the voice of peasants at the regional and national levels, the unification of ranchers associations created a monopoly that was easily dominated by medium and large ranchers opposed to the creation of ranching *ejidos* and the proliferation of small-scale ranches. The associations became an instrument of the *latifundios* in the fight against land reform and an exclusive channel for credit and other economic subsidies provided by the state for the development of the cattle industry. Rutsch notes that between the 'certificates of immunity' and the 'law of ranching associations' "the principles of the revolution took a step back during the regime of General Cárdenas, contrary to the overall image of this period that has been popularized" (Rutsch, 1984:33-34). While Cárdenas redistributed more land to peasants than any other Mexican President (mainly in central Mexico), he countered these reforms by favouring the creation of private property and the development of large-scale cattle ranching in northern Mexico and along the Gulf coast.

Anti-agrarian and counterreform legislation reached its peak when Miguel Alemán, the ex-Governor of Veracruz, became the President of Mexico. Amendments to the Constitution were introduced in 1947 that allowed landowners to protect themselves from petitions by peasants seeking to establish *ejidos*. The law reasserted the right of landowners to seek a court order of prohibition against the expropriation of their land pending a full legal investigation and resolution of the case, a process that on the average took 15 years to complete. Revel notes that by 1969 there were more than 1,500,000 hectares of land 'frozen' by these legal measures (Revel, 1980:304).

The principle of immunity established by the *certificados de inafectabilidad* was also strengthened by Alemán. The 1947 amendments to the Constitution provided for the creation of 'small ranching properties'; their legal limit was established as the amount of land required to support a herd of 500 head of cattle in any given environment. The extensive system of animal grazing characteristic of Mexico at the time required the creation of very large 'small ranching properties'. The Secretariat of Agriculture determined that a 'small property' dedicated exclusively to cattle raising could be up to 300 hectares if it were located on good quality land and up to 50,000 hectares on arid land. This provision increased dramatically the amount of land one person could legally own. In concert with the court order of prohibition, it was effectively use to protect land from reform and convert *latifundios*

into private properties with permanent immunity (Rutsch, 1984:43-46; Sanderson, 1986:129-130; Revel, 1980:188,309; Siemens, 1964).

The amendments to the Constitution introduced by Alemán complemented the 'Law of Colonization' also introduced during his term. In the years following the Revolution, the large *latifundios* owned by the railway companies, oil industry and foreign capital were expropriated and eventually redistributed. A program of colonization of these vast, 'unoccupied' areas of *tierra caliente* was launched by Presidents Avila Camacho and Miguel Alemán under the banner 'March to the Sea'. National land was made available at very low cost to individuals and collectives for the purpose of colonization.

While colonization was often hailed as a land policy for the poor, in many cases it was the rich who benefited. The lands of Lord Cowdray were expropriated by PEMEX, the newly created national oil company, and remained frozen as 'national lands' for many years. The division and redistribution of the Hacienda del Corral Nuevo was not fully legalized until 1956, some 50 years after peasants in Acayucan and Soteapan took up arms to protest the loss of their land (Siemens, 1964:170)! Revel (1980:164) notes that "the new law opened the possibility of creating 'small properties' (of 300 hectares!) on national lands, while the *ejidatarios* of the 'New Centres of *Ejido* Population' only had rights to parcels of 20 hectares. ... The law of colonization was used to withhold the *latifundios* from Agrarian Reform so that instead of being redistributed in *ejidos* they could be colonized as small properties".

In many cases, *haciendas* throughout southern Veracruz were divided into 'small ranching properties', each in the name of a different family member or *prestanombre* (name 'loaned' to ranchers for legal documents). Ranches of 300 hectares or more were grouped together by a single administrator into *haciendas* of several thousand hectares, with complete protection from the reform laws. Government officials and merchants living in the cities also got title to land through illegal manipulation of the law of colonization. (Revel, 1980:128,132,164-165,187-188).

A Period of Consolidation

Peasants made some gains from land reform but in many cases could not fully benefit from their new found position as landowners. Land reform legislation and the law of colonization resulted in a significant increase in the number of *minifundios* (properties of less than five hectares). However, because many *minifundios* were established on land unsuitable for intensive cultivation or were too small to support viable agricultural enterprises, they were often sold to ranchers and converted to pasture. For example, *colonos* who received lands on forested hill tops in the Acayucan area found that after a few years the land could not support agriculture. Many small properties were sold to ranchers who planted pasture and incorporated the cleared land into their own ranches. Revel notes that between 1950 and 1960 the number of *minifundios* declined by 30 per cent while medium and large properties increased by 113 per cent. In 1962, approximately 15 per cent of the ranches in the

region had more than 500 hectares of land, 60 per cent had between 50 and 500 hectares and 25 per cent less than 50 hectares. Other agricultural colonies in the municipality of Acayucan were corrupted by the illegal purchase of numerous small lots by ranchers, politicians, merchants and absentee landlords.

The colonization of southern Veracruz and modifications to Mexico's reform laws contributed to the proliferation of medium-sized ranches and the consolidation of a few *neolatifundios* with large, 'hidden' *haciendas*. In many cases land received by peasants was cleared of forest vegetation, cultivated for a few years and then converted into pasture for use by ranchers. Revel (1980) notes that in the lower Papaloapan forested land declined by some 138,000 hectares between 1950 and 1960. Rutsch's data indicate that more than 40 per cent of the forested areas in the humid zone along the Gulf of Mexico were felled between 1950 and 1970 (Rutsch, 1984:101). Most of this land was eventually diverted to pasture production, often by peasants later displaced by ranchers. In short, the policy of colonization had become a significant instrument of counterreform favourable to the development of the cattle industry and the creation of a dependent peasantry.

Tentacles of Power

The most powerful of the regional caciques in southern Veracruz was Amadeo Gonzalez Caballero, a cousin of President Alemán. During the 1940's, 50's and 60's he acquired numerous ranches in the name of different family members. In addition, he gained access to

land through special arrangements with small property owners, *ejidatarios* and *comuneros* throughout the Tuxtla uplands and along the coastal plain. For example, in exchange for a share of new calves and milk, a few *comuneros* in Pajapan grazed and cared for Caballero's cattle on village communal land. In this way Caballero was able to increase his herd without assuming the costs of land ownership or labour. When the *comuneros* eventually established ranches of their own, they became suppliers for slaughterhouses and cattle brokerages owned by Caballero. His empire also included trucking companies and many other businesses in urban centres. Caballero occupied many political positions including municipal president, state deputy, and director of the regional cattle ranching association and exerted considerable influence over key politicians in Coatzacoalcos, Acayucan, Jáltipan, Minatitlán, Cosoleacaque, Moloacán and other municipalities. The political and economic power of Caballero was unrivaled in southern Veracruz until his death in 1970 (Mendoza Neri, 1983:53,55).

The process of commercialization of cattle favoured large ranchers such as Caballero. Most of the slaughterhouses, collection points and trucking companies in the region were owned or controlled by a few powerful ranchers and merchants. Smaller ranchers were dependent upon a chain of intermediaries dominated by these few large operations (Mendoza Neri, 1983:46). Merchants financed local buyers who purchased cattle and arranged transportation to regional collection centres. The market for cattle was divided along geographical lines. Mature steers ready for slaughter were produced

on the flat flood plain where pastures provide stable, year-round grazing. Immature calves were raised in the Tuxtla uplands or on ranches without access to dry-season pasture and fattened on intensive ranching operations owned by large ranchers. They were then slaughtered for regional consumption or shipped live to major urban centres including Veracruz, Puebla and Mexico City.

In conclusion, the expansion of markets and improvements in transportation and ranching technology facilitated the expansion of the cattle industry in southern Veracruz. State legislation, corruption and violence were the instruments by which ranchers acquired land and initiated a process of capital accumulation. The land reforms introduced during the period did little to stop the formation of large properties and the proletarianization of a peasantry dependent upon a class of powerful ranchers. Peasants gained access to some land but the best land had been retained by large ranchers and many peasants were forced to sell or rent their land to ranchers. Large ranches escaped the reform through illegal means such as the use of 'prestanombres' and collusion with state officials. The commercialization of cattle was monopolized by a handful of the largest ranchers who owned slaughterhouses and controlled transportation networks. Many other urban businesses had their origins in wealth accumulated in cattle. Finally, a few regional *caciques* had enormous political power and occupied or controlled many of the elected political positions in rural municipalities, ranching associations, and PRI offices.

Boom and Bust in the Oil Industry

While ranching dominates the countryside, the state-owned petrochemical industry has developed a strong urban base. The development of the oil industry in the early 1900s catapulted Mexico into the forefront of a rapidly expanding industry. Between 1911 and 1922 oil production boomed, launching Mexico into second place, after the United States, among the world's oil producing countries. In 1921, Standard Oil, Royal Dutch and other multinational oil companies were supplying approximately 25 per cent of the world's oil from their Mexican operations. These companies had weathered the Mexican Revolution with relatively few interruptions in production and continued to pressure the Mexican government to protect their rights to the oil fields. In an historic contract of "Friendship and Commerce" signed between Obregón and the President of the United States, the Mexican government agreed to honour all rights to private property, including oil fields, acquired prior to the Constitutional declarations of 1917. This agreement, so contrary to the principles of the Revolution, was forced on Obregón in exchange for official American recognition of his government (see Colmenares, 1982).

Despite these guarantees, the multinational oil companies reduced levels of production in Mexico during the 1920's. Government limitations on the ownership of new oil fields and more effective taxation of the oil companies caused them to shift their focus to Arab countries and Venezuela. Mexican production

stagnated in a context of world economic crisis, low oil prices and increasing competition from other producers. By 1934 Mexican production had dropped 20 per cent compared to levels attained in 1921. The situation began to change, however, when prices improved during the late 1930's in anticipation of the Second World War. Mexico would probably once again have retained prominence on the world oil market had not tensions between the oil companies, labour and the Mexican government dramatically changed the course of events for the oil industry and the nation as a whole. In 1938 the government of Lázaro Cárdenas shocked the nation and the world by expropriating the oil industry and creating a state-owned national oil company (Colmenares, 1982:51-52).

The Expropriation of the Oil Industry

The labour movement in Mexico flourished throughout the 1920's, organizing workers and leading a number of major strikes. Oil workers were among the first to develop regional and national representation and were certainly the most successful in forcing concessions from their employers. Unions of oil workers in Minatitlán, Las Choapas, Agua Dulce and Nanchital joined forces in 1934 to launch a strike which galvanized the national movement and a year later resulted in the creation of The Union of Oil Workers of the Republic of Mexico. As with the peasant movement, Cárdenas' strategy was to incorporate the emerging national labour organizations into the party apparatus. Responding enthusiastically to his calls to play a more central role in national development, the

unions provided important political support at a time when the capitalist classes in Mexico were not strongly backing the national government.

By the late 1930's, oil workers had developed a large, well organized union structure that took on the oil companies in a series of strikes that culminated in widespread confrontations in 1938. Many labour unions in the country supported the oil workers, including longshoremen and railway workers. The impasse between the oil companies and workers eventually resulted in the establishment of a government conciliation board which ruled in favour of the unions, calling for increases in wages and compensation for salaries lost during the strike. The oil companies appealed the decision to the Supreme Court but it was upheld, forcing a direct confrontation with the federal government. When the oil companies again refused to honour the court decision, Cárdenas announced that it was in the public interest to expropriate the oil industry (Colmenares, 1982:86-98; PEMEX, 1971:145-156).

The nationalization of the oil industry and the formation of Petroleos Mexicanos (PEMEX), was followed by a major crisis in the industry. Oil refineries and production facilities were sabotaged by the vacating companies and a boycott by the United States, Britain and the oil companies made it difficult to sell oil offshore or purchase spare parts. The new state-owned company also lacked skilled personnel to run the plants. Levels of production declined dramatically and remained low throughout the war years. But under President Avila Camacho and especially President Miguel Alemán,

reforms to the petroleum laws were introduced that ensured a role for private companies in the development of the oil industry. By the early 1950's PEMEX was undertaking exploration and drilling projects in collaboration with multinational oil companies. While PEMEX retained exclusive rights to primary oil production, private companies were encouraged to invest in secondary petro-chemicals. Production increased throughout the 1950's and 60's and PEMEX became the main national vehicle for the development of state capital in direct collaboration with national and international business.

Southern Veracruz was one of the major focal points for developments in the oil industry. In 1957 a new refinery, storage facility, and port were constructed near Coatzacoalcos and within a few years several plants began processing basic chemicals derived from petroleum. The refinery at Minatitlán was expanded and new petro-chemical industries were established in the nearby Indian village of Cosoleacaque. Regional economic growth drew thousands of people from all over Mexico, doubling the population between 1950 and 1960.

The basic structure of the labour force was not significantly altered by the nationalization of the industry. Nolasco (1980:139) points out that the enclave of elite foreign employees was replaced by an elite of national administrators, bureaucrats and technicians recruited from Mexico City and other major centres. In cities such as Coatzacoalcos and Minatitlán they occupied company housing and reaped the benefits of services supplied by PEMEX and, increasingly,

by the union itself. Divisions within the union were enhanced by stronger distinctions between *trabajadores de planta* (permanent employees) and temporary workers with little security and few benefits. Meanwhile, the flood of unskilled workers arriving in the cities built their homes on the sand dunes and swamps surrounding the industrial facilities, creating 'lost cities' without basic sanitation or other services.

The nationalization of the oil industry did little to resolve the demands of oil workers for higher wages and better working conditions. Periodic strikes and work stoppages throughout the 1940's contributed to shortages of oil and oil products in the country. President Miguel Alemán used the army to force workers back to the plants. The government launched direct attacks on the independence of the oil workers' union, deposing leaders and replacing them with individuals supportive of the government. Provisions introduced under Alemán opened new possibilities for corruption within the union by facilitating personal gain through union control over construction contracts with PEMEX. Nevertheless, the union resisted cooptation into the government apparatus, separating from the PRI and the CTM in 1947. While it continued to remain relatively independent from the government, bureaucratization and deepening corruption facilitated the development of caciquismo within the union structure. Strong, charismatic leaders dominated various sections of the union and the movement eventually lost what had remained of its democratic origins (Colmenares, 1982:145).

The Boom 1950's - 1970's

The oil industry in Mexico experienced a period of slow but steady growth and consolidation during the 1950's and 1960's. Some strategic areas such as southern Veracruz grew more rapidly than others but it was not until the early 1970's that the industry as a whole began to boom. When the price of oil increased sharply on world markets because of instability in the Middle East and a stronger OPEC, the state-owned oil industry responded by borrowing money from international banks and dramatically increasing investments. The loans and investments were facilitated by the discovery of vast reserves of oil in Tabasco and offshore in the Sonda de Campeche in the Gulf of Mexico. Exploration and drilling programs were expanded, new refineries were constructed and port facilities were developed to export the increased production.

By the late 1970's oil production accounted for approximately two thirds of national exports (mainly to the United States). Nevertheless, PEMEX was absorbing more than a third of all public expenditures and was responsible for 17 per cent of the national debt. Overall, PEMEX carried a negative commercial balance because the industry depended on imports for 75 per cent of its technology, equipment and materials (Zavala de Cosio, 1985:21). Very few connections were developed with regional or national manufacturing sectors. By 1982, PEMEX had received \$5,360 million U.S. in loans from international financial markets, most of it used to purchase foreign technology (Toledo, 1982:49). Meanwhile, private

investment in petro-chemicals increased rapidly. In priority areas such as Coatzacoalcos companies received a 30 per cent discount from PEMEX on energy and primary materials. In short, PEMEX became a vehicle for the development of state capital and the provision of subsidies to national and international capital (Colmenares, 1982).

The strategic location of Coatzacoalcos on the Isthmus of Tehuantepec and the concentration of petro-chemical industries already established in the region prompted the national government to designate the area a 'zone of priority' for future developments. Several major projects were planned including the development of transisthmian transportation services for ship containers that could compete with the Panama Canal and a huge new oil refinery (Morelos). These and other projects firmly established the Coatzacoalcos-Minatitlán region as the geographic and industrial centre of the national petro-chemical industry. Approximately 70 per cent of basic petro-chemical production occurs in the region and the system of pipelines, shipping facilities and storage tanks handles 90 per cent of the crude oil and 80 per cent of the natural gas produced in Mexico. The refinery 'Lázaro Cárdenas' in Minatitlán, originally constructed in 1909 by Lord Cowdray's company 'El Aguila' processes 16 per cent of the nation's crude oil. The maritime terminal of Pajaritos on the outskirts of Coatzacoalcos is capable of loading 6 million barrels of oil a day and is the largest port facility in the country. The industrial plant at Cosoleacaque is the largest producer of ammonia in the world and plants in Jáltipan provide a

major share of the world's sulphur. Regional plants owned by some of the largest companies in Mexico produce plastics, fertilizers, cement and a host of other industrial products (Zavala de Cosio, 1985:18; Estrategia, 1986:59-63).

The construction industry and the service sector expanded rapidly in response to the oil boom. The local bourgeoisie comprised of cattle ranchers, landowners and merchants invested in storage facilities, hotels, transportation companies, car dealerships and clothing stores as well as a myriad of other services. Although large construction companies from Mexico City such as ICA and Protexa were contracted to build the major installations, many other smaller construction companies financed with local capital built houses, small factories and public buildings. Workers for the construction and service industries were drawn from rural areas throughout southern Veracruz.

The Bust 1982 - Present

Economic growth and industrial expansion in southern Veracruz and in Mexico as a whole came to a sudden halt in the early 1980s when the price of oil began a long decline. Global economic recession and the more efficient use of energy by industry has created a slump in the world oil market which in turn has resulted in overproduction and falling prices. Meanwhile, Mexico had been borrowing over the previous decade from international banks and governments at a higher rate than any other country in the world and has accumulated one of the largest debts in Latin America. Lower revenues from the

oil industry and the massive debt have thrown the national economy and government into a major crisis.

Several devaluations of the Mexican peso have occurred since the crisis began and inflation during most of the 1980s has been at 100 per cent or more per year. The wealthy have been removing capital from the country at an unprecedented rate and there have been dramatic cuts in public spending. While this plunge has stabilized in recent years, the standard of living for the Mexican people has reached its lowest level since the 1930's.

The general economic and political crisis has reinforced the central role of the oil industry. The national economy depends even more on oil exports to meet its financial obligations to international banks and generate foreign exchange. For example, in the early 1980s Mexico signed a contract with the United States government to supply a strategic reserve of crude oil at low prices in exchange for a favourable renegotiation of loan payments. At the same time, PEMEX consolidated its operations and initiated a move to vertically integrate primary and secondary production. Some of the very large projects planned for the 1980s were cut or scaled down. In the Coatzacoalcas-Minatitlán region, the Morelos refinery was reduced in size and the industrial port 'Laguna del Ostión' was cancelled.

Despite the cutbacks in the oil sector, the spectacular growth of the regional population during the 1970's continued unabated. Attracted by the prospect of urban employment, thousands of unskilled workers have arrived in the cities of the region from

Oaxaca, Chiapas and other parts of southern Mexico where the agrarian crisis and population increases have undermined the viability of rural life. The population of Coatzacoalcos has quadrupled and Minatitlán tripled. The regional population is more than a million, approximately 28 per cent of whom are recent immigrants.

Very few of the newly arrived are employed directly in primary industries. Approximately 83 per cent of the working population is employed in unstable and low-paying jobs in construction, retail and petty trade servicing the oil 'enclave' (Nolasco, 1980:144). Approximately a quarter of eligible workers are unemployed or underemployed. While the region has the greatest concentration of oil workers in the country, the majority are classified as transitory workers with relatively few benefits or security. Most permanent PEMEX employees are 'imported' from Mexico City and other major centres in central Mexico where the main technical and administrative institutions are located. This 'elite' enjoys company housing, hospitals and stores while the mass of the population inhabits spontaneous settlements in the swamps surrounding the industrial complex. Toledo estimates that 40 per cent of urban families live in one room houses, with an average of five people per room (Toledo, A., 1982:61). Among the urban poor, Nolasco (1980:144) discovered that the average family income is lower than the cost of the 'basic food basket' and approximately 85 per cent of family income goes just to buy food. In Cosoleacaque, 80 per cent of the population do not have running water, 90 per cent have no

drainage and only 23 per cent have electricity (Zavala de Cosio, 1985:25). Urban transportation and medical services for the majority of the population are also inadequate (Colmenares, 1982:197; Estrategia, 1986:65-65).

The crisis in the oil industry in southern Veracruz has had its greatest impact on the construction industry. While primary and secondary production continues at the same or slightly lower levels, the cancelation of new projects has left construction companies with relatively little work. Many of the smaller businesses have gone bankrupt while others have scaled down or moved elsewhere. Vast numbers of unskilled workers continue to flood into the cities from depressed areas around the country but more than ever they are left without employment or forced to earn a meager living as underemployed petty traders and occasional labourers. While at one time construction work provided a tenuous link between urban industry and the peasant economy, its potential to fulfill this role has been seriously eroded by the economic crisis.

Urban growth, industrial development and economic crisis have created an ecological nightmare. Urban garbage and sewage is dumped into rivers and swamps, contaminating drinking water during the wet season and creating a very high risk of epidemic disease. Industrial wastes have virtually destroyed all life in the lower Coatzacoalcos river, surrounding lagoons and swamps. Oil, alcalis, fenals, sulfites, heavy metals and other toxic substances are dumped into the ecosystem almost without control. Extensive areas of swamp are covered or crisscrossed with roads and pipelines,

interfering with the natural system of drainage, the movement of aquatic life and the habitat of numerous species of migratory birds (Toledo, 1982:55-62). The coastal waters have suffered from numerous oil spills, the most notorious of which occurred in 1979 when the offshore oil platform 'Ixtoc' blew out and for months spilled massive amounts of oil into the Gulf of Mexico. More routinely, tankers approaching the port of Coatzacoalcos illegally dump bilge water contaminated with oil and other substances into the Gulf of Mexico and spill crude into the river because of faulty valves at the port facility. One United States sailor I interviewed in Coatzacoalcos indicated that the port suffered from the greatest abuses in the handling of oil he had ever witnessed in over fifteen years of employment on oil tankers in different parts of the world.

The rapid expansion of the state-owned oil industry during the 1970's challenged the regional political hegemony of cattle ranchers. While ranchers and merchants traditionally controlled municipal politics and many regional political institutions, the oil workers union has become increasingly influential. The Union of Mexican Oil Workers provides stores, schools and other services to its employees. Legal provisions introduced by President Alemán give unions, and especially union leaders, a great deal of power in determining who can join the union and which companies will undertake sub-contracts for a wide range of services not directly supplied by the union. Corruption involving the sale of union jobs and the purchase of sub-contracts is widespread. Charismatic union leaders have used their influence to accumulate personal fortunes

and establish themselves as regional *caciques*, entering into direct conflict over political territory with established ranching interests. Leadership in political parties, municipal governments and various other political institutions is hotly contested by union bosses and the local bourgeoisie. Union leaders have also enhanced their political power by demonstrating their control over the labour force and loyalty to PEMEX: the region has had no major strikes in over fifteen years.

While the oil unions are involved in local and regional politics, PEMEX is not. The director of PEMEX is widely considered to be the most powerful individual in the country after the President and his power is centred in Mexico City. The bureaucratic structure and decision making process of the state-owned oil company is highly centralized. It is relatively isolated in its head office and does not develop close links with municipal and regional institutions or the State Government. This division between regional politics and the leadership of the oil industry has important implications for political struggles in Pajapan examined in chapter two.

Ranchers, Peasants and Oil Workers

In summation, the history of southern Veracruz spans alternating periods of capitalist development and peasant resistance. The land policies of the 19th century promoted the concentration of land ownership under the control of a few powerful ranching families and land speculators. Although these policies were supposed to foster

economic growth, in fact the regional economy stagnated. Extensive cattle ranching was inefficient and employed very few wage workers. Also, the large land concessions granted to foreign and national land speculators were not used for sustained economic development. Precious woods were cut from forests near the railway line and the supply was quickly exhausted. Only part of the rural population 'freed' from the land was incorporated into the ranks of the urban proletariat.

The rural population dispossessed of their traditional lands rebelled against the large landlords and initiated more generalized uprisings in central and northern Mexico. The peasants of Veracruz organized following the Revolution to demand the implementation of radical agrarian policies. The large *latifundios* were eventually divided during the 1920's and 1930's and some *ejidos* and small private properties were established on poorer quality land. Nevertheless, the best lands remained under the control of ranchers who thwarted the reform by creating large and medium sized private properties immune to redistribution.

The cattle industry expanded rapidly during the 1940's, 1950's and 1960's as a result of improvements in transportation, disease control and increasing demand for beef in regional and national urban markets. Despite land reform legislation, ranchers acquired more land and introduced cattle into remote corners of southern Veracruz. Production increased and most of the small ranchers became increasingly dependent upon a few regionally powerful ranchers, merchants, and money-lenders supported by gangs of *pistoleros*. The

efficiency of production improved only marginally and the vast majority of ranches continued to produce poor quality feeder calves for sale to regional cattle merchants.

The expansion of cattle production was followed in the 1970's by the rapid development of the petro-chemical industry in Coatzacoalcos and Minatitlán. Petro-chemicals became the mainstay of both the regional and national economy and the main focus of economic development policies. The political and economic hegemony of the rancher class was replaced by a petro-chemical complex partly owned by the Mexican government. While crises in the oil industry have slowed economic growth, the state continues to play an important role in the development of the region and the management of peasant resistance to the loss of land and the process of proletarianization.

The following chapters examine the impacts of the cattle and petro-chemical industries on the politics, economy and ecology of Pajapan, an Indian community located on the edge of one of the largest petro-chemical complexes in existence. The Pajapan case illustrates processes common to the region as a whole such as the usurpation of peasant property and the subordination of peasant labour to capital. I argue that the relations of class conflict and economic exploitation characteristic of Pajapan are structural effects of three concurrent process, namely, the development of variable forms of peasant subordination to capital, the contradictory forces of capital growth and misgrowth and the resistance of workers to the loss of control over vital means of production. This

latter issue, the political struggles of peasants in Pajapan to retained access to land, is examined in the following chapter.

CHAPTER THREE

The Politics of Land

Introduction

This chapter examines the political history of land struggles in Pajapan that culminated in 1982 with a major local land reform. The analysis shows that the expansion of cattle ranching contributed to the development of a system of unequal political power both within the Indian community and between Indians and wider political structures. These disparities have resulted in the greater integration of the Indian political system into the national society and the domination of the majority working classes by a few politically influential ranchers.

The actions taken by Pajapeños to protect their land from the expansion of outside cattle ranches resulted in the integration of local land administration into the Mexican legal system. With the development of the cattle industry, locally influential peasants in Pajapan began to establish ranches of their own, resulting in numerous conflicts over land within the community as well as with outside ranchers. Conflict over the definition of land tenure was channeled through the national legal system and bureaucratic institutions and eventually resulted in the development of new distinctions between *comuneros* with land rights and villagers without. These changes to local land tenure and the manipulation of laws created by the state to regulate communal land use, depended upon the control ranchers exercised over local authorities and

communications with the outside. The communal land tenure system became an important instrument for the appropriation of land for the expansion of cattle ranches. Although far out numbering the rancher class, peasants were unorganized and lacked influence with outside institutions. By contrast, local ranchers developed political power through their connections with larger regional ranchers, political parties, lawyers, and government agencies that intervened in the struggle on their behalf.

Ranchers also received support from the local population by ostensibly responding to peasant demands for change during crisis situations and then thwarting and delaying the collective decisions until peasant protests lost their momentum. Rhetoric regarding the communal and collective nature of Nahua society was frequently used by ranchers to promote 'traditions' such as communal land tenure favourable to the expansion of individual ranches and to legitimize their actions in the eyes of outside observers. For many years, the political influence of the ranchers and mismanagement on the part of the state and federal bureaucracy delayed an equitable solution to land use problems.

The process of political integration accelerated in response to the expropriation of communal land to make way for the expansion of the urban petro-chemical industry. The land reform obtained by peasants of Pajapan in 1982 resulted from their political actions and independent links established with the state and the media. However, peasant gains cannot be attributed only to their resistance to capitalist penetration of the local economy. The reform required

the intervention of an external force to challenge the power of ranchers and influence the outcome of local land reform.

The data base for the analysis of the politics of land reform is composed mainly of interviews and archival research conducted during a three month period by Dominic Caouette (1988). To Mr. Caouette's data and analysis I have added archival research on the early history of land tenure in Pajapan and interviews of my own. The research questions and interview procedures were developed in a collaborative manner by the research team.

The Origins of Pajapan

The current struggle between peasants and ranchers in Pajapan has a remote predecessor recorded in oral tradition. Pajapeños believe that their ancestors moved to their present location from the village of San Fransico Menzapa (Casas Viejas). They attribute the move to violent attacks on their village by the French pirate Laurens de Graffs (Lorencillo) during the 17th Century. It is more likely, however, that the abandonment of Menzapa was precipitated by a much later invasion of French colonists during the 1830's. Garcia de Leon (1976:20) notes that oral traditions of Indians in the region commonly confuse 17th Century French pirates and 19th Century French colonists. Archival data suggests that it was French colonists who forced the Indians of San Fransico Menzapa to abandon their land and move to the more remote slopes of the volcano 'San Martin Pajapan'. In reality, San Fransico Menzapa still existed long

after French pirates actually frequented the coast of Veracruz. In 1746 it had a population of 63 families administered by the curate of Chinameca; in 1803 the village contained some 178 Indian families and one Spanish family; in 1831 approximately 773 men and women lived there (Blom and La Farge, 1926). Also, the village in its old site appears on regional maps from the 18th and 19th Centuries.¹ Based on this evidence, there is little doubt that the exodus from Casas Viejas was precipitated by something other than pirate attacks on their village.

The lands presently occupied by Pajapeños are claimed by titles issued in the early 1880's to five lots totalling approximately 19,158 hectares extending from the base of the volcano 'San Martin Pajapan' to the shores of the lagoon 'Ostión' (see Map 3.1). However, the move to Pajapan may well have occurred sooner as it is widely accepted by locals that San Juan Volador, a nearby village formed by families of Pajapan, was founded in 1868. This suggests that the migration to Pajapan occurred sometime between 1800 and 1860. The only reference to a French population in the area during this period is the arrival of several groups of French colonists in Coatzacoalcos in the 1830's and French soldiers who attacked Cosoleacaque in 1873 during the French Intervention. De Leon notes that the French colonists mixed with the local population and that French names and blue eyes survive in the area to this day (de Leon, 1976:20). While these colonies failed shortly after they were established, the French connection explicitly recognized in the oral

¹ National Map Collection of Canada.

traditions of Pajapan may refer to these colonists or their descendents and the displacement of Indian villagers from their ancestral lands

Additional research is required to determine why Pajapeños received collective title to their present lands, even though the trend in Veracruz at that time was to break-up Indian communities and create private properties (Chapter Two). Also, it remains to be determined how the French gained control of the land. It seems from oral tradition that the expulsion was violent: invaders raped the women of Menzapa while the men were working in the fields. Archival data indicate that by 1900 the site of the original village was within the boundaries of a large cattle ranch, Hacienda Temoloapan, owned by a French family (Martínez Morales, 1981:9). Taken together, these observations suggest that the land struggles faced by Pajapeños during the 20th century are a continuation of conflicts between peasants and ranchers initiated a century before.

Ejido Versus Communal Land Tenure 1932 - 1968

Elders of Pajapan remember the Mexican Revolution of 1910-1921 as a time of great hardship. The village was raided on a number of occasions by roaming bands of Revolutionaries and Counter-revolutionaries, who forcibly recruited young men into their ranks and left behind them depleted stores of grain. Pajapan was to be the point of departure for an attack on Coatzacoalcos during the rebellion of 1906 but the attack was called off when it was learned that the storming of Acayucan had failed. The rebels who entered

Pajapan with banners and calls of 'victory for the rebels and death for Porfirio Diaz' fled into the hills to avoid capture by federal troops (Azaola Garrido, 1982:157-158). Both Martinez Hernandez (1982) and Azaola Garrido (1982:288) note that a number of Pajapeños were involved in the uprisings of the period but there is little other recorded evidence of their role in the Revolution or local political struggles of the period.

The two major political institutions in Pajapan at the time of the Mexican Revolution were the Municipal Government and Lot Administration. The Municipal Government included an elected President, Treasurer and Alderman as well as an appointed Secretary and Justice of the Peace. These individuals mediated between the community and outside authorities on all matters of taxation and the provision of services to villages and hamlets throughout the municipality. In 1923, local representatives of the National Revolutionary Party (PRN) were elected to form the first post-revolutionary municipal government in Pajapan, ending a twenty year period of rivalry between revolutionary forces. This party, later renamed the Partido Revolucionario Institucional (PRI), has dominated municipal, state and national politics ever since (Antonio Hernández, 1979).

The Lot Administration included five lot Chiefs, each with a Treasurer and a Secretary responsible for the five lots granted to Pajapan by the Mexican Government in the 1880's. They were selected by peasants in each of the five barrios or neighbourhoods of Pajapan (four) and San Juan Volador (one) and retained office for as

long as they were supported by the population. Each lot Chief collected an annual tax from barrio families paid to the state treasury in Coatzacoalcos and the local municipality (Martínez Lorenzo, 1981:4-7).

Prior to the 1930's, there was very little conflict over access to land or for control of the lot system. Customary rules of land use recognized the rights of households from each barrio to the use of a *milpa* and a limited area of second growth surrounding the *milpa* on the lot corresponding to their neighbourhood (Martínez Lorenzo, 1981:5; Stuart, 1978). Because the population was very small and the amount of land needed to cultivate a subsistence *milpa* was minimal, there were few disputes over land.

Land and municipal politics became a contentious issue in Pajapan in 1930 when Fidencio de la Cruz, the Municipal President, organized an Ejidal Agrarian Committee in Pajapan to protect the local land base from external threats. It was modelled on the radical agrarian policies of the State Governor, Adalberto Tejeda, and the Veracruz Peasant League that was actively organizing peasants throughout Veracruz.¹ The Committee requested that the Departamento de Asuntos Agrarios y Colonización (DAAC), the federal land authority, authorize the creation of an *ejido* in Pajapan. The *ejido* was a system of land tenure established by the Constitution of 1917 that called for the definition of the boundaries of lands claimed by peasants and the division of the land into

¹ Juan Porfirio, a leader of the new Agrarian Committee in Pajapan was also a member of both the Agrarian League of Minatitlán and the Mexican Communist Party - ACAM, Expediente #1860, Pajapan.

individual parcels of equal size for use by members of the community. According to agrarian legislation, the beneficiaries of the *ejido* lands had to work the land themselves and could not rent or sell the parcel to other individuals. *Ejido* rights could only be passed on from one family member to another and each *ejidatario* had rights to one parcel only.

While most *ejidos* in Mexico were created from the division of *haciendas* following the Mexican Revolution, in the case of Pajapan the objective of the *ejido* request was not to provide a land base for peasants or to change the structure of land use within the community but rather to protect their existing claims from external threats. As already noted, land conflicts in Pajapan were relatively minor because land was distributed on the basis of actual use by families with very similar economic and social profiles. External threats, however, were more pressing. Blom and Lafarge (1926) report that in the early 1920's Pajapan and the neighbouring Nahua village of Tatahuicapan were in conflict over a coffee plantation located between the two communities. Tatahuicapan had made a request for an *ejido* and would have gained the upper hand in the border dispute if Pajapan had not followed with a similar request. The lower border between the lands claimed by Pajapan and the Hacienda Temoloapan was also in dispute. Juan Porfirio and Juan Silva, two leaders of the Ejido Agrarian Committee, were also the Chiefs of the two lots bordering Tatahuicapan and the Hacienda Temoloapan most affected by the dispute. The other three lot

administrators were not active in the Ejido Agrarian Committee because their lands were not directly threatened.¹

The promotion of an *ejido* in Pajapan by the Ejido Agrarian Committee was strongly resisted by ranchers from Coatzacoalcos because it implied the definition of land boundaries in areas they controlled but did not legally own. Just prior to the 1932 *ejido* request, F. de la Cruz, the Municipal President of Pajapan, was assassinated by the *guardias blancas* of outside ranchers as was A. Martinez, Municipal President from 1933-34. Both de la Cruz and Martinez had strongly supported the Ejido Agrarian Committee and forged an alliance between local municipal and land authorities to promote the establishment of an *ejido*. The Municipal President to follow Martinez was also assassinated, some members of the Ejido Agrarian Committee were put in jail and by 1936 the movement for an *ejido* faltered. The Ejido Agrarian Committee in Pajapan was reorganized in 1943 and the new president of the Committee ran for Municipal President but was defeated. At the state level, support for *ejido* requests was also weakened when Miguel Alemán became State Governor and stripped the Veracruz Peasant League of its power. The hired guns of powerful ranchers operated with impunity during this period in many parts of Veracruz (see Chapter Two).

Local Ranchers and the Communal Land Tenure System

Even as the Ejido Agrarian Committee was being reorganized, significant internal opposition to the *ejido* request was developing

¹ ACAM, Expediente #1860, Pajapan.

among villagers with increasing economic ties to outside ranchers. Arrangements were made between individuals in Pajapan and ranchers from Coatzacoalcos to rent pasture on the fertile lowland near the lagoon. Individuals with land in this area were provided with wire for fencing and in some cases with cattle to be raised on a share basis. As the herds increased and more pasture was required, larger parcels of land were fenced and a few individuals began to acquire herds of their own. Guillermo Caballero, the powerful rancher from Coatzacoalcos, provided some individuals in Pajapan with their start in the cattle industry as did Don Felix Martinez 'El Negro' of Coatzacoalcos and Eulogio Lagunes, a wealthy rancher from La Perla.

Ranchers preferred the traditional lot system over the *ejido* because it provided them with more access to land --- access not available in areas of southern Veracruz where private properties and *ejidos* predominated. Because the land in Pajapan was owned 'collectively', villagers could claim unused land for their own use. Ranchers allowed their cattle to graze freely on the natural savannah of the lowland, often into the corn fields of peasants. The violent conflicts that sometimes erupted between peasants and ranchers were used by ranchers to legitimize the erection of fences and claims to larger areas of second growth on 'abandoned' corn fields.

Peasants who objected to the loss of their plot received little support from local authorities who were often themselves engaged in cattle raising. In some cases, peasants were offered a small

amount of money by individuals who wanted their land. The money was to encourage them to clear a new field elsewhere. Usury was also used to force indebted peasants to 'sell' their land. Since land was relatively abundant during the early years of ranch expansion, peasants had alternatives to confrontations with the economically and politically more powerful local and outside ranchers.

The strategy of land concentration developed by ranchers was promoted by Guillermo Salinas Mendoza, a Mestizo sent to Pajapan from Coatzacoalcos in 1948 as a representative of the PRI, the ruling political party. His official status was as a school teacher but he also organized the successful campaign of W. Martinez, who took office as Municipal President in 1949. Salinas was appointed Municipal Secretary and Judge and later organized the local chapter of the Ranchers Association where he incessantly promoted the development of cattle ranching. According to one peasant, "When Guillermo Salinas became the Municipal Secretary he allied himself with those who had more money and told them to fence their land. People with small *milpas* increasingly lost their land. Mendoza Salinas told the ranchers, 'Bring the poor to drink, buy them beer in exchange for their parcels.'"

The development of a small but influential local rancher class created internal opposition to the Ejido Agrarian Committee. Municipal Government and Lot Administrators allied themselves with outside and local ranchers to oppose the *ejido* request because it would restrict the expansion of ranches. Divisions developed within the Ejido Agrarian Committee when one member of the

Committee executive joined the municipal authorities in denouncing the Ejido Agrarian Committee for undermining the 'traditions' of the village. He was later assassinated, presumably by supporters of the Ejido Agrarian Committee. When officials of the state land commission arrived in Pajapan during the early 1950's to undertake surveys of the land, the rancher dominated Municipal Government was uncooperative and in one incident put a surveyor in jail for several days.

The municipality not only blocked the *ejido* request but also used its power to promote the development of cattle ranching in Pajapan and the concentration of land ownership in the hands of politically influential ranchers. When land rental to outside ranchers began in the late 1940's, the land tax on each household was changed by the local authorities to a tax per hectare of land used. This allowed individuals supported by relatively wealthy outside ranchers to claim larger parcels of land by fencing land and paying taxes to the local Lot Administrators. In 1951 a special land tax of 22 pesos was demanded of every family in Pajapan followed a year later by an additional 20 peso tax. The explicit purpose of the tax was to raise money to lift an embargo on Pajapan land imposed by the state for non-payment of state taxes. While these taxes were eventually paid and the embargo was lifted, shrewd ranchers took advantage of an opportunity to increase their land holdings by paying taxes on land claimed by peasants unable to pay.

In 1952, the municipal authorities rallied ranchers to block the *ejido* request and promote ranching by initiating an application for

Presidential recognition of the communal status of land tenure in Pajapan. As already noted, the *ejido* system required the division of land into individual plots of equal size distributed to all members of the community. By contrast, the communal land tenure system left the division and administration of the land up to a General Assembly of *comuneros* and an elected local Communal Land Commission. It was similar in many respects to the traditional lot administration system except that it had legal status under modern Mexican agrarian law, a status that did not apply to the pre-Revolutionary lot system.

Ranchers preferred the status quo to a clear definition of land boundaries which would uphold the rights of villagers to land in Pajapan --- but a communal land tenure system was more desirable than an *ejido* system. In the absence of an officially recognized land tenure system, ranchers felt compelled to counter the *ejido* request with a land tenure proposal more favourable to their interests and over which they could exercise greater control. By building on the traditional lot administration system they controlled, ranchers were also able to claim that they were acting in the interests of all villagers by 'protecting' the communal nature of local land tenure. The communal rhetoric was being used to attain purely personal goals and give the ranchers' position greater legitimacy in the eyes of outside agents.

Divisions Within the Rancher Class

While Salinas and the Municipal President W. Martinez were undoubtedly popular with the majority of ranchers, resentment over the land tax among a majority of peasants cost them the municipal elections of 1952. The winner was Juan Grande, a wealthy cattle rancher who had gained peasant support by criticizing the previous Municipal Government for its land tax and giving support to the Ejido Agrarian Committee. During Juan Grande's term, the Ejido Agrarian Committee became a political tool in the struggle between competing groups of ranchers for the support of the majority peasant population. The popular discontent that followed the land taxes and increasing land concentration provided an opportunity for Juan Grande to win the support of the peasants and establish a political position that could be used to his economic advantage.

Juan Grande's objective was to promote an alternative resolution of the land tenure conflict favourable to a few select ranchers. Nahmad (1984) suggests that Juan Grande and a few other ranchers supported the *ejido* request because they planned on limiting the extension of the *ejido* to part of the land area while at the same time claiming other areas as private properties. Archival data and interviews with Juan Grande indicate that he wanted to create an *ejido* on the poorer lands near the volcano and establish private properties on the fertile lowland below the village. In a complete reversal of the ecological facts, Juan Grande told Mr. Caouette that the lowland "is not good for maize. Let us work this land with cattle. For pasture, the land is fertile, for maize it is not." When

one considers as well the fact that only 118 people were included in the first officially recognized census of possible *ejidatarios*, it becomes clear that the promoters of the *ejido* were too few in number to claim all the land of Pajapan and that a large area would be left for the creation of private properties.

This approach to the land tenure question in Pajapan was also being promoted by Guillermo Caballero, the powerful cattle rancher from Coatzacoalcos. Caballero owned land bordering the communal land of Pajapan and in the absence of clear survey lines could claim some of Pajapan's land as his own. As a member of the State Electoral Committee of the PRI, he arranged for Juan Grande to take the position of PRI candidate, accompanying him on the day of the municipal elections. Juan Grande informed us that shortly after he was elected, Caballero told him, "I put you in as Municipal President to keep the community calm. If the community complains to me, I will punish you."

Juan Grande's position regarding land tenure was strongly denounced by ranchers who knew they would not benefit from the creation of private properties controlled by a limited number of individuals. In a masterful use of communal rhetoric, the Communal Land Committee dominated by the land-hungry ranchers wrote to the State Governor that "Mr. Juan A. Martinez, a big rancher, and his relatives are trying to mislead the State administration by affirming that these lands are private properties. Mr. Governor, in

this community NOBODY IS LANDOWNER, there is no private property available for the creation of an *ejido*".¹

The concerns of the Communa I Land Committee were confirmed when an associate of Caballero and owner of the ranch 'El Moral' located on the lower border of Pajapan claimed 164 hectares of land traditionally considered to be part of the communal lands of Pajapan. Other conflicts over the boundaries of the communal land also arose when DAAC gave orders for the establishment of an *ejido* in Tatahuicapan, a neighbouring Nahuatl community. Because the titles to the land of Pajapan pre-dated the 1917 agrarian legislation, Pajapeños feared they could lose some of their land to Tatahuicapan or 'El Moral' if they did not clarify and confirm their land rights.

Rancher Hegemony and the Promotion of Communal Land Tenure

These outside threats and internal struggles over the use and tenure of land incited ranchers favouring the communal system to regain complete control of local political institutions including the local office of the PRI, the Municipal Government, the Communal Land Committee and the Lot Administration. A rancher from San Juan Volador was selected as the PRI candidate for the municipal presidency, a decision which in the absence of any organized opposition guaranteed his election to office in 1955. Salinas Mendoza was once again appointed Municipal Secretary and the Lot Administration was used to reactivate the request for communal

¹ ASRAM. Expediente 276.1/2414. Letter, October 18, 1958, their emphasis.

land tenure status. In 1956 a Mexico City lawyer was hired to represent the Communal Land Committee and promote the request with the Departamento de Asuntos Agrarios y Colonización (DAAC), the government land authority.

The actions of the ranchers met with a rapid response from national authorities. In January, 1957 the DAAC sent an engineer to complete the technical work needed to recognize communal title. He was followed later by two other engineers who confirmed his findings that the communal land included 19,158 hectares with no border disputes with neighbouring *ejidos* (Tatahuicapan and Minzapan). He also concluded that there was no private property within the boundaries of the communal land. A census identified 1,222 heads of household and a total population of 3,433. He made no mention, however, of the numerous disputes between peasants and ranchers over land or the formal complaints of land invasion by local ranchers that had flooded the offices of DAAC and the office of the Mexican President throughout the 1950's. Once again, ranchers successfully defended the land base from external threats and gained the support of outside authorities in the struggle against alternative land tenure systems.

The deepening conflict between ranchers who were expanding their land holdings and peasants displaced from the land resulted in the reorganization of the Ejido Agrarian Committee in Pajapan and the formation of a similar committee in San Juan Volador. While the Committee had been controlled in previous years by Juan Grande, the new committees were controlled by peasants with more forceful

demands. In Pajapan they totalled some 150 heads of households and in San Juan Volador another 25. In separate letters, these two committees denounced the municipal authorities for evicting peasants from their lands, allowing ranchers from Coatzacoalcos to use community lands, illegally appointing the Lot Administrators and threatening peasants with fines, jail and death. They also requested that an *ejido* be established in the community on Lots 1, 2, & 3, the best lands in Pajapan.

Applications for communal and *ejido* status were handled by different branches of the DAAC and for each, a separate set of surveys and census data were needed to process the request. Thus, while data had already been collected for the area by the office of communal requests, the agrarian authorities responsible for *ejido* requests responded to the petitions of the Ejido Agrarian Committees of Pajapan and San Juan Volador by sending an engineer of their own in 1958 to conduct a census of Pajapan and survey the land for an *ejido*. This was followed in 1960 with a survey of San Juan Volador that was never completed as ranchers supported by the Municipal Government confiscated the technician's equipment.

Other actions taken by ranchers against the *ejido* request included letters from the Lot Administrators and the Communal Land Committee to the State Governor, important politicians in Coatzacoalcos, the Agrarian League, and the Revolutionary Federation of Workers and Peasants (CROC) denouncing the actions of the Ejido Agrarian Committee. These letters claimed no private property was available for an *ejido* because all the land in Pajapan

was communal. The Mexico City lawyer representing the Communal Land Committee and the regional representative of the CROC also wrote letters to the Governor calling for rejection of the *ejido* request in favour of the communal land proposal. These groups and individuals made frequent references to the communal traditions of Pajapan including land tenure and collective labour for community projects.

The role of the municipal authorities in the dispute between the Ejido Agrarian Committee and the Communal Land Committee was often ambiguous because the ranchers supporting them wanted to delay as much as possible the final resolution of the land tenure question. Ranchers feared that marking the boundaries of the communal land would make it more difficult for them to continue the lucrative practice of renting land to outside ranchers with land bordering on the communal area. For example, the regional cacique Gonzalez Caballero had acquired the disputed area claimed by the ranch 'El Moral' and was using up to 500 hectares of Pajapan's land to graze his cattle. This was sanctioned by the municipal authorities under Salinas who received payment in the form of 'taxes' from Caballero.

Another important reason why ranchers wanted to delay the resolution of the tenure conflict as much as possible was that they controlled de facto use of most of the communal land. An investigation into the internal distribution of land and the number of peasants with land rights would have revealed the high concentration of land ownership present in a community and provide

peasants with a basis for demanding land reform. The absence of clearly recognized rights to the land was used by ranchers to discredit peasant claims and assert their own, often through the use of force with full support of the municipal authorities.

Peasant Support for Communal Land Tenure

The lack of a strong commitment to the communal position on the part of the rancher dominated Municipal Government resulted in a split between them and the Communal Land Committee. While ranchers had launched the Committee in reaction to the *ejido* request, it could no longer be controlled by the ranchers. Support for a communal land tenure system had developed among peasants who opposed threats to the land base posed by Caballero and other regional ranchers. The Committee was also supported by peasants with small parcels of land who wanted their rights as *comuneros* formally recognized so they could protect their land from the expansionist tendencies of local ranchers. Protests to the President of Mexico were launched against the municipal authorities for supporting land invasions in Pajapan and against the Director General of the Communal Lands branch of DAAC in Mexico City for subverting and delaying the petition for recognition of the communal lands

The Regional Agrarian Committee of Minatitlán wrote several letters to DAAC in support of the communal request and in a letter sent to the President of Mexico, the Mexico City lawyer employed by the committee accused the Director General of Communal Lands in

DAAC of blocking the communal petition. The lawyer argued that the Director General was unduly affected by ranchers opposed to the resolution of Pajapan's land tenure struggle. Although no evidence of corruption was presented, the implication was that local ranchers in collaboration with regional ranchers such as Caballero were influencing the DAAC. These complaints prompted the Ministry of Justice to question the Director General regarding the delays. However, no further investigation was undertaken.

A turning point in the political struggle occurred in 1965 when the state land commission once again sent an engineer to undertake an *ejido* census and survey. The engineer met with massive opposition in Pajapan and a general village assembly was convened to decide the fate of the *ejido* request. Ranchers overwhelmingly opposed the *ejido* request as did peasants working as *peones* for the ranchers and a growing number of peasants who supported the request for communal land tenure. During the assembly, the *ejido* request was struck down and several decades of struggle between promoters of the two land tenure systems ended.

In 1967 a peasant leader supportive of the communal land request was elected Municipal President. Shortly afterwards, Salinas was chased out of town by a large group of peasants, never to return. The Lot Administration and Communal Land Committee adopted a more aggressive position toward resolution of the land conflict and against land invasions by outside ranchers. This shift in local political orientation forced the DAAC to proceed with the communal land petition.

The struggle over land tenure initiated by peasants in the 1930's and commandeered by ranchers during the forties, fifties and early sixties, culminated in March, 1968 with the official recognition of Pajapan's communal property. After years of procedures and delays, President Diaz Ordaz signed a Presidential Resolution which recognized the rights of the community of Pajapan to the 19,158 hectares of land included in the primordial titles and identified 905 heads of households or *comuneros* with land rights. The number of households to receive land rights was based on a census conducted in the village in 1967. It also called on the community to organize three new administrative bodies, a General Assembly of *comuneros*, a Communal Land Commission, and a Vigilancy Council. The General Assembly of *comuneros* would formulate and approve the internal scheme of land exploitation and consider requests concerning the distribution of land. The Communal Land Commission elected by the General Assembly would administer the communal land and represent the community on land issues before all other authorities. The Vigilancy Council would periodically audit Commission accounts and ensure that the actions of the Commission were in accordance with the directives of the General Assembly. These administrative bodies replaced the Lot Administration and the Communal Land Committee which had originally requested recognition of the communal land.

The Struggle to Implement Land Reform 1969 - 1979

The formal definition of communal land tenure diffused peasant mobilization around the land issue. As one prominent rancher noted, "the people quieted down a lot after the Presidential Resolution". Peasants probably felt that the definition of communal land tenure would be followed by real changes in land use implemented by the Departamento de Asunto Agrarios y Colonización (DAAC). Ranchers could not stop the communal definition of Pajapan's land tenure system so they used this lull in peasant political activity to delay the implementation of the Presidential Resolution and continued controlling de facto access to the communal land.

The political power of ranchers had been weakened by the election of peasant leaders to positions of local authority. Ranchers solidified their base of political support through their continued domination of the Local PRI Committee, the Local Ranchers Association, and the position of Municipal Secretary within the municipal government. Ranchers also continued to receive political support from outside ranchers and political organizations including the regional office of the DAAC in Chinameca, the State Delegate of the DAAC in Jalapa, the Regional office of the PRI, the State Ranching Division, and the Regional Union of Ranchers. (In the late 1960's, the DAAC was renamed the Secretaria de Reforma Agraria, SRA.) As one peasant noted, "The caciques had contacts in the SRA offices of Acayucan, Chinameca and Coatzacoalcos. They had access to privileged information." When elections were called in 1970 to form a Communal Land Commision, Vigilancy Council and a new

Municipal Government, ranchers were once again able to diffuse peasant demands and gain the support of enough peasants and day-workers to win the election. As shown in Table: 3.1, ranchers occupied all of the important positions within the Communal Land Commision, the Municipal Government and the local PRI Committee. Many of them had held positions within the previous administration and simply transfered from one office to another. For example, Pascacio Silvestre Martínez was the Municipal President from 1964 to 1967 and became the Communal Land Commision's Treasurer in 1970.

Table: 3.1 INDIVIDUALS IN POLITICAL POSITIONS. 1970

POSITION	EARLIER POSITION	CLASS
COMMUNAL LAND COMMISSION		
President: Juan Mtz. Alvarez	?	Small Rancher
Secretary: Antonio Osorio Hdz.	?	Small Rancher
Treasurer: Pascacio Silvestre Mtz. Mun. President (1964-67)		Rancher
VIGILANCY COUNCIL		
President: Nemesio Antonio Antonio Mun. President (1961-63)		Rancher
	PRI Com. Pres. (1967-70)	
Secretary: Wenceslao Morales Hdz. Communal Land Committee		Rancher
Treasurer: -	?	?
MUNICIPAL GOVERNMENT		
President: Roman Gonzalez Cruz	?	Rancher
Sup. Pres.: Juan Mtz. Encarnacion	Sind. Uni. (1949-52)	Small Rancher
Sind.Uni.: Pascual Mtz. C.	?	Rancher
Sup. Sin.: Anastacio Cruz Salas	Lot Treasurer #5	?
Reg. Uni.: Maximino Hdz. R.	?	?
Reg. Sup.: Galina Lorenzo de Silvestre	?	Rancher
PRI COMMITTEE		
President: Sergio Mtz. Aleman	Mun. Secretary (1968-)	Rancher

Note: '?' indicates missing information. Small rancher refers to individuals with fewer than 50 head of cattle. Rancher refers to individuals with more than 50 head of cattle. Abbreviations: Pres. Sup. (Presidente Suplente); Sind. Uni. (Sindico Unico); Sup. Sind. (Sindico Suplente); Reg. Uni. (Regidor Unico); Reg. Sup. (Regidor Suplente). Source: D. Caouette, 1988:112.

The transfer of power to the new authorities was resisted by some peasants. The Communal Land Committee delayed handing over the documents of the communal land to the new Commission and a former member of the Ejido Agrarian Committee began to organize peasants to sign a petition to implement the Presidential Resolution.¹ According to a peasant leader,

in 1970 there was a group of 520 peasants who did not have any land. We went to Mexico to ask the SRA to send an engineer to divide the land into two parts; one part for the peasants, another part for the ranchers. When the engineer arrived, the Communal Land President accused me of improperly acting in his behalf and put me in jail. The ranchers let the engineer work in the upper part of the communal land but when he reached the lagoon, the problems started. Then they paid him and he left Pajapan.

Another peasant noted that "the ranchers took the engineer to Modesto Perez's bar in Coatzacoalcas. He never came back to Pajapan. He even left his equipment here!"

The peasant petition combined with indications that the SRA would respond to the demands once again forced ranchers to take the offensive. The rancher-dominated Communal Land Commission denounced the peasant leader who had initiated the petition for usurping the official functions of the Commission and shortly afterward initiated a petition of their own against a local rancher. The commission claimed that Don Guadalupe, one of the wealthiest local ranchers, was controlling 232 hectares of land within the communal land area and that he was demanding private title to this

¹ ASRAM. Expediente 276.1/2414. December 05, 1970.

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land. They announced that the General Assembly had rejected the ranchers' claim and redistributed his land among landless *comuneros*. In fact, no such redistribution occurred and while the actions of the commission were partly directed at controlling the expansion of this rancher they were also intended to give the SRA in Mexico City the impression that the Commission was acting on behalf of the majority of the *comuneros*. The rhetoric of communal traditions was used by some ranchers against others to legitimize political power.¹

The Acayucan Regional Peasant Committee of the CNC, the national peasant council, supported the petition of peasants for implementation of the Presidential Resolution. They met with local peasant leaders and brought the case to the attention of the General Secretary of the CNC who in turn requested support from the national office of the SRA. Over a period of several years, the SRA in Mexico City ordered on at least five occasions that the State Delegate (regional representative of the SRA) implement the Presidential Resolution, but nothing was done. The State Delegate claimed that they lacked the personnel needed to implement the order; local peasants argued that the delegate was pressured by ranchers through the Southern Veracruz Ranchers Association into not acting on the orders.²

¹ ASRAM. Expediente 276.1/2414. Letter, December 07, 1970; Letter, January 13, 1971.

² ASRAM. Expediente 276.1/2414. Letters, April 1^o & May 13, 1972; ASRAX. Expediente C-26 Bis. February 16, 1973.

Despite pressure from the national office of the SRA, by the time 1973 elections were organized for new land and municipal authorities no action had been taken. Ranchers once again dominated the slate of PRI candidates and formed a new Commission and Municipal Government. For another three years, the Presidential Resolution went unexecuted. Table 3.2 shows the strong control ranchers exercised over local authorities and the fact that individuals with the 1973 administration occupied political positions in 1970.¹

Table: 3.2 INDIVIDUALS IN POLITICAL POSITIONS, 1973

POSITION	EARLIER POSITION	CLASS
COMMUNAL LAND COMMISSION		
President: Sixto Vargas Lorenzo	?	Rancher
Secretary: Ramon Hdz. Mtz.	?	Rancher
Treasurer: Pedro Antonio Antonio	?	Small Rancher
VIGILANCY COUNCIL		
President: Simon Antonio Hdz.	Sindico Unico	Rancher
Secretary: Dalio Villanueva de la Torre	?	?
Vocal: Abad Mtz. Mtz.	?	?
MUNICIPAL GOVERNMENT		
President: Apolinar Hdz. Mtz.	?	Rancher
Sup. Pres.: Juan Mtz. Alvarez	Communal Land Com. Pres. '70-73	S. Rancher
Sind.Uni.: Santos Mtz. Morales	?	Rancher
Sup. Sin.: Simon Antonio Hdz.	Vig. Council	Rancher
Reg. Uni.: Agustin Hdz. Mtz.	?	Small Rancher
Reg. Sup.: Santos Hdz. Mtz.	?	Small Rancher
PRI COMMITTEE		
President: Reynaldo Mtz. Nepumoceno	-	Rancher

Note: '?' indicates missing information. Small rancher refers to individuals with fewer than 50 head of cattle. Rancher refers to individuals with more than 50 head of cattle. Abbreviations: Pres. Sup. (Presidente Suplente); Sind. Uni. (Sindico Unico); Sup. Sind. (Sindico Suplente); Reg. Unii. (Regidor Unico); Reg. Sup. (Regidor Suplente). Source: D. Caouette, 1988:118.

¹ ASRAM. Expediente 276.1/2414. August 03, 1976.

A Labour Dispute

A labour dispute in 1975 unrelated to land conflicts illustrates the advantages ranchers gained not only from access to land but also from the cheap labour provided by peasants who maintained their pasture. The Mexican government had sent an engineer to Pajapan to supervise the extraction of rocks to be used in construction of new port facilities in Coatzacoalcos. Workers from Pajapan were offered 50 pesos a day, more than three times as much as the salary offered day-workers by ranchers and other employers in Pajapan. The rancher dominated municipal authorities strongly objected to this arrangement and shortly after the project began, they jailed the project supervisor and pressured him to sign blank sheets of paper intended for false declarations. They then announced that half of the salary paid would be added to the Municipal Treasury for 'collective' work projects.

These actions caused a strong reaction from peasants who gathered around the office of the Communal Land Commission in preparation for an assault on the Municipal Palace. A bloody confrontation between peasants and the municipal authorities was prevented by the timely arrival of the *columna volante*, the rural police force dispatched from Minatitlán. The peasants were assured by the police captain that the Governor would be informed of the incident and that the Municipal President would be removed for abuse of power. The peasants dispersed but several days later reorganized to occupy the municipal palace, which in turn brought back the *columna volante*. Finally, a week or so after the incident

started, a State deputy arrived in Pajapan with orders from the Governor to dismiss the Municipal President and replace him with a substitute president for the remainder of the term in office. Meanwhile, the rock extraction contract was cancelled and the non-unionized workers from Pajapan were banned from further employment on the construction of the new port by the Union of Construction Workers of Coatzacoalcos. The incident marks the first collective violent peasant action since the beginning of land conflicts.

Land Invasion by an Outside Rancher

In 1976, when some of the communal land was invaded by an outside rancher, Pajapeños once again rallied to demand the implementation of the Presidential Resolution of 1968. Pedro Florentino, a large rancher from Coatzacoalcos, was denounced by the Communal Land Commission for occupying a tract of communal land near the lagoon 'Ostión'. The CNC was informed of the invasion as was the Director General of Inspection and Complaints of the SRA in Mexico City. Initially, no action was taken so peasants in Pajapan took matters in their own hands by planting *milpas* on the disputed land. The *columna volante* of Coatzacoalcos was called in by the rancher and two peasants were arrested. Before they could be removed from the area a large band of peasants armed with machetes and wooden sticks attacked the police. One Pajapeño reported that "the *columna volante* first shot in the air but then they started shooting people." Three peasants were killed and three were wounded.

The peasants involved in this action later built a corral to keep 113 of Florentino's cattle and continued to occupy the disputed land. It took almost two years of negotiations before an agreement was reached in which Florentino paid a small amount of money to the widows and the wounded in exchange for his cattle. The incident was very significant for the long term peasant struggle for land because it galvanized the resistance of peasants and provided a catalyst for peasant action on a number of fronts.

Peasant resistance to the invasion of their land once again forced ranchers controlling the local land and municipal authorities to take a more aggressive and ostensibly pro-peasant position in order to maintain a degree of legitimacy with the local population and outside authorities. The most active of these rancher leaders was Sixto Vargas, the Communal Land Commission President. He called for the immediate implementation of the Presidential Resolution and supported peasant demands for a census update to transfer the rights of *comuneros* who had died or were living outside of Pajapan to the landless. Although he was a rancher with fundamentally different economic interests, he ostensibly supported the peasant position against outside ranchers in the hopes of maintaining political power and influencing the outcome of peasant demands.

The SRA responded to the peasant demands and their uprising against the land invasion by conducting a thorough investigation of land issues in Pajapan. In 1976, the SRA confirmed and formalized the boundaries of the communal land indicated by the Presidential Resolution and provided title to the communal property. They

conducted a census update and submitted an investigative report indicating that most of the communal land of Pajapan was under the control of some 33 families with properties of over 100 hectares each.¹ SRA also organized a General Assembly of *comuneros* at which it was resolved that a parcel of land would be given to each registered *comunero*. These were the most significant steps taken toward the redistribution of land since inequalities in land use had developed in the community in the 1940's.

While the actions of SRA seem definitive, ranchers were once again able to block all of them except the resolution of communal land boundaries by lobbying the SRA and the CNC in Mexico City and Jalapa, the state capital. In addition to letters and meetings with officials from these agencies, approximately 30 ranchers went to Jalapa to testify before the Governor that there were no land problems in Pajapan and that no census update was required. A letter to the President of Mexico signed by 203 *comuneros*, including ranchers and their day-workers, denounced the investigation conducted by the SRA and the Communal Land Commission President in Pajapan, Sixto Vargas. Ranchers claimed that the majority of the *comuneros* did not want to change the current distribution of land in the community by parcelling the land.

Ranchers also pressured Sixto Vargas, the President of the Communal Land Commission, into withdrawing his support of the

¹ Our own research indicates that the number of large land owners in Pajapan was greater, perhaps 40 in all, and that the degree of land concentration was not as great as that indicated by the SRA report. See Chapter 4 for details of land distribution prior to the reform.

census update and land redistribution. One very candid rancher acknowledged that,

we felt that a land redistribution was coming, we knew we were wrong but we decided to fight until the end. It was going to be the last fight. To stop the census we had to pressure the communal land commission president, Sixto Vargas, into supporting our position and calming the people. ... Since he was supporting the small peasants and landless workers we had to bring him onto our side. We demanded his attention so that he would start supporting us. We also had a lot of support from the Southern Veracruz Ranchers Union and the State Ranching Division. We had contacts all over. ... We went and talked to the *comuneros* to calm them. We were able to calm the *comuneros* for a year. However, I believed that the situation would not last much longer. I felt that the 905 *comuneros* had to be able to use the land also.

Sixto Vargas himself noted that under pressure from ranchers opposed to the census update, "I decided to stop fighting and I said, it is better not to do anything." As a result of the protests of ranchers, the SRA disallowed the census update and took no further action to implement the land redistribution. Once again, the politically well connected ranchers were able to thwart peasant demands and delay an equitable solution to local land use problems.

The Emergence of Alternative Political Parties

Municipal politics in Pajapan had been dominated by the PRI since the 1920's. PRI candidates were selected by the rancher-led local PRI office and election to power was assured by the absence of a local alternative and a well-funded campaign replete with food,

drink and radical rhetoric. When municipal elections were organized in 1976 ranchers once again proposed their own slate of PRI candidates and, while they won the Presidency and other major positions, an opposition candidate received enough votes to win the position of Alderme. Pascual Pablo Martinez had run for office with the support of a recently established chapter of the Partido Popular Socialista (PPS), a national party with a regional office in Coatzacoalcos.¹ Table 3.3 indicates the results of the election and the in-roads made by peasants into positions of political power. Ranchers nevertheless held the main offices and continued the practice of transferring from one position in the previous administration to another in the new administration.

Table: 3.3 INDIVIDUALS IN POLITICAL POSITIONS, 1976

POSITION	EARLIER POSITION	CLASS
COMMUNAL LAND COMMISSION (same as in 1973)		
President: Sixto Vargas Lorenzo	?	Rancher
Secretary: Ramon Hdz. Mtz.	?	Rancher
Treasurer: Pedro Antonio Antonio	?	Small Rancher
VIGILANCY COUNCIL (same as in 1973)		
President: Simon Antonio Hdz.	Rep. Sindico	Rancher
Secretary: Dalio Villanueva de la Torre	?	?
Vocal: Abad Mtz. Mtz.	?	?
MUNICIPAL GOVERNMENT		
President: Emiliano Trujillo Antonio	?	Rancher
Sup. Pres.: Ramon Hdz. Mtz.	Sec. Communal Land Commission	Rancher
Sind.Uni.: Epifanio Matias Mtz.	?	Rancher
Sup. Sin.: Miguel Pereyra Mtz.	Ejido Agrarian Committee	Peasant
Reg. Uni.: Pascual Pablo Mtz.	Leader Partido Popular Socialista	Peasant
Reg. Sup.: Lazaro Palomino Patraca	?	?
PRI COMMITTEE		
President: Simon Antonio Hdz.	Vigilancy Council	Rancher

¹ The party was established in Pajapan in 1973 during the campaign of a PPS candidate from Coatzacoalcos for the position of Federal Deputy.

Although elections for municipal authorities were held at the end of a three year term as required by law, the Communal Land Commission led by Sixto Vargas did not call elections for a new Commission and Vigilancy Council when they were due. In protest, another recently established opposition party, the Partido Auténtico de la Revolución Mexicana (PARM), began pressuring SRA's regional and national delegates for a change in the local land authorities. PARM denounced Sixto Vargas for remaining in office beyond the period of his mandate and for defrauding *comuneros* of \$1,600,000 pesos in taxes owed to the Federal Revenue Office in Coatzacoalcas. They also organized a Peasant Defense Committee to denounce a Pajapan rancher for invading the land of peasants. In a letter to the State Delegate of the SRA, the Defense Committee claimed that "a land invader from Pajapan forced six peasants off 3 hectares of cultivated land. The Regional Agrarian Office headed by Mr. Carriosa has not paid any attention to our demands. If justice is not done, there will be violence in Pajapan."¹ This action was part of a general plan to remove the Commission President and implement the redistribution of land into individual parcels approved by the General Assembly of *comuneros* in 1976.

After almost three years of protest and several attempts to organize a General Assembly, elections for the Communal Land Commission were finally organized in Pajapan by the SRA in 1979. The only party to present a panel of candidates was the PARM, which won the election by acclamation. Nevertheless, neither the previous

¹ ASRAX. Expediente C-26 Bis, Telegram, August 31, 1978;

Commission nor the municipal authorities would sign the election act and the election was eventually voided.¹ When new elections were organized several months later, the rancher-dominated PRI forwarded a panel of its own and won the election. According to one peasant, "on the day of the elections the caciques killed several bulls to get votes for the PRI. Since many people were hungry they supported the candidate of the PRI." Another indicated that ranchers pressured their day-workers to vote for their candidate.

Following the election of the Communal Land Commission, the leaders of the PPS and the PARM joined forces to denounce the monopolization of land in Pajapan by ranchers. They sent a letter of protest to the President of Mexico signed by 151 *comuneros* and 128 other peasants living in the community without land rights. They also took legal steps to protect Pajapan peasants from arrest and harassment by ranchers.² With the support of the Regional Committee of the PPS in Acayucan, they fielded PPS candidates in the 1979 municipal elections but once again lost to the PRI. Table 3.4 shows once again the dominance of ranchers over political positions with the Municipal Government, the Communal Land Commission and the Local PRI Committee. Some of these ranchers held positions of power in the 1976 administration.

¹ Anonymous Archives of Pajapan.

² ASRAM. Expediente 276.1/2414. Letter, October 15, 1979.

Table: 3.4 INDIVIDUALS IN POLITICAL POSITIONS, 1979

POSITION	EARLIER POSITION	CLASS
COMMUNAL LAND COMMISSION		
President: Ramon Hdz. Mtz.	Sec. Communal Land Commission	Rancher
Secretary: Gonzalo Dgz. Hdz.	?	Small Rancher
Treasurer: Camilo Ciriaco Mtz.	?	Rancher
VIGILANCY COUNCIL		
President: Pablo Mtz. Tino	?	?
Secretary: Eleutorio Cruz Reyes	?	?
Treasurer: Wenceslao Mtz. Osorio	?	?
MUNICIPAL GOVERNMENT		
President: Abel Hdz. Mtz.	?	Rancher
Sup. Pres.: Sergio Mtz. Aleman Mun. Secretary/PRI Committee Pres.		Rancher
Sind.Uni.: Pedro Mtz. Vargas	?	?
Sup. Sin.: Sebastian Silvestre Morales	?	Rancher
Reg. Uni.: Santos Hdz. Mtz.	PPS/Suplente Regidor Unico	Small Rancher*
Reg. Sup.: Alejo Mtz. Osorio	PPS	Rancher*
PRI COMMITTEE		
President: Emiliano Trujillo Antonio	Municipal President	Rancher

Note: "?" indicates missing information. Small rancher refers to individuals with fewer than 50 head of cattle. Rancher refers to individuals with more than 50 head of cattle. See Chapter Four for details concerning ranch size.

*Alejo Mtz. Osorio and Santos Hernandez Martinez were among a small group of ranchers supporting the PPS.

Abbreviations: Pres. Sup. (Presidente Suplente); Sind. Uni. (Sindico Unico); Sup. Sind. (Sindico Suplente); Reg. Uni. (Regidor Unico); Reg. Sup. (Regidor Suplente).

Source: D. Caouette, 1988:148.

While inexperience and possibly fraud had cost them the previous elections, the loss in 1979 was partly due to the lack of political organization by the PPS in the villages and hamlets outside Pajapan. According to a leader of the PPS,

The PRI received the majority of the votes (1,000 vs. 530) because only the villagers of Pajapan voted for the PPS while hamlets such as Chocolapa, Benito Juarez and Minzapan voted for the PRI. These hamlets were not aware of the struggles for land redistribution in Pajapan. Some of

the hamlets are *ejidos* unconcerned with land redistribution so they supported the PRI.

While divisions between villagers on the communal land and villagers in the rest of the municipality weakened the political position of peasants, the 1979 election was probably also influenced by a new external factor. During the election period, the Mexican Government announced that it was going to expropriate part of the communal land to make way for the construction of an industrial port. According to one peasant leader, "the people felt that they should go with the PRI to protect their interests [against the Industrial Port]. As a result, the PPS lost the municipal election."

In summation, the decade following the Presidential Resolution (1968) and leading up to the expropriation of land for an industrial port (1978) was characterized by a constant and sometimes violent struggle between peasants and ranchers over the implementation of the Presidential Resolution. Presidential recognition of communal property implied an equitable distribution of land. Ranchers used their control over local political institutions and connections with regional and state level organizations to delay the implementation process and retain de facto control over the communal land until peasant actions lost momentum. Peasants mobilized under the banner of an opposition party to present their own slate of candidates for land and municipal authorities. Nevertheless, without sustained support from outside agencies, their actions were undermined by politically more powerful ranchers.

The Expropriation and Land Reform 1980-1982

The strategic location of Coatzacoalcos on the Isthmus of Tehuantepec prompted the Lopez-Portillo government (1974-1979) to designate the area a 'zone of priority' for future developments. One of the major projects planned for Coatzacoalcos was the construction of a new industrial port on the coast 15 kilometres northwest of the city. Although the lagoon 'Ostión' was initially selected because of its potential as a natural harbour, studies soon revealed it was underlaid with a rock shelf and the site of the port was moved a few kilometres toward Coatzacoalcos. Plans were made to construct huge piers and conduct a massive dredging operation to create a sheltered port along an uninterrupted strip of coastline.

The industrial port was to cover an area of approximately 20,000 hectares. The project called for the construction of 1,900 metres of docks and a deep water zone capable of handling boats of up to 100,000 tonnes. A large industrial park was also to be constructed for basic and secondary petro-chemical plants, agroindustries, mining industries and service industries. The plants were to produce vinyl chloride, benzene, dichloride, polyethylene, toluene, xanthene, polyester fabric, reinforced plastics, flour, vegetable oil, aluminum sulfate and rock salt. A railway link to the main line from Coatzacoalcos was to be constructed along with a network of roads and a bridge spanning the mouth of the lagoon 'Ostión'. An urban complex with a projected population of 1 million people by 1990 was also planned as was the creation of an 'ecological reserve'

around the lagoon that would include some of the mangrove forest. These developments were to cost an estimated 3 billion pesos in their initial phases and several billion more until completion of the project. thousands of workers were expected to gain temporary and permanent employment.¹

In January of 1980, government agencies responsible for the Industrial Port Project met with the *comuneros* of Pajapan in a General Assembly to inform them of the project and the planned expropriation of 5,153 hectares of communal land.² Officials assured the villagers they would receive compensation payments for land and private goods according to regional market values. They also affirmed that the project would create many short and long-term jobs for the people of Pajapan and that government agencies would be undertaking the construction of a secondary school, Municipal Palace, public market, public utilities and paved streets for the village.

The meeting was attended by a representative of the Coordinadora Nacional de Pueblos Indigenas (CNPI), a national umbrella organization for Indian people, who called on *comuneros* to resist the expropriation. He argued that the people of Pajapan would be excluded from the skilled jobs in urban centres. The project was endorsed, however, by a prominent rancher in Pajapan, Sergio

1 Mexico. Programa 1981, Coordinacion General del Programa de Puertos Industriales; Memoria del Programa de Puertos Industriales, 1979-1982.

2 Representatives of seven government agencies were present including SRA, PEMEX, SAHOP, SCT, SPP and FONDEPORT. Account of this meeting is based on interviews by D. Caouette. See also Bouysse-Cassagne, 1981:27; Martinez and Rodriguez, 1984:12; Uno Más Uno, January 30, 31, 1980.

Martinez Aleman. He presented a list of 12 demands in exchange for support of the project, including guarantees that *comuneros* would have access to employment, provisions for resettlement in urban areas with electricity, sewer and drinking water, schools in Pajapan to prepare the comuneros for work in industry, etc. He was supported by a few prominent rancher-politicians who recognized that the project could not be stopped but hoped to control and direct the reaction of the majority peasant population.¹

The community was divided along class lines over the expropriation issue. While some ranchers closely associated with local land and municipal authorities expressed conditional support for the expropriation, a majority of ranchers opposed it because they would lose control over the fertile lowland near the lagoon. According to local informants, approximately 250 ranchers and their day-workers attending the assembly opposed the project and voted against a call for its endorsement. However, the majority of the population comprised of landless workers and peasants approved the government proposal. They had little to lose because virtually all of the land to be expropriated was controlled by ranchers. Peasants also hoped to get cash compensation for the land and access to steady wage employment. As one peasant informant noted, "There were only ranchers occupying the expropriated lands. The expropriation did not directly affect the peasants." Another peasant

1 Sergio Martinez presented a list of 21 demands endorsed by prominent ranchers including Ramon Mtz., Abel Hdz., Emiliano Trujillo, Roman Gonzalez, and José Luis Antonio.

pointed out that "many people were happy about the industrial port because they thought that they would be able to get a job."

The Expropriatory Decree

When the expropriary decree was signed by the President of Mexico in 1980, it identified the 5,154 hectares of communal land to be expropriated and specified the amount and method of compensation payments. Some \$8,500 pesos per hectare totalling \$43,801,193.52 were offered in payment for the land with a further \$8,626,708.80 offered to 182 *comuneros* for private goods such as rolls of wire, fence posts, fruit and palm trees, wells, and buildings on the affected land. The amount offered to each of the 182 *comuneros* varied considerably, ranging from a half million pesos to \$150 pesos. The decree proposed that the payment for land be deposited at the Banco de Mexico in the name of the community and that the payments for private goods be paid directly to the 182 *comuneros* affected. It also offered the 182 *comuneros* two lots each in the urban zone of the Industrial Port.¹

The public release of details of the Expropriatory Decree had a great impact on ranchers' and peasants' attitudes toward the expropriation. First, the amount of money offered per hectare was much lower than expected. Secondly, *comuneros* feared that they would not benefit personally from money deposited in the Bank of Mexico in the name of the community as a whole. The experience of villagers with official corruption and the self-interested actions of

¹ ACEAX Dictamen Positivo, Expediente 56-5471, February 27, 1980.

local authorities did not inspire confidence in a system of compensation administered by these same officials. Thirdly, many *comuneros* had been excluded from the list of 182 (mainly ranchers) who would receive urban lots and compensation for private goods in the expropriated zone.

The objections of peasants and ranchers to the Expropriatory Decree were first aired publicly at a General Assembly in June 1980, convened to discuss the reallocation of land to landless *comuneros* and *comuneros* displaced from the expropriated zone. The Chief of the Regional Agrarian Office of the SRA attended the Assembly and proposed that the list of 905 registered *comuneros* be updated to allow approximately 100 new *comuneros* to replace those who had died or left the community. All registered *comuneros* would then have collective access to the communal land not affected by the expropriation. The Municipal President made a similar proposal but the local representative of the PPS countered with a proposal that the 182 *comuneros* be paid for both their share of the land and the private goods, after which they would forfeit their agrarian rights. With this proposal the PPS hoped to expell ranchers from the community. When a vote was called, some *comuneros* interrupted the Assembly with cries that they "were tired of being misled and cheated by the land and municipal authorities". They demanded that the land unaffected by the expropriation be divided into equal plots for the 905 *comuneros* by representatives of the SRA. No decision was taken by the Assembly but the SRA representative assured them that he would voice their demands to the State Delegate.

Peasants feared that without the division of land into equal parcels and the direct intervention of the SRA in the implementation of land redistribution, ranchers would once again undermine their demands and regain de facto control over all the land. However, in a decision by the State Delegate, SRA refused to parcel the land on the grounds that such a provision was not specified in the original Presidential Resolution of 1968. He failed to note that agrarian law does not prohibit the parcelization of communal land when requested by the majority of the *comuneros*.¹ While no direct evidence of influence by ranchers on the State Delegate is available, the decision clearly benefited ranchers by blocking a definitive redistribution of land.

Although ranchers could do little to stop the expropriation, they tried to delay peasant demands and maximize compensation for the loss of access to the lowland area. Following the June General Assembly, ranchers organized a strong lobby to protest the exclusion of approximately 100 *comuneros* from the list of 182 who claimed they had private property in the expropriated zone. On their behalf, the CNC in Mexico City pressured SRA to undertake a new inventory of private property owned by 100 *comuneros* excluded from the Decree. According to one peasant, in addition to the lobby for compensation for private property, "the ranchers went to the different government agencies and asked them to oppose the

¹ Article 130 of the Ley Federal de Reforma Agraria states that "provisional and definitive ejidos and communities [communal lands] will be used collectively, except when its members determine by an agreement reached during a general assembly that they will be used individually." Chavez Padron, 1987:161. Also see Article 52.

expropriation. During a meeting at the Local Ranchers Union they collected money from each rancher to pay the State Delegate of the SRA to oppose the expropriation."

The August Peasant Rebellion

Continuing frustration over peasant demands for land redistribution and equitable compensation for the expropriation exploded in August of 1980 when 500 peasants stormed the Municipal Palace in Pajapan and demanded the resignation of the Municipal President and Communal Land Commission. The action was organized by leaders of the PPS and temporarily supported by a small number of ranchers who were also dissatisfied with the compensation arrangements. Ranchers controlling the local authorities had prepared for the invasion by requesting the intervention of the *columna volante* who repelled the attacking peasants with tear gas. When two protesters were arrested and sent to jail in Coatzacoalcas, the peasants countered by blocking all roads to and from the village and informing the national press of the uprising.

These actions brought federal and state level representatives of the SRA to Pajapan where they assured the protesters they would support their demands for land redistribution and individual payments for the expropriated land. As noted by Caouette, "the August Rebellion was a major advance toward land redistribution because for the first time representatives of the Federal Government were forced to sit with the Pro-Peasant formation and negotiate" (Caouette, 1988). It also made it abundantly clear to

the ranchers that their traditional lines of communication with regional and state level representatives of government agencies were not working and that alternative methods of control and manipulation would have to be developed.

Legal Action Against the Expropriation

As already noted, the Coordinadora Nacional de Pueblos Indigenas (CNPI), a national umbrella organization of Indian groups, was represented in Pajapan during the first meetings between Pajapeños and government agencies responsible for the Industrial Port. According to a regional CNPI organizer, local land and municipal authorities requested advice from the CNPI on the impact of the project on their community. For the CNPI, this was an opportunity both to extend its influence into a new area and raise its profile on an issue that was receiving national attention from the press and academics.

The national status of the CNPI and their legal expertise provided the political leaders of Pajapan a new forum in which to voice their demands. At meetings between the CNPI and the rancher dominated municipal authorities it was decided that the community would seek a judicial order of prohibition protecting their land from expropriation. This action was similar to legal actions taken by ranchers to protect their lands from land reform. In the case of the Pajapan action, the Office of the President of Mexico and eight other government agencies were denounced for not compensating an additional 176 *comuneros* who had private property in the

expropriated area and for not offering the true market value of the land expropriated. The vast majority of the *comuneros* who claimed compensation for private goods were small, medium, and large ranchers who had been left off the original census of the expropriated land. An alternative evaluation of property value conducted by a qualified engineer was presented along with evidence of substantiating claims of the *comuneros* excluded from the Expropriatory Decree. The legal action also demanded the suspension of construction activities by the Industrial Port authority until all issues were resolved.¹ The request for a judicial order of prohibition was accepted by the court Judge in Coatzacoalcos and counter claims were presented by the government, initiating a complex and lengthy legal process.

The public image of the conflict presented by local leaders to the outside was of an Indian community being exploited by the heavy hand of PEMEX and the national government. Ranchers succeeded in downplaying internal divisions within the community by focusing the attention of the media and academics on threats to communal land tenure, traditional Indian culture, religion and language.² They emphasized the romantic image of an Indian culture being crushed beneath the wheels of progress while internal conflicts, although sometimes recognized, received relatively little attention.

1 Interviews and ACNCP "Amparo, September 18, 1980"; Personal Archives, Pajapan.

2 The following reports on Pajapan emphasize this perspective at the expense of a clear understanding of internal divisions within the community: INI film "Laguna de Dos Tiempos"; Bouysee-Cassagne (1981); Coll (1981); 1907 Pensamiento Crítico (1982); Lara Ovando (1983); Lara Ovando and Hdz. Leobardo (1983); Martinez and Rodriguez (1984).

A. Peasant-Rancher Coalition

Peasant mobilization during the August Rebellion convinced local leaders that land reform could not be delayed any longer. At a General Assembly a month after the legal action was launched, Sergio Martínez, a rancher and key political leader in the community, called on peasants to join in the struggle for better expropriation compensation in exchange for rancher support of land redistribution. In his words,

Two or three days before the Assembly, we recognized that we had to give up the land. At the assembly I asked the peasants what they wanted, the land redistribution or the payment of compensation. They answered that they wanted the land redistribution. So I told them, first let's fight for land redistribution and then for the payment of compensation. From then on, the people supported me.

The local political leaders' concession to a land reform was necessary because their credibility was at an all-time low. Peasants were acting independently of the ranchers and receiving considerable attention from state authorities and the media. Land redistribution was inevitable and so the local political leaders tried to gain peasant support for a reevaluation of compensation payments that would mainly benefit ranchers. In addition, the position taken by them received strong support from ranchers who had lost most or all of their land in the expropriated area and wanted to gain access to land in the unaffected area.

Although a majority of the population supported the redistribution of land and reevaluation of compensation payments, some ranchers and peasants continued to protest the compromise. Ranchers who controlled large amounts of land in the area to be redistributed continued to oppose land reform as did peasants with 'medium-sized' parcels of land (20 - 50 hectares). Landless workers also opposed the redistribution because they were not registered *comuneros* included in the list of 905. They wanted a new census that would increase the number of *comuneros* with land rights.

Despite continuing opposition, an agreement was reached during the General Assembly that called for a new inventory of private property in the expropriated zone, a census update to a maximum of 905 *comuneros*, and the division of the land unaffected by the expropriation into individual parcels. While similar agreements had been reached in the past, this time it had the support of the Municipal Government, the Communal Land Commission and a majority of ranchers.

State Intervention

The struggle for land reform did not end with the agreement made among peasants, ranchers and local political leaders. It took another year of constant pressure and violent confrontations to bring about an effective implementation of the land reform and compensation payment. In the weeks following the General Assembly, members of the PPS began to divide land into individual parcels of about 14 hectares each. The action was halted, however, when a day-worker

employed by a powerful local rancher shot and wounded one of the peasants involved in the redistribution. According to local peasants, this incident forced the Secretaría de Reforma Agraria (SRA) and the State Government to intervene.

At the State Palace in Xalapa a meeting was convened to bring together representatives of all the key figures in the struggle: the Municipal Government of Pajapan, Communal Land Commission, State Government, Secretaría de Reforma Agraria, Fondo Nacional para el Desarrollo Portuario, Secretaría de Comunicaciones y Transportes, Partido Popular Socialista, Partido Revolucionario Institucional, and Coordinadora Nacional de Pueblos Indígenas. The participants at the meeting agreed to divide the land unaffected by the expropriation and to compensate an additional 155 *comuneros* for private goods in the expropriated zone. Several months later, the agreement was formalized in a contract signed by the Communal Land Commission and senior representatives of government agencies responsible for the expropriation. In exchange for the reform and compensation payments, *comuneros* agreed to withdraw the legal action they had launched against the expropriation. This contract marked definitive official recognition of the land reform demanded by peasants and the reevaluation of compensation payments demanded by ranchers.¹

The government agreed to the demands of peasants and ranchers because it wanted to remove a bothersome impediment to the resumption of an important state-sponsored project. While

¹ Interviews and ASRAX. Expediente C-26 Bis. Letter, February 03, 1981 and Memorandum, March 16, 1981.

construction had not been completely stopped by the legal action of Pajapeños, the violence associated with the land conflict and the attention the expropriation was receiving from the national media was a political embarrassment for the Mexican Government.¹ It demanded an immediate solution. As one senior government official noted, "The need to pacify the community was the main reason for the land redistribution. ... When needed, the SRA seeks political solutions, even if they are not written in law."

The division of communal property into individual parcels implied the elimination of the only significant difference between communal land and an *ejido*. According to agrarian law, both *ejidos* and communal lands are to be worked collectively, except when the members of the community decide in a General Assembly that the land will be used individually (Article 130, Ley Federal de Reforma Agraria). *Ejidos* are in fact usually divided into equal, individual parcels distributed among the *ejidatarios*. In the case of communal property, however, the land is usually not divided. The decision to divide the land taken by the General Assembly following the August Rebellion was technically legal but it contravened the convention of communal property promoted by the Secretaría de Reforma Agraria.

The Land Reform and Compensation Payments for Private Property

Formal agreement on the land and compensation issues was followed quickly by compensation payments to the ranchers. A team of engineers conducted a new inventory of private properties that

¹ El Día, January 4 & 9, February 3 & 5, 1981; Uno más Uno, January 17, 1981.

increased the number of beneficiaries from 182 to 364 and the amount of compensation from \$28,756 U.S. to \$185,250 U.S..¹ Since no changes had been made to the value of the land, the compensation for private property now totalled more than the compensation offered for the land itself. When beneficiaries received their cheques they also signed an agreement that no further legal action would be taken against the expropriation.

The engineers also marked the boundaries of the communal land and divided the unaffected area into lots of approximately 300 hectares. Peasants and ranchers formed groups of 25 *comuneros* each and began to sub-divide the lots into parcels of approximately 12 hectares. The groups of 25 *comuneros* were formed partly on the basis of who already had land in the area. Since most of the land was owned by ranchers, they claimed the best part of their land and grouped their day-workers in parcels around their own. This enabled them to retain access to a number of parcels. Peasants unaffiliated with the ranchers claimed parcels in lots where they had traditionally worked the land. A few ranchers resisted the redistribution and threatened peasants with violence. Also, the subdivision of the parcels was often subject to considerable imprecision because no surveying equipment was used. The politically and economically more powerful usually fenced in more than the 12 hectares they were entitled to. Nevertheless, the redistribution proceeded and many peasants who had become landless regained access to land of their own.

¹ Based on an exchange rate of 300 pesos per U.S. dollar.

The final redistribution was based on a census update conducted by SRA engineers. Their findings indicated that 288 out of the 905 *comuneros* included in the 1968 Presidential Resolution had died or were not cultivating the land; their agrarian certificates were then transferred to family members. It is difficult to determine with certainty whether the update was fair although a group of young Pajapeños ("Frente Estudiantil Revolucionario") denounced it. They claimed that ranchers had bribed the President of the Communal Land Commission into providing certificates that did not have a clear successor to members of their own families. Nevertheless, no further revisions were made by SRA despite vocal protest by a few peasants and the CNPI.¹

Land Payments

Supported by land and municipal authorities, the CNPI had been instrumental in developing the legal action against expropriation. When an agreement was made with federal and state agencies to withdraw the judicial order of prohibition, a split developed between local authorities and the CNPI. The Coordinadora continued to protest the expropriation and denounced the land redistribution on the grounds that many Pajapeños would lose their rights, either because they were not included in the census or because the land they held exceeded the new limit of 12 hectares imposed by the reform. A small number of ranchers and middle peasants opposed to

1 ASRAM. Espediente 276.1/2414, Letter, September 10, 1981 and October 07, 1981; Also, Personal Archives in Pajapan.

the redistribution continued to support the CNPI and press for the cancelation of the expropriation and Industrial Port Project. They were relatively few in number and despite their protests had little influence on the outcome.

Delays in the payment of compensation for the expropriated land prompted the Communal Land Commission to reinstate the judicial order of prohibition and foster other protests. Two unions formed in Pajapan in anticipation of the construction phase of the Industrial Port joined with the Commission to stop work that had begun on the Project. They demanded payment for the expropriated land and other actions promised by PEMEX such as schools, a market, paved roads, etc. They also asked that PEMEX and sub-contractors respect the rights to employment of union members in Pajapan.¹

Once again, the protests of Pajapeños forced the authorities to respond or face further delays in the Project and bad publicity. Work was begun on a secondary school in Pajapan and representatives of the SAHOP, the federal agency responsible for the expropriation, arrived in the village of Pajapan in September 1982 to pay for the expropriated land. They issued cheques of \$303 U.S. each to the *comuneros* listed on the updated census. While some dissension and protest followed the final compensation payments, the majority of Pajapeños conformed to the reform and the expropriation. This marked an end to the three year protest movement initiated by the expropriation and was a significant moment in a 50 year land struggle between peasants and ranchers.

¹ ACEAX. October 07, 1982.

The Politics of Land

The land struggle in Pajapan is based on the development of a system of unequal political power both within the Indian community and between Indians and wider political structures. These disparities have resulted in the greater integration of the Indian political system into the national society and the domination of the majority working classes by a few politically influential ranchers.

Political integration and subordination revolves around two local institutions, land and municipal authorities. Municipal government was introduced into the community during the 19th century and played a subordinate role of liaison and tax collection for outside authorities. Following the Mexican Revolution, however, a national political party, the PRI, established itself in a position of local power. The prominence of the PRI at a national level provided local PRI candidates with a measure of authority of their own. The local PRI office selected a slate of candidates for municipal office who were assured outside support and recognition by the regional PRI office and government agencies. In exchange, local leaders promised voter support for regional, state, and national PRI candidates. This interaction confined local political activity to a single party apparatus integrated into the national political network.

The system of local land administration was also integrated into wider legal networks. The request for an *ejido* was initially motivated by the need to define and protect the legal status of Pajapan's land base. When conflict developed within the community over the distribution and use of communal property, the struggle

was channelled through the national legal system. Peasant struggles to retain control over some means of production required that they seek the support of the state for the creation of an *ejido* that would ensure access to land. These actions were countered by ranchers who promoted a communal land tenure system, also legally recognized by the state, that would allow them to continue to control large areas of communal property. The resolution of the conflict in favour of the communal system implied the application of national laws and the intervention of state institutions in the administration of land.

The Municipal Government and land authorities were the political instruments used by ranchers to usurp the communal property. Ranchers exercised local power in alliance with external power holders including regional and state level offices of the SRA, the rural police (*columna volante*), the Regional PRI Committee, the Southern Veracruz Ranchers Union, State politicians, and lawyers. Relations with key figures in the regional power structure ensured rancher control over communication with outside institutions. During elections, ranchers received the support of a majority of the local population by virtue of the authority of the PRI, the absence of organized opposition and coercion of dependent day-workers. When necessary, political leaders ostensibly responded to peasant demands and manipulated communal rhetoric in a bid to thwart peasant objectives and coopt resistance.

Political integration increased in response to the expropriation of communal property. Relations with outside government agencies

prior to the expropriation had been limited mainly to the Secretaría de Reforma Agraria and the federal treasury. The intervention of PEMEX forced ranchers to seek out new avenues of communication and support. In addition to their traditional contacts, ranchers petitioned the support of various government agencies and established a temporary alliance with the Coordinadora Nacional de Pueblos Indígenas to launch legal action against the expropriation. They also sought the support of the media, academics and INI, the federal agency representing Indian people.

Despite their subordination to national political structures and the dominant rancher class, peasants in Pajapan had a significant impact on the political process. Contrary to studies which focus only on the political marginalization of peasants, the analysis of Pajapan brings to light the important gains made by Indian peasants through long term struggles to reinstate their claims to land. Peasants used national opposition parties (PPS and PARM) in a bid to gain control of the Municipal Government and Communal Land Commission. They also tried to by-pass rancher control over regional and state level government institutions by seeking support from the federal offices of the SRA and the Mexican Presidency. Following the land expropriation, peasants gained the support of the regional and national offices of CNC, the national peasant confederation directly affiliated with the federal government. Local workers formed two unions of construction workers and joined the National Labour Federation while other groups of peasants and

youths formed their own organizations including the Frente Estudiantil Revolucionario and the Defensa Campesina.

Land reform gained through the action of peasants has provided them with a means of survival and a concrete alternative to full proletarianization. However, peasants gains cannot be attributed only to the resistance of peasants to capitalist penetration of the local economy. The reform required the intervention of an external force to challenge the power of ranchers. The analysis of the political history of land struggles in Pajapan shows that the Mexican state did not intervene on behalf of the wealthy (ie. ranchers) or simply as a mediator between classes in conflict. Rather, it intervened *on its own behalf* to protect both the political interests and economic base of state capital (ie. the oil industry). Peasants in Pajapan were able to make use of the tensions between state capital and a weak branch of ranching capital to force concessions from the Mexican state and the cattle ranchers. Thus, the political history of land struggles in Pajapan cannot be explained in isolation from the determining effects of contradictory tendencies of the political-economic system. These include class struggle and the tensions inherent to the Mexican state. The impact of these developments on the relations of production and the development of a complex class structure in Pajapan is examined in the following chapter.

CHAPTER FOUR

Class Structure

The expansion of the regional cattle industry and the political struggles of Pajapan's peasants have had a profound impact on the class structure of Pajapan. This chapter examines the changes in the distribution of wealth in land, cattle and other means of production resulting from three concurrent tendencies in the local economy: i) the development of variable forms of subordination of peasant labour to capital, ii) peasant resistance to capitalist exploitation, and iii) contradictory forces of capital growth and misgrowth. The analysis shows that over a period of 30 years cattle ranchers gained control over most of the communal land of Pajapan, forcing peasants out of agriculture and into other sectors of the rural and urban economy. The usurpation of communal property resulted in the proletarianization of the peasant population and the subordination of peasant labour to capital-dominated markets. Peasant resistance to this process and the eventual introduction of land reform has produced a class structure that is less polarized and more fragmented. Peasants combine subsistence agriculture with other activities such as small-scale commodity production, petty trade, trades and seasonal wage employment. These changes have been accompanied by limitations on the concentration of wealth and the development of agricultural and merchant capital. The analysis

shows that the persistence of peasant ownership of some means of production cannot be explained in isolation from the determining effects of contradictory tendencies of the capitalist system. These include the struggles of peasants against exploitation and the forces of capital growth and misgrowth.

The Process of Land Concentration

Cattle were first introduced into Pajapan in the 1930's but it was not until the late 1940's that their numbers began to increase rapidly in response to increasing demand for beef in regional and national markets (see Chapter Two). The first large influx of cattle in Pajapan belonged to Mestizo ranchers from Coatzacoalcas who rented the natural savannah near the lagoon 'Ostión'. Indians from Pajapan did not have the capital needed to establish ranches of their own and were initially employed by Mestizos as ranch hands. When the herds increased and more pasture was required, locally powerful Indian political leaders were offered a share of the young calves in exchange for access to pasture. These individuals began to acquire control over larger parcels of the communal property and establish herds of their own. Once the nucleus of a herd was established (ten to twenty animals), Indian ranchers became relatively independent from their Mestizo mentors although they continued to supply calves to regional markets controlled by a few powerful cattle merchants. Many of Pajapan's large ranchers

interviewed in the 1980's indicated that they began their herds in this manner.

The tradition of communal property provided the emerging class of local ranchers with unique opportunities to gain access to land not available in areas of southern Veracruz where private properties and *ejidos* predominated. No one had private title or exclusive land rights so ranchers claimed as much land as they could fence in. As already noted (Chapter Three) control over the local land authorities and individual acts of violence or coercion were important factors facilitating the acquisition of land by ranchers.

The fertile lowland near the shores of the lagoon was the first area acquired by ranchers. Peasants with *milpas* in the lowland were displaced to the poorer quality forested land above the village. As the ranchers increased their herds and sought to establish wet season pastures on the higher land, they encroached on the land of peasant cultivators. Over time, more and more forested land was felled for *milpa* cultivation and regrowth was converted to pasture, which in turn forced peasants to clear additional forest. By the early 1970's, land clearing had reached the steep slopes of the volcano 'San Martin Pajapan', wiping out virtually all of the mature forest and converting two thirds of the arable land to pasture.

The process of land concentration resulted in a sharp division between the majority landless peasants and ranchers with large parcels of land. Survey data indicate that by the late 1970's, approximately 61% of the local population were landless while 3%

controlled almost half of the arable land. Approximately 36% of the population controlled small to medium parcels of land (Table 4.1)¹ The large land holders (100 > hectares) controlled parcels averaging 235 hectares each with a maximum individual property of 800 hectares. These individuals usually held the best quality land in the area while peasants with small parcels were restricted to the poorer quality slopes of the volcano.

Table: 4.1 LAND DISTRIBUTION IN THE 1970's

<u>PARCEL SIZE</u>		<u>HLDS (%)</u>		<u>TOTAL HAS. (%)</u>	
0	has	903	61%	-	
1 - 6	has	170		553	
7 - 12	has	122		1,227	
13 - 24	has	155		2,820	
25 - 40	has	60		2,027	
41 - 99	has	30		1,857	
1 - 99	has	537	36%	8,484	53%
100 >	has	40	3%	7,529	47%
TOTAL		1,480	100%	16,013	100%

N.B. Estimates for total Pajapan population based on survey data (N 592 X 2.5) with an undersampling adjustment made to the category of large landholders based on interviews.

The concentration of wealth in cattle was even greater. In the late 1970's, only 19% of the local households owned cattle in herds

¹ According to the SRA, 32 families owned 14,450 hectares of land in 1976, hence 90% of all arable land in Pajapan. In my view, this overestimates the concentration of land in Pajapan. The survey data clearly indicate that a significant number of peasants had small to medium parcels of land.

ranging from a few head to over 700.¹ Of a total herd of approximately 11,000 animals, 84% was owned by approximately 40 families with average herds of 230 head of cattle.² The remaining 16% of the herd was distributed among households with fewer than 50 animals (Table 4.2).

Table: 4.2 THE DISTRIBUTION OF CATTLE IN THE 1970's

<u>CATTLE</u>	<u>HLDS (%)</u>		<u>TOTAL CATTLE (%)</u>	
0	1195	81%	-	

< 10	155	10%		
10 - 24	60	4%		
25 - 49	30	2%	-	

1 - 49	245	16%	1,760	16%

50 >	40	3%	9,240	84%

TOTAL	1,480	100%	11,000	100%

N.B. Estimates for total Pajapan population based on survey data (N 592 X 2.5) with an undersampling adjustment made to the category of large ranches based on interviews.

The expansion of cattle ranching had a significant impact on the occupational structure of the community. Land concentration forced many peasants out of agriculture and into other sectors of the rural and urban economy. Some peasants became day-workers hired by

¹ A survey of the Pajapan population undertaken by RIGOR indicates that 18% of the economically active population are engaged in cattle ranching in 1980 (1980:50).

² The estimate of the total herd and proportion owned by the 40 ranchers is based on the survey data and interviews. In my opinion, the estimate of 7,000 head of cattle made by RIGOR is too low.

ranchers on an occasional or seasonal basis to clear land for planting pasture, to maintain existing pastures and to assist ranchers in the care and handling of cattle. The cattle industry as a whole, however, employed few full-time workers and peasants displaced from the land could not rely on rural wage employment for their livelihood.

Lagoon and ocean fishing had always been part of the subsistence economy of Pajapan and during the land crisis of the 1960's and 1970's became an increasingly important source of subsistence and cash income. The village of Jicacal was founded in 1970 on the shores of the Ostión lagoon by peasants from San Juan Volador and Pajapan who had been displaced by the expanding cattle industry (see Map 2.1). A local and regional market for fish was developed and some fishers established a weekend restaurant trade in Jicacal serving fish and seafood to industrial workers from Coatzacoalcos. By the early 1980's, more than 70 families were living in Jicacal, most of them engaged in lagoon and coastal fishing on a full-time basis. The number of canoes used by fishers on the lagoon increased from 60 in 1960 to 132 in 1984.

During the late 1960's, a coastal fishery was established in the village of Las Barrillas, outside the communal property area, by Mestizo fishers from Alvarado, an important Mestizo fishing port near the city of Veracruz. This fishery employed as crew a growing number of landless peasants from Pajapan and San Juan Volador. During the 1970's, Las Barrillas expanded from a few families to

approximately 136 in 1984, the vast majority of whom originated from San Juan Volador and Pajapan. They were employed as crew on 23 coastal fishing boats operating out of the village as well as in small restaurants serving seafood to urban tourists.

Some peasants avoided rural wage employment and commercial fishing by moving to more remote, underexploited corners of the communal land. The hamlets of Peña Hermosa, Sayultepec, and Santanón Rodríguez were established during the early 1970's by families displaced from Pajapan. These few families were very poor and almost entirely dependent upon subsistence agriculture for their livelihood.

The most significant movement of peasants during the period of land concentration was into the urban centres of Coatzacoalcos and Minatitlán. The construction industry in these cities was booming during the 1960's and 1970's as a result of the expansion of the petro-chemical industry. The forcible usurpation of communal property 'freed' the agricultural population from the land and transformed it into a proletariat for the needs of industry. Although no precise data on out-migration during this period is available, Chevalier's analysis of changes in population growth, age and sex distribution among the Gulf Nahuas suggests that Pajapan experienced a dramatic population loss (1989:2-12). Approximately 30 - 40% of the young men of Pajapan left the community in search of urban employment. This age group were among the most severely affected by the scarcity of local land resources.

A survey of Pajapan and surrounding villages conducted by RIGOR in 1980 gives an indication of the occupational structure in the area just prior to the land reform. According to this research, some 51% of the adult population were engaged in agriculture, 18% were ranchers, 15% were wage workers, 9% fishers, 1% petty traders and small merchants and 6% were employed in the urban economy. It is likely, however, that a large portion of the population categorized as agriculturalists were in fact also integrated into the wider market economy as part-time wage workers, fishers, petty traders, etc. Occupational pluralism was a matter of survival for peasants being pushed off the land and drawn into urban employment. It was in this context of class differentiation and the struggle to maintain access to land that peasants mobilized to demand land reform. The remainder of this chapter examines the impact on class structure of political events of the late 1970's and early 1980's.

The Distribution of Land

The expropriation of over 5,000 hectares of communal land for an industrial port and the subsequent land reform resulted in the loss of one quarter of the communal land area and the division of the remaining portion into parcels of 12 hectares each for distribution to 905 *comuneros*. Approximately one third of the land was redistributed to poverty-stricken peasants and *peones* of Pajapan, thereby reducing their dependence on wage-labour and increasing

their reliance on subsistence cultivation and agricultural commodity production to provide for their family needs. Another fourth was retained by ranchers and peasants who had land prior to the reform (Table 4.3).

Table: 4.3 THE REDISTRIBUTION OF LAND

EXPROPRIATED	5,153 Has.	26.9%
REDISTRIBUTED	6,054 Has.	31.6%
RETAINED*	4,806 Has.	25.1%
FOREST RESERVE & URBAN ZONE	3,145 Has.	16.4%

TOTAL LAND	19,158 Has.	100%

* Land retained by ranchers and peasants with land prior to the reform and land rights as comuneros following the reform.

As a result of the reform, the class structure of Pajapan is less polarized: the proportion of landless dropped from 61% to 40%. Nearly half (47%) of the households who received parcels of land through the redistribution had possessed no land at all in the 1970's.

The reform took from the wealthy and gave to the poor. Table 4.4 indicates that the greater the wealth in land, the greater the loss. Given the survey's undersampling of the large rancher class, the losses suffered by the wealthiest landowners were probably even greater than indicated in the table. Actually, the 40 large

landholders (100 > hectares each) who controlled almost half of the communal land, lost practically all of it.

Table: 4.4 LAND REDISTRIBUTION

PRE-REFORM		POST-REFORM		
LAND HAS.*	TOTAL HAS.	HAS. LOST	%	HAS. GAINED
0	0			+ 4890
1 - 6	221			+ 888
7 - 12	491			+ 33
13 - 24	1128	- 1170	41.7	
25 - 40	811	- 1313	64.7	
41 - 99	743	- 1533	82.5	
100 >	775	- 1790	92.4	
<hr/>				
TOTAL	4169	- 5806	55.7	+ 5811

N.B. Estimate for total Pajapan population (N 592 x 2.5). Large ranchers undersampled.

* Refers to the categories of households with land prior to the reform.

The Presidential Resolution of 1968 identified 905 individuals as *comuneros* with rights of access to the communal land. Individuals who did not appear on this list of *comuneros* could not claim rights to a 12 hectare parcel, even if they were occupying land at the time of the reform. As a result of this legal distinction between *comuneros* and *non-comuneros*, approximately 40% of all households in Pajapan remained landless.¹ Some of these landless peasants (17% of all households) had land prior to the reform and lost their

¹ Land ownership data is based on a survey of the villages of Pajapan, Batajapan and Tecolapan. Because land ownership in the surrounding hamlets is probably lower than in the villages surveyed, the ratio of landed to landless for the entire communal population may be slightly lower, say 55% with land and 45% without.

land rights because they were not *comuneros*. Most of these households were relatively poor to begin with and had small properties of less than 18 hectares (average 8.5 ha., maximum of 60 ha.). Thus, access to land is still a critical issue in Pajapan, affecting some 40% of the total population.

Class Fragmentation

The land reform has reduced the degree of class polarization within the community and yet also increased the level of class fragmentation. Survey data indicate that the population of Pajapan consists of three basic class categories: subsistence-wage workers, small-scale commodity producers, and owners of capital (Figure 4.1).

Figure: 4.1 PAJAPAN'S CLASS STRUCTURE

Each of these categories can be sub-divided by unique occupational profiles summarized in table 4.5 and explained in the following text. These class categories and sub-categories were developed inductively from the distribution of the survey population by key occupational criteria. The association between these definitional class categories and empirical generalizations concerning the distribution of various means of production is examined throughout the remainder of this chapter. The objective is to provide a means of making distinctions between workers and owners of capital who occupy different positions within the class structure.

Table: 4.5 CLASS TYPOLOGY

	<u>HLDS %</u>	<u>HLDS¹</u>	<u>CATTLE</u>	<u>WAGE-L</u>	<u>ASSET/SALE²</u>	<u>TRADES</u>
SUBS/WAGE						
WAGE	6.4	38	< 5	> 2 d/wk	< 40 U\$ S.	
SUB WL	32.8	194	< 5	> 1 d/wk	< 40 U\$ S.	
SUBS.	7.3	43	< 5	< 2 d/wk	< 40 U\$ S.	
SCP						
FARM-WL	10.8	64	<10	> 1 d/wk	> 40 U\$ S.	< 3 d/wk
FARMERS	12.3	73	< 10	< 2 d/wk	> 40 U\$ S.	< 3 d/wk
P. TRADE	8.5	50	< 5	-	< 40 U\$ S.	> 2 d/wk
CRAFTS	7.9	47	< 5	-	< 40 U\$ S.	> 2 d/wk
SMALL RANCH	7.6	45	10-25	< 2 d/wk	< 230 U\$ A.	
CAPITAL						
SMALL BUSINESS	4.4	26	< 50	NONE	> 230 U\$ A.	
MEDIUM RANCH	1.0	6	26-49	NONE	< 230 U\$ A.	
LARGE RANCH	1.0	6	> 49	NONE	< 230 U\$ A.	
TOTAL	100.0	592				

¹ Sample only.

² A = Assets; S = Annual Sales (including agricultural products, pasture and fish).

SUBSISTENCE AND WAGE-WORK

Households engaged in subsistence production and wage work represent almost half (47%) of the total population. Their activities include subsistence agriculture and wage work in either rural or urban sectors of the local and regional economy.

WAGE WORKER CLASS : (6%) These workers engage in wage labour more than two days per week and do not produce subsistence food or goods for the market.

SUBSISTENCE-WAGE WORKER CLASS: (33%) Subsistence-wage workers produce very little for the market (less than \$40 US per year¹) and work for wages at least 2 days per week.

SUBSISTENCE WORKER CLASS: (7%) Subsistence workers do not work for wages more than 1 day per week and produce very little for the market (less than \$40 US per year).

SMALL-SCALE COMMODITY PRODUCTION

Approximately 47% of the total population are engaged in small-scale commodity production and distribution. Their activities include small-scale cattle raising, farming, fishing, crafts and petty trade.

FARMER-WAGE WORKER CLASS: (11%) Farmer-wage workers sell agricultural products of their own totaling at least \$40 US per year, have fewer than 10 head of cattle, engage in petty trade or crafts

¹ All money values give in United States Dollars based on the 1986 exchange rate of 650 pesos per dollar.

less than 3 days per week and wage labour for at least two days per week.

FARMER CLASS: (12%) Farmers are similar to farmer-wage workers except that they engage in wage work less than 2 days per week.¹

TRADES PEOPLE CLASS: (8%) Trades people in Rajapan include carpenters, bakers, butchers, tailors, barbers and mechanics who engage in their craft more than 2 days a week, sell less than \$40 (US) per year in agricultural goods, and own fewer than 5 head of cattle.

PETTY TRADER CLASS: (9%) Petty traders buy and sell fruit, vegetables, fish, bread, pigs, beer, milk, ice cream, and soft drinks for more than 2 days a week, sell less than \$40 (US) per year in agricultural produce and own fewer than 5 head of cattle. Households owning small stores with less than \$230 (US) invested are also included in this class.

SMALL RANCHER CLASS: (8%) Small ranchers have between 10 and 25 head of cattle. With this number of cattle, ranchers can devote themselves mainly to cattle raising and meet subsistence needs but they cannot make significant investments in the development of their herds. Households in this class devote less than 2 days a week to wage labour.

¹ This class includes fishermen that sell more than \$40 US per year. The sample contains only 7 cases.

CAPITAL

Approximately 6% of all households in Pajapan (N 38/592) own capital such as cattle and small businesses.

SMALL BUSINESS CLASS: (4%) This class includes households with businesses such as stores, taxi, cattle brokerages, restaurants and rooming houses with a minimum worth of \$230 (US). These households may also own up to 49 head of cattle.

MEDIUM RANCHER CLASS: (1%) Medium ranchers have between 26 and 50 head of cattle. These ranchers own and sell enough cattle to meet subsistence needs and increase their capital but they cannot generate significant profits for investment outside of cattle ranching.

LARGE RANCHER CLASS: (1%) Large ranchers have more than 50 head of cattle. These ranchers are able to increase their capital at a rapid rate and invest profits in other sectors of the economy.

Class and Comunero Status

As already noted, only 60% of Pajapan's population are *comuneros* with legally-recognized rights to a 12 hectare parcel of communal land. The association between *comuneros* status and class position within the occupational typology presented above is very strong. All ranchers and owners of businesses are *comuneros* as are approximately 86% of the farmers and farmer-wage workers. Members of these classes usually have rights to land either because they are the wealthiest classes or because their involvement in

market agriculture and cattle raising requires access to land. By contrast, only 44% of petty traders are *comuneros* with land. One third of the households in the subsistence-wage worker class and 11% of wage labourers are *comuneros*. The lower frequency of *comunero* status among these classes accounts for the involvement of these poorer families in petty trade and wage labour, as opposed to food production for the market.

The preceding generalizations cover 85% of the village population. Households not accounted for consist of two smaller classes: subsistence producers and trades people. About two thirds of the subsistence producers are *comuneros*. Their access to land allows them to engage in subsistence agriculture on a full-time basis. As for trades people, although 74% of them are *comuneros* with a land base of their own, they do not engage in commercial agriculture or ranching. Some tradesmen such as bakers and butchers have sizeable earnings from their craft which allow them to avoid agriculture while others (carpenters, basket makers, midwives, and woodcutters) only recently gained land from the reform and have not left their trade for agriculture (Figure: 4.2).

Figure: 4.2 *Comuneros* in each Class

The Quality and Location of Land

The distribution of prime land reflects the economic and political power of the various classes and reinforces the observation that class structure in Pajapan is highly fragmented. The large and medium ranchers and business owners not only have rights to land as *comuneros* but also control the best land.¹ These classes have the highest rating of soil quality and some 79% of their parcels are close to the village of Pajapan or in the fertile areas near the ocean and lagoon. Small ranchers and trades people occupy average-quality plots, 74% of which are in the Pajapan area or in the lowlands. By contrast, subsistence producers and peasants engaged in part-time

¹ Land quality is measured by the survey data in two ways, a self-rating of soil quality (0 = poor, 1 = fair, 2 = good) and location relative to the more fertile lowland.

wage labour (subsistence-wage workers and farmer-wage workers) are left with land that has the lowest rating of soil quality. In addition to poor soil quality, only 60% of their parcels are in the select areas and they have a higher than average proportion of poor land close to the volcano (Table 4.6).¹

Table: 4.6 CLASS DISTRIBUTION OF QUALITY PARCELS

<u>CLASS</u>	<u>% COMUNEROS</u>	<u>SOIL QUALITY</u>	<u>PAJ./LAGOON</u>	<u>VOLCANO*</u>
BUSINESS, L. & M. RANCHES	10%	1.44	79%	21%
S RANCHES, TRADES	22%	1.16	74%	26%
SUB, SUB-WL, FARM-WL	45%	1.03	60%	40%
ALL LAND		1.14	63%	37%

* The depth of the soil, moisture content and fertility decrease as one proceeds from the lowland up the slope of the volcano. See Chapter Five for details.

N.B. Farmers have land with soil of about the same quality as the small ranchers (1.17) but the location of their parcels corresponds more closely to that of the subsistence class. They have been excluded from this table to avoid distorting the statistical averages.

Statistical findings concerning the *comunero* status of members of various classes and the class distribution of quality land indicate that despite the reform, class inequalities have not been eliminated. Ranchers and business owners are usually *comuneros* and have better

¹ The findings presented in table 4.7 can be refined for the peasant classes with data from a separate agricultural survey (N 49) indicating that subsistence producers have the poorest land of all while farmers and farmer-wage workers have land of relatively better quality. These findings are based on the criteria of soil colour and location of the parcel, a more precise classification of soil quality than the self-rating used in the general survey.

quality parcels, on the average, than Pajapan's agricultural workers and wage-labouring classes. In addition, the post-reform village of Pajapan is characterized by observable divisions within the working classes, that is, the growth of a 'middle peasantry' comprised of small ranchers, farmers and trades people. These classes have more frequent land access and better quality land than the poorer peasants. The 'middle peasantry' has distinguished itself from the subsistence-wage workers and petty traders of Pajapan who represent the poorest and most vulnerable segments of the community.

Land Rental

The division of the communal land into 12 hectare plots controlled by 905 *comuneros* has put an end to the concentration of land ownership by the wealthy classes while simultaneously excluding a large number of peasants from rights to communal property (40% of all households). As a result, land rental has become an important form of land access for both land-hungry ranchers and landless peasants who need land for corn cultivation. An estimated 2,438 hectares of land, or almost one quarter (23%) of the land owned by Pajapeños is rented to other Pajapeños. Two thirds of the rented land (64%) is rented out by farmers and farmer-wage workers who play the role of land brokers to both land-hungry ranchers and landless peasants.

Table: 4.7 LAND RENTAL BY CLASS

<u>CLASS</u>	<u>HAS. RENTED</u>	<u>% OF RENTED LAND</u>
CAPITAL	1 431.2	58.7
FARMERS.	497.3	20.4
SUB.-WL	397.3	16.3
OTHER	112.2	4.6

TOTAL	2438.0	100.0 %

Land rental has made it possible for ranchers to regain control over some of the land they lost to the reform (Table: 4.7). Ranchers and business owners use approximately 59% of the rented land, which amounts to 13% of the total communal land area . Thus, to the 996 hectares owned directly by capital must be added another 1,431 hectares controlled by them through rental arrangements. The degree of land concentration is not great in comparison to the pre-reform period. Nevertheless, some 14% of the wealthiest households still own or control approximately 22% of the communal land.

Land rental has also made it possible for 'middle' peasants to improve access to land needed to engage in small-scale commodity production and for landless peasants to cultivate a subsistence corn crop. Some 20.4% of the rented land is used by farmers and farmer-wage workers who graze a few head of cattle or cultivate commercial crops. Subsistence workers rent 16.3% of the land for milpa cultivation.

Most of the rented land (89%) is used for grazing cattle and the remaining 11% is used to cultivated food crops. Although relatively limited in area (268 hectares), the land rented for milpa cultivation is vital to the household economy of some peasants. Approximately 80% of the households renting land for crop cultivation are landless, mainly subsistence-wage workers, and subsistence producers. These workers usually pay 'in kind' for land rented for crop cultivation: three times out of four, rented cropland is paid for in product or in labour. By paying 'in kind', peasants reduce their need for cash and thereby minimize connections to the market economy.

The Expropriated Land

To the issues of land rights and land rental can be added another critical component in communal politics: the use of the expropriated zone in the fertile lowland area. As already noted, 5,153 hectares of communal land were expropriated by the Mexican government in 1980 to make way for an industrial port and urban complex. The land was surveyed and the original occupants including cattle ranchers from Pajapan, were expelled. Shortly afterward, however, many people returned to occupy the land on a temporary basis and squatters have greatly increased in numbers since the cancellation of the PEMEX project in 1986. The future of the expropriated land is a hotly contested land issue that is still unresolved. According to agrarian law, the national government must redistribute the land expropriated for the cancelled industrial port project. To date, no

decision has been taken and peasants and ranchers are once again pitched against each other in a struggle for access to this land.

At the time of the survey research (1986), the total area (590 ha.) and the average plot (1.6 ha.) occupied by Pajapeños in this lowland zone was limited by the temporary and disputed nature of land tenure. Ranchers who had reclaimed some of the land were forced to abandon it by peasants who cut fences and stole cattle. All the same, one fourth of the households in Pajapan occupied some land in this area. The vast majority of squatters (80%) were agricultural workers and small ranchers who fall into one of two groups (Table 4.8).

Table: 4.8 CLASS DISTRIBUTION OF THE EXPROPRIATED LAND

<u>CLASS</u>	<u>CLASS %</u>	<u>% SQUATTERS</u>	<u>% LAND OCCUPIED</u>	<u>AV. PLOT</u>
SUB. SUB-WL	35%	57%	40%	1.1 HA.
S. RANCHER; FARMER	29%	23%	37%	2.6 HA.

Subsistence producers and subsistence wage-workers -- the poorest families of the village -- form the largest group of squatters (57%). On average, they occupy 1.1 hectares of land. Some 83% of the squatters from the subsistence-wage worker class have no land of their own while some 56% of the squatters from the subsistence class are landless. By contrast, most of the ranchers and farmers occupying land in the expropriated zone are *comuneros*

with titles to 12 hectare plots. Although they are fewer in number (23% of all squatters), they occupy larger plots, i.e., between 2 and 4 hectares, thereby laying claim to almost as much land as the first group. These observations indicate that problems of economic growth and misgrowth in the petro-chemical industry can have unexpected effects such as the persistence of peasant subsistence production and the development of differences in the distribution and use of land within the working classes.

Wealth in Cattle

The land reform has reduced the polarization of land distribution in Pajapan while at the same time increasing the degree of class fragmentation. Similar changes have occurred in the distribution of wealth in cattle. According to one local informant, "There were many ranchers who went down after the land redistribution. The total number of cattle decreased significantly when ranchers started to sell their cattle and put as many as possible on a small parcel of land." The survey data indicate that the total herd went from a pre-reform high of approximately 11,000 to 7,000, a decline of 36%. The drop in numbers was inevitable as ranchers had lost access to the prime grazing land in the expropriated zone and could not graze their entire herds on the greatly reduced parcels.

Declines in total herd size were also accompanied by sharp drops in the size of the largest herds. Before the reform, a large herd

consisted of 50-700 head of cattle, with an average herd being approximately 230. After the reform, a large herd consisted of 50-300 head, with an average herd of 89 head of cattle. Without access to extensive areas of pasture, the very large herds of the 1970's could no longer be maintained.

While the large ranchers have been negatively affected by the reform, the number of households engaged in ranching has increased by 70% from approximately 285 units before the reform to 485 units in 1986. Ranchers who were forced to reduce their herds sold their cattle quickly and at relatively low prices. Peasants who gained access to land and a cash settlement from the government for the expropriated property, purchased cattle and established their own small herds. The redistribution of land was consequently accompanied by a redistribution of wealth in cattle.

The increase in ranching units reflects a jump in the number of small herds. The number of herds with fewer than 10 head of cattle rose by 80% and herds with 10 to 24 head of cattle jumped by 125%. The number of medium-sized herds (25-49 animals) also grew when the large herds were cut back (Table: 4.9).

Table: 4.9 CHANGES IN THE DISTRIBUTION OF CATTLE

<u>CATTLE</u>	<u>PRE-REFORM</u>		<u>POST-REFORM</u>		<u>% DIFF.</u> <u>INCR. OR DECR.</u>
	<u>HLDS</u>	<u>%</u>	<u>HLDS</u>	<u>%</u>	
NONE	1195	81%	995	67%	- 17%
1 - 9	155	10%	280	57.7	+ 80 %
10 - 24	60	4%	135	27.8	+ 125 %
25 - 49	30	2%	45	9.3	+ 50 %
50 >	40	3%	25	5.2	- 38 %
1 - 50 >	285	19%	485	33%	+ 70%
TOTAL	1480	100 %	1480	100 %	-

N.B. Estimates for total Pajapan population based on survey data (N592) with an undersampling adjustment made to the category of large ranches based on interviews.

Table 4.10 indicates the class mobility factor, i.e., the villagers' previous and present class positions based on wealth in cattle. Figures indicating an absence of mobility are underlined: they indicate households whose wealth in cattle has remained the same over time (1980-86). They comprise approximately two thirds (67.4%) of the village population. Approximately 63% of the Pajapan population had no cattle prior to the reform and still have none after the reform. The redistribution of land has nonetheless permitted households without cattle prior to the reform to move into small-scale cattle ranching. Two thirds of all the households who now have between 1 and 49 head of cattle are newcomers to the industry.

Table: 4.10 CLASS MOBILITY*

<u>CATTLE AFTER REFORM</u>	<u>CATTLE BEFORE LAND REFORM</u>					TOTAL
	0	< 10	10-25	26-50	> 50	
NONE	<u>368</u>	32	5	2	1	408
1 - 9	79	<u>16</u>	11	4	1	111
10 - 24	28	11	<u>6</u>	5	1	51
25 - 49	5	1	1	<u>1</u>	0	8
> 50	0	2	1	0	<u>2</u>	5
TOTAL	480	62	24	12	5	583

* This table represents the sample population only. Large ranchers are underestimated.

The land reform dispossessed well-to-do ranchers of half of the arable land available in Pajapan and forced them to sell part of their livestock. Some peasants acquired the land and initial cash (expropriation money) needed to move into small-scale cattle raising. As a result, the overall size of the SCP class (farmers and small ranchers) has grown well beyond the limits imposed by the former land tenure system traditionally dominated by the large cattle ranchers. Nevertheless, there are still significant limitations on entry into the cattle industry: some 67% of the households in Pajapan are excluded from the cattle industry. The landless (40% of all households) have nowhere to graze cattle while many comuneros with 12 hectare parcels do not have the capital needed to buy their first few head of cattle. All inequalities in the distribution of wealth in cattle have by no means been eliminated.

Ranch Size and the Fragmentation of the Rancher Class

The redistribution of wealth in cattle resulting from the reform has been accompanied by greater fragmentation within the rancher class and among commodity producers engaged in small-scale cattle ranching. Different sized ranches face various kinds of land access problems and require dissimilar amounts of money to rent pasture, hire wage workers and meet subsistence needs. These differences in scale, control over capital, and profits, detailed below, have significant implications for the accumulation of capital by individual ranchers and for the growth of the industry as a whole. Before examining the profile of each ranch size, a general overview of the costs and benefits of cattle ranching indicates that the cattle industry is an effective means of capital accumulation fully integrated into the wider market economy.

Costs

The costs of raising cattle include labour (pasture maintenance and care of the cattle), pasture rental, supplies and medicine. In 1986, a total of some \$23,161 was paid in wages by cattle raisers to both *peones* and ranchhands for maintaining pasture and caring for cattle. This represents an equivalent of approximately 63 full-time wage workers, only 4% of the male labour force.¹ For every dollar spent

¹ Based on a daily wage of \$1.23 and 300 working days per year. The estimate of wage labour employed by the ranching sector may be slightly higher. A sectoral analysis of wage labour based on reports by workers, not ranchers, are presented in a later section on wage labour.

directly on wages by cattle ranchers, \$0.67 was spent on the rental of pasture; approximately 2,098 hectares of pasture were rented at a total cost of \$15,623. Considering that some two thirds of the communal property is devoted to pasture production, these costs are very low. Other costs included supplies (barbed wire, nails, rope, salt), and medicine (vaccines, parasiticide, tickicide) totalling approximately \$10,975.¹

Cash expenditures represent only part of the costs of raising cattle. To the costs of wage labour, pasture rental, supplies and medicine can be added the value of the labour power of the cattle raisers themselves. These additional labour costs can be calculated by assigning a value for self-employed labour equivalent to the local daily wage. Based on the estimates of labour requirements for pasture maintenance and care of cattle presented in Chapter Five, self-employed labour by the ranchers of Pajapan has a value of approximately \$68,468.

Benefits

Pajapan is a supplier of immature, poor quality calves for the regional and national market. As already noted, most of the cattle sold by ranchers from Pajapan are grown-out and fattened-up under more intensive conditions on outside ranches and then resold for

¹ Cost estimates for wage labour and pasture rental are based on the general survey (N592). Supply and medicine costs are based on a small sample of ranches of various sizes (N16).

slaughter in Mexico City and elsewhere. Tight control over the market for adult animals is exercised by ranchers in Coatzacoalcos and Acayucan who benefit from a supply of cheap 'feeder' calves raised in the mountainous areas of southern Veracruz such as Pajapan. The raising of calves is the riskiest and most labour intensive stage of cattle production and yet the net profits are lower: approximately \$108 for a calf and \$463 for adult animals. More ranchers in Pajapan would raise animals to adult weight if they had access to open markets and more pasture. The scarcity of dry-season pasture in Pajapan forces most ranchers to sell calves at the end of the wet season rather than raise them to adult weight (see Chapter Five for details). This has been particularly problematic for the ranchers of Pajapan since the loss of the fertile lowland and the dramatic reduction of parcels. As a result of these market and ecological problems, Pajapan's ranchers are dependent on outside ranchers who receive part of the surplus-value created in production.

Despite these limitations, the cattle industry is an effective means of capital accumulation. As already noted, two thirds of Pajapan's land base is devoted to pasture production and while the reform has forced a reduction in the total herd, it still numbers approximately 7,000 animals with a market value of almost a million dollars.¹

¹ The estimate of total market value is based on a ratio of 4 adult cows (\$155 U.S. each) for every 6 calves (\$123 U.S. each). See Chapter Five for details.

Table: 4.11 CALVES SOLD:RETAINED

#NEW CALVES	#CALVES SOLD	#CALVES RETAINED	SOLD : RETAINED
2,100	1,199	901	1 : 0.75

Table: 4.12 COST-BENEFIT ANALYSIS FOR CATTLE INDUSTRY

#HEAD	\$VALUE	SALES\$	COST\$	SALES\$ PROFIT	RATE SALES PROFIT	CAPITAL ACC.
7,000	950,600	147,485	118,227	29,258	3.1%	14.7%

In 1986, cattle sales totaled \$147,485.¹ Costs for the same year, including the value of self-employed labour, totaled \$118,227, leaving a net sales profit of only \$29,258 and a rate of sales profit of only 3.1%. To this modest sales profit must be added the value of the new calves retained for expansion of the herd. Based on rates of reproduction analyzed in Chapter Five, an estimated 2,100 new calves must have been produced in 1986, resulting in a total increase in the herd of about 30%. Approximately 1,199 animals (17% of the herd) were sold and 901 animals (13% of the herd) were retained.² Considering the sales profits and the value of the animals retained, the rate of capital accumulation was 14.7%, a favourable

¹ Total sales are derived from the survey data with an undersampling adjustment to the large ranches.

² The number of calves sold was estimated from sales data assuming an average value of \$123 per calf.

return on investment compared to other sectors of the rural economy (Tables: 4.11 and 4.12).¹

Ranch Size

The costs and benefits outlined above vary considerably for ranches of different sizes. Ranches in Pajapan can be divided into four types, each with a distinct potential for capital accumulation and the diversification of investment (Tables 4.13, 4.14, and 4.15).

Table: 4.13 COST-BENEFIT ANALYSIS BY RANCH SIZE*

/-----A-----/				B	B - A		
CATTLE	RENT\$	WAGES\$	SUPPLIES\$	SELF-EMP.\$	SALES\$	PROFIT\$	RATE
< 10	5	5	14	77	107	6	1.1%
10-25	23	23	23	230	335	36	1.9%
26-49	93	151	35	230	535	26	0.5%
> 49	276	472	95	230	1916	834	6.9%

* N.B. Average values in \$ U.S. for each category. RATE is rate of profit in %.

Table: 4.14 RATE OF HERD EXPANSION

CATTLE	#NEW CALVES	#CALVES SOLD	#CALVES RETAINED	SOLD:RETAINED
< 10	1.2	0.9	0.3	1 : 0.33
10-24	4.2	2.7	1.5	1 : 0.56
25-49	11.1	4.4	6.7	1 : 1.52
> 50	26.7	15.6	11.1	1 : 0.71

¹ The rate of sales profit is the net profit divided by the total value of the herd (ie. initial investment). The rate of capital accumulation is the sales profit plus the value of the calves retained divided by the total value of the herd.

Table: 4.15 HERD INCREASES AND CAPITAL ACCUMULATION*

<u>CATTLE</u>	<u>\$ HERD</u>	<u>PROFIT\$</u>	<u>VALUE CALVES RETAINED</u>	<u>CAPITAL ACC.</u>
< 10	543	6	37	7.9%
10 - 25	1901	36	185	11.6%
25 - 49	5025	2	824	16.9%
> 49	12086	834	1365	18.2%

* N.B. Average values in U\$ for each category. Capital Accumulation = Profits + Value of Calves Retained/ Value of Herd.

Ranches with fewer than ten head of cattle cannot rely on cattle raising alone for their livelihood but rather must also engage in agriculture, petty trade, crafts or wage labour. On average, households in this category own four head of cattle. Wage labour costs, pasture rental, supplies, medicine and self-employed labour are very limited but so too are sales, leaving almost no sales profit or a very low rate of sales profit (Table: 4.13). A higher proportion of calves are sold than retained, resulting in a reduced rate of herd expansion (Table: 4.14). These ranches are also very vulnerable to the loss of an animal through disease, accident or unexpected demands on savings (eg. family illness). At best, these ranches earn a limited cash income and savings in the form of a herd nucleus (Table: 4.15).

Small ranchers (10-24 head of cattle) can reduce their dependence on agriculture and dedicate themselves mainly to raising cattle. The average herd for this category is 14 animals, a ranch

size slightly beyond the sustainable stocking rate of a typical 12 hectare parcel of pasture (ten animals; see Chapter Five). As a result, average costs for wage labour, the rental of pasture and the costs of supplies and medicine are somewhat higher than for smaller ranches. Nevertheless, small ranchers provide most of the labour requirements themselves. Very small profits are realized by ranches of this size and a high proportion of the new calves are sold. This puts severe limits on the expansion of the herd. These ranches need all the cash from the sale of their calves for subsistence and production costs and the expansion of their herds is constantly restricted by the upper grazing limits of their own pasture and ability to rent additional pasture.

Medium ranchers (25-49 head of cattle) are independent of agriculture and other sources of income and sell enough cattle to meet both subsistence needs and increase their capital. Herds of this size (average 37 head of cattle) must be broken into groups and grazed on different 12 hectare parcels. Rental costs are therefore relatively high as are wage labour costs and costs for supplies and medicine. Day-workers are hired to maintain pasture and move cattle from one paddock to another. Sales of cattle cover these costs but very little cash profits remains. The rate of sales profit is the lowest for all ranch sizes (0.5%). In this case, however, low profits may reflect a growth strategy on the part of medium ranches. They sell enough new calves to cover costs and retain a much higher than average proportion of the expanded herd. Medium

ranches occupy the most dynamic position within the local industry because there have enough capital to rent pasture, hire wage labour, etc. but their herds are still small enough that access to Pajapan's scarce pasture resources is not too difficult. Their growth strategy differs from both the capital-poor small ranches and from the excessively large ranches.

Large ranchers own an average of 89 head of cattle and a maximum of some 300. Because of the labour and pasture requirements of such large herds, costs are considerably higher than for any other ranch size. Many large ranchers hire full-time ranch hands and 'lease' parcels from landowners. Long-term lease arrangements often relieve the landowner of the responsibility for developing and maintaining the pasture. It is generally agreed that arrangements of this sort amount to the illegal sale of parcels. Sales by these ranchers are much higher than any other group, as is the rate of profit. High absolute profits reflect the relatively stagnant situation of large ranches. Because pasture is often difficult to find in quantities adequate for large herds (especially during the dry season), these ranchers must sell a high proportion of their new calves; one animal for every 0.71 animals retained. Large ranchers are often forced to sell more calves than they want to and reinvest their profits in bank accounts and other businesses such as stores, trucks and taxis.

In summation, the cattle industry in Pajapan has adapted to the limits imposed by the land reform by creating a number of

categories of cattle raisers whose economic survival is dependent upon a subordinant relationship to the wider market economy. Cattle ranchers in Pajapan as a whole continue to supply cheap, poor quality feeder stock to the regional industry and conform to low profits and high risks. Internally, divisions have developed between classes of ranchers with varying degrees of control over the means of production. Peasants with a few head of cattle and small ranchers realize limited cash incomes and savings from their labour, while owners of medium and large ranches are restricted in their ability to expand the scale of their operations by limited access to land and the domination of larger outside ranchers and merchants. The result is a highly fragmented cattle industry characterized by a dependent peasantry and a relatively weak branch of ranching capital.

Small Businesses and Merchant Capital

The land reform and the fragmentation of agricultural capital has encouraged the development of small businesses in Pajapan. One out of every four households is engaged in a business or trading activity based on self-employment. However, the data suggest that a distinction should be made between the few small businesses which generate profits and the trading activities that provide limited cash earnings to meet household subsistence needs (Table: 4.16).

There is no big business or large-scale concentration of merchant activity in the hands of a few well-to-do Pajapeños. The largest investment in fixed capital is \$5000. Most of these small-scale businesses consist of stores, taxi services and cattle brokerages.¹ As shown below, many are owned by ranchers who cannot reinvest their profits in the cattle industry because of limited access to pasture. While the trend in the sixties and the seventies may have been for small merchants to invest in the cattle industry to increase their profits, the present trend is for ranchers to open up small businesses in lieu of increasing their herds. The development of merchant capital is nevertheless restrict by the low purchasing power of most Pajapeños and the small amount of commodities produced by the local economy.

Table: 4.16 MERCHANT CAPITAL

		U\$	A	B	B/A	AV.	AV.	> 12 HA.
		<u>N ASSETS</u>	<u>CIRC.CAP.</u>	<u>PROFITS</u>	<u>RATE OF P.</u>	<u>M-D</u>	<u>CATTLE</u>	<u>RANCH</u>
CAT.MERCHTS	17	-	1,300	240	18%	< 6	34	57%
TAXI-OWNERS	11	1,600	380	10	3%	28	27	36%
S.MERCHTS	34	450	200	75	37%	28	13	53%
P. TRADE	11	130	150	20	13%	28	0	0%

N.B Monthly figures. Subsistence costs (wage earnings) have been deducted from the profits made by Taxi-owners, merchants and store owners. > 12 Ha. ranch refers to landownership prior to the reform.

¹ To this list should be added three small restaurants, two pharmacies and a hotel (owned by an ex-rancher). Two wealthy ranchers also deliver gravel and produce cement blocks for local construction.

Cattle Merchants

Cattle merchants are few in number: between 15 and 20 in Pajapan. They usually buy and resell nine or ten local animals per month, transporting the animals by truck to cattle brokers in Coatzacoalcos, Minatitlán and Acayucan. Most of the cattle are calves that need to be sized and fattened on regional ranches before slaughter, although occasionally older animals which have had accidents or cows with problems of infertility are sold directly to slaughterhouses. The costs of transportation are high and only a few trucks owned by the wealthiest ranchers in Pajapan are available. Nevertheless, profits are also significant; cattle merchants make an average net profit of \$240 per month and an 18% rate of profit on their initial investment. This is enough to potentially increase their herd by 20 head of cattle per year. Cattle merchants earn more profits than any other small business.

Most cattle merchants had land and cattle of their own prior to the reform. Although one third of the cattle merchants are also large ranchers, the majority own fewer than 50 head of cattle (average of 34). In the class typology presented earlier, cattle merchants have been classified as business owners (43%) or ranchers (57%), depending on the importance of their trading activity relative to their wealth in cattle.

Taxi-owners

There are eleven locally-owned taxis, all of which started servicing Pajapan in recent years. The first taxi to operate in the communal area appeared in 1980. The taxis operate seven days a week and are usually driven by the owner, his son, or in some cases (3) a *peon* receiving the minimum wage. The cars are worth between \$1,000 and \$3,000 (average of \$1,600). Monthly earnings amount to approximately \$440, which is barely enough to cover costs in labour (\$50), fuel expenses (\$180), car repairs and replacement costs (\$200/mth).¹ Unlike the cattle merchant, a taxi-owner makes little profit over time; at best he will provide for the needs of his family (or his *peon*) and reproduce his investment over time: i.e., a car worth approximately 12 head of cattle.

These small business owners usually have cattle as well, on average 27 head. Seven of the cars are owned by households that had little or no wealth in land or cattle prior the reform. They purchased taxis with money earned in other sectors of the economy, usually wage earnings from urban employment. The remainder reinvested their cattle and land wealth in a taxi following the reform.

¹ Amortized over a five year period.

Local Stores

Prior to the sixties, there was virtually no commercial activity in Pajapan. In the absence of roads and bus service, villagers had to transport foodstuffs (corn, fruit, livestock) by horse to Coatzacoalcos and sell them in exchange for the money needed to purchase a few manufactured goods (machetes, pots and pans, etc.). Even during the 1970's there were limitations on the expansion of merchant business because of the population's low level of cash earnings; only two stores presently in the village of Pajapan existed prior to 1978. Profits earned in the sixties and seventies were usually reinvested in cattle, not small businesses.

The land reform and sudden infusion of cash into the local economy following the expropriation has resulted in the proliferation of small stores; two out of every three stores started in the eighties. Personal savings or the sale of one or two calves was enough to stock a small store with a few household goods imported from Acayucan -- oil, soap, candles and matches, pots and pans, sugar, rice, coffee, biscuits, tin food, soft drinks, stationery, sandals, clothes, etc. By 1986 there were 45 stores in Pajapan.

Eleven *tiendas* consist of family stores (often attended by a woman) that have less than \$200 invested in merchandise (av. \$130) and that generate subsistence earnings but very little profit; their owners have been classified as petty traders rather than small merchants. They buy about \$150 worth of merchandise per month which they sell for a total sum of \$215, hence a wage-like earning

of \$45 and a net monthly profit of \$20. None of them have cattle nor did they have land in the seventies.

There are 34 stores owned by small merchants with average assets of \$450 (range from \$150 to \$1200). These merchants buy on the average \$200 worth of merchandise per month (range \$100 to \$600). Unlike petty traders, they manage to generate a substantial monthly profit -- around \$150, part of which (min. \$50) is needed to provide for household needs. The maximum profit reported in our census was \$300 per month (before subsistence expenses). The ratio of net profit to circulating capital is 38%, a good return on investment. Most stores are attended by the owner, his wife or an adult child.

Approximately 53% of the larger store owners had cattle and more than 20 hectares of land (av. 44) prior to the reform. Two thirds of these small retail businesses are still owned by small ranchers who have between 10 and 20 head of cattle; a few stores are owned by large ranchers. For these ranchers, stores are an alternative form of savings and investment in an economy where the development of the cattle industry is restricted.

While small businesses may be the only local alternative to the cattle industry, the poverty and low population density of Pajapan restrict the development of merchant capital as well. There are few customers and their cash earnings are low. Merchants in Pajapan employ a limited number of wage workers and own little in the way of 'factors of distribution' (storage facilities, pick-up trucks). Very

few store owners can afford to sell on credit or purchase agricultural goods for resale in the cities. Most of what they sell consists of articles of personal consumption bought in small quantities and with limited price reductions from Acayucan suppliers. They compete with each other, with stores in the city, and with petty traders who make a living at retailing merchandise at the lowest possible price. As a result, the total capital accumulated over time is divided among many different stores of various sizes. The business of a village merchant remains very modest in comparison to the commercial operations of his urban supplier. Needless to say, the fragmentation of rural merchant capital serves the interests of the urban supplier. In the words of one merchant, small store owners 'don't do business; they work for Acayucan suppliers.'

Credit and Savings

The fragmentation of merchant capital has undermined the development of financial capital and the operation of credit in the local economy. Only about 4% of the households in Pajapan have loans, ranging from as little as \$3 to a maximum of \$554. It totals an estimated \$4603, virtually all of which is money loaned by individuals. The state-owned banking institutions have no presence in Pajapan. Businesses account for 69% of the money borrowed and have by far the highest average debt (\$319). A few small ranchers,

petty traders and farmers have very small loans, usually less than \$80.

Savings, usually in the form of money in the bank, are also rare. Approximately 11% of all households in Pajapan have savings, ranging from \$15 to a maximum of \$3077. Cash savings in the local economy total about \$72,623. Ranchers and business owners account for about 48% of the households with savings and 60% of the total value. Large ranchers all have money in the bank, averaging some \$1616. This finding reinforces earlier claims that ranchers have few opportunities to expand their ranches and must invest their capital in other sectors of the economy, including financial institutions outside of the community.

Small-Scale Commodity Production and Distribution

The land reform won through the struggle of peasants has resulted in a resurgence of small-scale commodity production. More peasants are engaged in the production of corn and other foods as well as pasture for grazing cattle than was the case prior to the reform. Nevertheless, an analysis of these sectors of the local economy indicates that important differences in productivity and the use of labour power continue to divide the community along class lines. These divisions are not necessarily indicative of the integration and subordination of peasant labour to capital. Rather, structural disarticulation from the wider economy is also an effect of peasants

struggles to control access to vital means of subsistence and retain a degree of independence from capital dominated markets.

Corn

While the development of the cattle industry pushed peasants out of agriculture and into other sectors of the local and regional economy, the land reform cleared the way for a partial return to *milpa* cultivation; some 80% of the local population cultivate a small plot of corn compared to a much lower proportion prior to the reform.¹

Involvement in corn production is greater for classes dependent upon it for family consumption. More than 90% of subsistence producers and subsistence-wage workers have *milpas*; they comprise almost half of all corn-producing units. Approximately 82% of all farmers and farmer-wage workers are engaged in corn production as are 75% of the small ranchers and tradesmen. By contrast, only two thirds of the business owners, large and medium ranchers produce corn; these well-to-do families are few in number and represent less than 5% of all corn producers.

The actual size and yield of a corn plot, whether per family or per hectare, also varies from class to class (Figure: 4.3). The available data (466 cases) point to three different class profiles (Table 4.17)²:

¹ The survey data and interviews with local informants suggest that only about half of the population was engaged in *milpa* cultivation.

² The findings given below are from the general census (N601) and have been confirmed with data from an independent agricultural survey.

Table: 4.17 CLASS PROFILE OF CORN PRODUCTION

<u>CLASS</u>	<u>% UNITS</u>
1/ SMALL RANCHER, PETTY TRADE, TRADES, SUBSISTENCE-WAGE WORKER	63 %
2/ SUBSISTENCE CLASS	8 %
3/ BUSINESS, L. & M. RANCHer, FARMER AND FARMER-WAGE WORKER	29 %

Figure: 4.3 Corn Productivity by Class

The first group is involved in various market activities (small-scale ranching, trading, trades, or wage work) and as a result produces less corn on the average than the other groups. Although they comprise 63% of all corn-producing units, they account for barely more than half of the total land cultivated and corn harvested. They have relatively smaller *milpas* (0.64 ha), a lower output per

unit (0.97 MT), and a lower yield per hectare (1.29 MT, wet season corn only).¹

Subsistence producers (group 2) depend on corn production more than any other class. Their resources, however, are severely limited and this results in only an average production profile. They represent 8% of all households that cultivating corn and account for 9.6% of total production and land devoted to corn. They have an average-size *milpa* of 0.87 ha, a normal output of 1.36 MT per unit, and a slightly higher than average yield of 1.48 MT per hectare (wet season only).

Farmers, businessmen and owners of large and medium ranches who cultivate corn (Group 3) tend to be more productive than the preceding classes. This stems from one of two reasons. either they are engaged in production for the market (farmers) or the economic resources of the class (businessmen, ranchers) make it possible to work the land more effectively. They comprise 29% of all corn-producing units, yet they account for close to 40% of total corn production and land devoted to corn. They have larger *milpas* (1 ha), a higher than average output per unit (1.61 MT), and also a higher yield per hectare (1.62 MT, wet season only).

Corn is produced mostly with family labour. Households that hire workers purchase on average 7 person-days per season, hence less than 10% of the total labour requirements for corn production (81

¹ Good-quality parcels are unequally distributed among the classes, but not along lines that match our analysis of corn production by class.

days; see Chapter Five for details).¹ There are, however, class differences in the utilization of labour power. Wealthier families rely more heavily on wage labour to produce corn for family needs. Approximately 81% of business owners and well-to-do ranchers hire peones to work on their *milpas* (12 person-days on the average). By contrast, only 28% of subsistence-wage labourers hire other workers to help in the production of corn (5 person-days on the average).

Virtually all of the local corn production is consumed by the producers themselves. The small quantity of corn sold by farmers and farmer-wage workers is purchased by other peasants directly from the home of the producer, without the intervention of merchants.

For many peasants, the objective of the land reform was to regain access to land for a subsistence milpa. While comuneros have attained this and while access to land through rental arrangements is probably easier for landless peasants now than it was prior to the reform, corn production is not the same for all classes. Important class differences exist in productivity and the utilization of labour power. Despite these indications of class differentiation, the production of this vital subsistence product occurs outside of the sphere of capital-dominated markets.

¹ The agricultural survey indicates that an average of 21 days of wage labour were used by farmers, hence 30% of their labour requirements).

Other Food Crops

The land reform has made it possible for more peasants to grow a variety of food crops. Approximately 295 households or 20% of the communal population produce some crops other than corn, including beans, sweet potatoes, prickly pears, manioc, plantains and different kinds of fruit. The production profile for each plant is given in table 4.18. Approximately 69% of agricultural production from these crops is sold on local and regional markets. Although precise data on the activities of agriculturalists prior to the reform is not available, local informants indicate that very few households were producing and selling agricultural products during the 1970's.

Table: 4.18 PRODUCTION PROFILE OF FOOD CROPS

	<u>HLDS</u>	<u>HA</u>	<u>MT</u>	<u>VALUE US</u>	<u>HLDS SELL</u>	<u>% SOLD</u>	<u>HLDS HIRE</u>	<u>WAGE</u>
BEANS	125	44	33	3,779	35%	35	31%	\$465
S.POTATO	43	28	101	3,108	100%	74	30%	\$170
MANIOC	33	19	228	4,388	62%	79	23%	\$140
CHAYOTE	20	5	145	3,346	100%	90	13%	
BANANA	22	5	-	-	37%	-	0%	0
<hr/>								
TOTAL	243	101		14,621	56%	69	28%	\$775

While commercial crop production has increased, it is still a relatively undeveloped sector of the local economy. The total number of hectares devoted to horticulture is limited by the

expansion of the cattle industry to approximately 100 hectares, less than 1% of Pajapan's arable land. The total value of production (\$14,621+) is also very limited in comparison to cattle production (\$1 million) and the market value of subsistence corn production (\$150,000). Furthermore, there has been little development of the agricultural labour market: only 28% of the horticulturalists hire seasonal wage workers.

Class differences in agricultural crop production can be related to environmental factors. Crops that can be preserved or harvested gradually (beans, manioc, bananas) are often used to supplement the peasants' subsistence needs while crops that must be harvested all at once and that are difficult to preserve (e.g., yams, prickly pears) are usually sold on the market to provide the family with cash earnings. These differences are reflected in the class profile of the main agricultural crops produced by farmers, farmers-wage workers and subsistence wage-workers (three quarters of all producers) (Table 4.19).

Table 4.20 PRODUCTION PROFILE OF PETTY TRADING AND TRADES

	<u>N*</u>	<u>DAY/WK</u>	<u>EARN/WK</u>	<u>EARN/D</u>	<u>D.WL†</u>	<u>ASSETS</u>	<u>WK PURCH</u>
SMALL STORES	6	6.50	\$ 17.11	\$ 2.63	16.7	\$ 130	\$ 37
CANTINAS	11	4.82	11.23	2.33	7.0	867	34
PETTY TRADE	27	4.04	11.25	2.78	4.5	6	27
FRUIT VENDORS	40	3.04	17.55	5.78	9.6	0	22
CARPENTERS	26	4.23	12.63	2.99	16.1	39	5
BAKERS	11	5.73	24.40	4.26	36.2	83	38
BUTCHERS	8	2.42	26.15	10.81	54.9	40	76

* Survey sample data only are presented.

† Total person days of wage labour hired per trade.

• Horticultural labour input and land property value not included.

One out of five village households is engaged on a part-time or full-time basis in petty trade or semi-skilled crafts and trades. The vast majority are the poorer families of Pajapan, i.e., peasants who do not have businesses or cattle. Two thirds of these families spend three days a week or more in trade-work or trading; they make up the two classes called petty traders and trades people (see class typology). The remaining cases consist of subsistence-wage workers and farmers selling fruit or engaged in petty trade on a part-time basis.¹ Although acquired with fewer days of work, earnings by these workers are comparable to the wages of a full-time *peon* -- \$15 a week on the average. Thus, the net income of

¹ Subsistence-wage workers (full-time subsistence producers included) comprise 12.4% of the traders and craftworkers; the corresponding figure for farmers (farmer wage workers included) is 15.5%.

subsistence-wage workers) have the lowest productivity: they cultivate smaller areas of land and harvest less than other classes. There are fewer farmers and farmer-wage workers producing beans and they tend to produce more, on the average, while also selling a greater proportion of their harvest on the local market. Full-time farmers (ie. farmers who do not engage in wage-labour) are the most productive of all.

Unlike beans, 75% to 90% of the yam and the prickly pear harvest is produced and sold on the market by farmers and, to a lesser extent, farmer-wage workers. Few subsistence-wage workers grow yams or prickly pears. As for manioc and plantains, production follows a dual logic: farmers harvest and sell larger than average quantities of these staple foodplants, whereas subsistence-wage workers tend to produce smaller quantities to meet household consumption needs.

In conclusion, the land reform has increased the villagers' capacity to provide for their own subsistence needs but commercial production continues to be severely restricted by the scarcity of good agricultural land and the absence of commercial networks for production. In this context, significant differences in levels of production and productivity have developed between agricultural producers, thereby contributing to the greater fragmentation of the working classes. Nevertheless, the degree of integration of peasant labour into the wider market economy is limited by the orientation

of agriculture toward the production of articles consumed by the producers themselves or sold to other peasants on the local market.

Pasture Production

The redistribution of land among peasants has made it possible for *comuneros* to engage in a new form of small-scale commodity production: the sale of pasture for grazing cattle. Pasture is in constant demand, especially during the dry season, and even the least developed of parcels can be rented out to generate some income for cash-poor peasants. Despite the scarcity of pasture, the price is very low. Most *comuneros* have few short-term alternative uses for their land beyond the few hectares needed to grow corn and they lack the financial resources required to buy cattle of their own or invest in commercial crop production.

Peasants receive approximately \$0.75 per month for each head of cattle grazed on their pasture and on average earn some \$50.00 per year for the rental of part or all of their 12 hectare parcels. This income barely covers the labour costs of producing pasture. The preparation of land for pasture production requires the investment of labour by the *comunero* in clearing land, burning the vegetation and repairing fences. The local cost of labour and materials required to maintain a 12 hectare parcel of pasture is approximately \$36 per year, leaving a net earnings of only \$14 per year. Thus, while pasture is a commodity on the local market, it is remunerated at a rate equivalent to the amount of wage labour used in its production.

The 'ground rent' is transferred to ranchers who benefit from the labour power invested by peasants in the production of a commodity essential to capital accumulation in the cattle industry.

Livestock

Another form of commodity production is the raising of livestock other than cattle. One out of every two households own one or two horses, in total some 513 animals. Horses are essential to the management of cattle and can easily be grazed on the pastures of Pajapan at little cost. Horses are occasionally sold locally to peasants who work as ranch hands for cattle ranchers or who wish to establish cattle ranches of their own. Other forms of livestock raised and sold locally in very small quantities include pigs and chickens. One out of every five households own pigs (2-3 animals each) and 6% raise chickens (10-15 animals per household).

Livestock production has a definite class profile. The proportion of each class with horses and the number of horses owned by each household increases from the poorest subsistence-wage workers to the large ranchers. Pigs are raised by small ranchers with the financial resources needed to buy feed and subsistence producers with surplus corn production. Most of the households raising chickens (70%), the least costly of domestic animals, are from the poorest classes in Pajapan: subsistence wage-workers, subsistence producers, petty traders and farmer-wage workers.

Fishing

Lagoon and ocean fishing have been part of the subsistence economy of Pajapan since time immemorial. Garcia de Leon (1976:119) notes that the local dialect of Nahuatl has an enormous number of terms referring to aquatic animals and suggests that fishing was once a more important economic activity than it is today. Nevertheless, in recent years fishing has become an important alternative to wage labour for peasants displaced from the agricultural economy.

Lagoon fishing fell into complete decline during the 1950's and early 1960's. Wave action had moved the narrow passage between the lagoon and the ocean further from the main body of the lagoon. Fresh water still escaped into the ocean during the wet season but ocean tides exercised less influence over the lagoon. This caused a drop in the salinity of the lagoon water and the destruction of habitat suitable for oysters, clams and many species of ocean fish. During the land crisis, villagers from Pajapan and San Juan Volador organized a massive work party in 1965 to improve the productive potential of the lagoon. A new passage was dug that allowed the tidal waters to enter the lagoon with greater force and in a few years the aquatic resources of the lagoon began to recover.

Once fish and shellfish populations were restored, an increasing number of landless peasants turned to fishing as a means of subsistence and, in some cases, as a full-time commercial activity. As already noted, the villages of Jicacal and Las Barrillas were established on the shores of the lagoon by peasants from Pajapan

and San Juan Volador who had been displaced by the expanding cattle industry. Despite the land reform and the return to agriculture it has facilitated, many Pajapeños continue to fish. The survey data indicate that at least 45% of the communal households are engaged in fishing, usually one or two days per week.¹ This represents an equivalent of 107 full-time fishers. A third of these fishers are either very young or elderly women not fully employed in domestic work or in the care and feeding of children. The population of male fishers is mainly composed of boys and young men with the stamina and condition to cast nets and dive for the commercially valuable clams and oysters. These workers provide an important complement to the household economy of Pajapan's poor.

Fishing is an important alternative for the landless in Pajapan: some 58% of fishers are landless, compared to 40% in the general population. Approximately 58% of all households in the subsistence-wage worker class are engaged in fishing compared to only 25% of the small ranchers and none of the owners of capital.

The majority of fishing by Pajapeños is for subsistence. Approximately 80% of fishers consume all of their catch while the rest sell an average of \$30 per month for about 8 months of the year. Fish prices are low, especially during the peak season

¹ Because of proximity to both the lagoon and the ocean, the proportion of fishers is probably higher in San Juan Volador. Although the class analysis of fishing that follows is based on a survey of the Pajapan village population only, its findings apply to approximately 80% of the communal population.

Nevertheless, in 1986, sales by all fishers from Pajapan totalled \$29,120, more than total sales of food crops. This small but productive sector of the rural economy produces cheap, protein-rich food consumed by peasants and urban wage workers employed by capital.

Petty Trading and Skilled Trades

Pajapeños no longer produce most of what they need as they did a few decades ago. Subsistence production is a vital component of their daily livelihood, yet peasants must engage in other forms of labour -- simple commodity production, wage work, petty trade or trade work -- if they are to obtain the cash earnings required to purchase basic commodities such as food, clothing, building materials, machetes, etc. The movement of labour into non-agricultural sectors has diversified the base of capital accumulation and increased the level of market integration compared to the subsistence economy of the past. As we shall see, however, petty trading and trades are subject to limitations such as high transportation costs, small markets, and low levels of production resulting from natural constraints (e.g. seasonality of fruit production) (Table: 4.20). These problems have contributed to the further fragmentation of the working classes while at the same time undermining the development of merchant capital.

Table: 4.20 PRODUCTION PROFILE OF PETTY TRADING AND TRADES

	<u>N*</u>	<u>DAY/WK</u>	<u>EARN/Wk</u>	<u>EARN/D</u>	<u>D WL†</u>	<u>ASSETS</u>	<u>WK PURCH</u>
SMALL STORES	6	6.50	\$ 17.11	\$ 2.63	16.7	\$ 130	\$ 37
CANTINAS	11	4.82	11.23	2.33	7.0	867	34
PETTY TRADE	27	4.04	11.25	2.78	4.5	6	27
FRUIT VENDORS [§]	40	3.04	17.55	5.78	9.6	0	22
CARPENTERS	26	4.23	12.63	2.99	16.1	39	5
BAKERS	11	5.73	24.40	4.26	36.2	83	38
BUTCHERS	8	2.42	26.15	10.81	54.9	40	76

* Survey sample data only are presented.

† Total person days of wage labour hired per trade.

§ Horticultural labour input and land property value not included.

One out of five village households is engaged on a part-time or full-time basis in petty trade or semi-skilled crafts and trades. The vast majority are the poorer families of Pajapan, i.e., peasants who do not have businesses or cattle. Two thirds of these families spend three days a week or more in trade-work or trading; they make up the two classes called petty traders and trades people (see class typology). The remaining cases consist of subsistence-wage workers and farmers selling fruit or engaged in petty trade on a part-time basis.¹ Although acquired with fewer days of work, earnings by these workers are comparable to the wages of a full-time *peon* -- \$15 a week on the average. Thus, the net income of

¹ Subsistence-wage workers (full-time subsistence producers included) comprise 12.4% of the traders and craftworkers; the corresponding figure for farmers (farmer wage workers included) is 15.5%.

most petty traders and trades people barely covers basic subsistence costs.

Petty Trading

There are approximately 170 families in Pajapan that derive some earnings from retail trade. They buy and sell fruit, fish, bread, milk, baskets, canned food, oil, soap, sugar, coffee, soft drinks, beer, stationery, etc. They peddle fresh food in the village, in a neighbouring community or in the city, on a daily or a weekly basis. Some of them put up a market stall, cantina or a small store in the village and buy manufactured goods from a local merchant or a supplier usually based in an urban centre. They hire very little labour and purchase between \$22 and \$27 worth of merchandise per week on the average, most or all of which they sell for a weekly income of \$11 to \$18.

Cantina and small store owners have more expenditures and wealth invested in merchandise than itinerant vendors. Their daily earnings, however, are about the same because the rate of return on the retailing of manufactured goods imported from city merchants is lower than for fresh foods bought in the Pajapan area and peddled in the village or elsewhere. It should be noted that the assets reported by the owners of cantinas (average \$867) usually consist of merchandise loaned to them by beer companies rather than capital they actually own. Like the small storekeepers, they are dependent

upon their suppliers. Although apparently self-employed, they essentially work as rural distributors for city merchants.

Itinerant traders work three or four days a week buying and selling fruit and fish. They purchase the merchandise one to three times a week and retain very little of the perishable stock. The cost of transportation by bus to the cities and towns of the region reduces their net income by as much as 25% to 35%.

Fruit vendors occasionally sell seasonal products of their own labour and land, thereby reducing their weekly expenses and increasing their net income to \$17.55 a week. Compared to other vendors, they make more money with less labour (one day less a week on the average). Vendors go three or four times a week to one of the markets in Coatzacoalcos where they pay a fee for a sidewalk stall. They usually travel by way of Chinarneca, the longer but better serviced route, leaving at five in the morning and returning late in the afternoon.

Fish vendors buy four to ten kilos of fresh fish or seafood from lagoon or sea fishers in Jicacal, Playa Linda or Las Barrillas every three or four days. They salt or cook the fish before taking it to neighbouring Indian communities (Tatahuicapan, Huazuntlán, Mecayapan). Trips are interrupted by a day or two devoted to other tasks prior to buying more fish. The merchandise is sometimes exchanged for corn and the price may be reduced for poorer customers. These practices are indicative of the disarticulation of petty trade from the wider market economy.

Trades

There are also about 90 carpenters, bakers and butchers in the village. The earnings of carpenters are not all that different from those of small store owners and itinerant vendors of Pajapan. Table 4.21 gives a detailed account of the weekly production, sales and profits of an experienced, full-time carpenter who makes chairs for urban customers. Wood workers are faced with three basic problems not easily resolved: the scarcity of good quality wood (e.g., mahogany, caoba), the limited demand for furniture in Pajapan, and the high cost of transportation to the city (an expense that urban carpenters do not have). In response to these problems, a carpenters' cooperative built a workshop in 1972 with funds provided by the Instituto Nacional Indigenista, a federal agencies responsible for Indian people in Mexico. However, limited demand for their products undermined the viability of the cooperative, which soon went out of business. The workshop has ended up in private hands.

Table: 4.21 CASE STUDY OF A CARPENTER'S WEEKLY PRODUCTION

<u>CHAIRS</u>	<u>LABOUR</u>	<u>COST\$</u>	<u>TRAN\$PORT</u>	<u>SALES</u>	<u>NET EARNINGS\$</u>
2 LARGE	2 DAYS	4.62		12.30	
14 MED. & SMALL	4 DAYS	17.22		32.34	

TOTAL	6 DAYS	21.84	9.00	44.64	13.80

Bakers and butchers tend to be better off than carpenters (Table: 4.22). The available data indicate that they make about twice as much money per week as vendors and carpenters. They usually have title to land and some wealth invested in tools, machines, or, in the case of butchers, cattle. Bakers also employ wage labourers more often than the vendors and rarely work for wages themselves.

Table: 4.22 CLASS INDICATORS OF PETTY TRADERS AND CRAFT WORKERS

	<u>CATTLE</u>	<u>% LANDED</u>	<u>HA BEFORE*</u>	<u>WL/WK†</u>
SMALL STORES	0.0	50	0.3	1.20
CANTINAS	2.3	55	12.4	1.22
PETTY TRADE	1.1	55	6.9	1.27
FRUIT VENDORS	1.0	58	6.1	2.17
CARPENTERS	0.6	73	4.1	0.90
BAKERS	0.3	83	5.6	0.80
BUTCHERS	4.3	88	17.9	1.14

* Hectares of land prior to the reform.

† Days of wage labour worked per household per week.

Most of the butchers are small ranchers, or used to be, prior to the reform. They have now formed an association that controls entry into the trade and the price of meat sold at the local market. Butchers work two to three days a week and generate a sizeable rate of profit (20%, or \$11 per day) on what they sell. Nevertheless, the low cash earnings of peasants in Pajapan restricts the quantity of meat sold at the market and overall profits.

Despite the fact that beef is produced locally, the cost of meat in Pajapan is higher than in the city and beyond the means of most

peasants. A kilo of meat costs more than twice the daily wage paid to workers who clear the pasture and repair the fences on ranches. Peasants contribute to the production of commodities they cannot afford to buy themselves.

There are approximately 33 bakers in Pajapan, a dramatic increase over the two or three who operated in Pajapan in the sixties. Some bakers sell bread to vendors who seek customers from house to house and from one village to another. Although they make bread six days a week, they earn no more than butchers earn in two or three days, i.e., about \$25. Bakeries are particularly vulnerable to fluctuations in the price of flour which they buy in Acayucan. The elimination of a government subsidy on flour during the period of survey data collection (May, 1986) was forcing many bakers to abandon the business.

In summation, the development of cattle ranching and the concentration of land ownership forced some peasants out of agriculture and into petty trade and craft work. While this development has integrated peasant labour into the wider market economy, the level of production remains low and the contribution to capital accumulation is minimal. The goods distributed by most of these workers (fish, fruit, bread, meat) do not even enter the capital-dominated market: they are sold or traded to other peasants within the local and regional economy. Nevertheless, cash earnings from these activities have permitted the development of some class differences between semi-skilled tradespersons (bakers and

butchers) and vendors/carpenters and provided workers with the cash needed to meet basic subsistence needs.

Wage Labour

Since the reform, the Pajapan economy has experienced a resurgence of small-scale commodity production and subsistence agriculture. These activities provide peasants with concrete alternatives to full proletarianization while at the same time creating new and relatively limited avenues of capital accumulation for merchants, ranchers and an industrial sector that benefits from the provision of cheap food for the urban proletariat. The direct exploitation of peasant labour as wage workers is nevertheless an important features of Pajapan's economy. Approximately 55% of all village households rely on the wage earnings of at least one family member. The proportion of the total labour force (measured in person-days (PD), all male and female adults above 15 included) engaged on a part-time or full-time basis in wage employment is close to 20%. This adds up to the equivalent of 552 full-time *peones*, or one third of the male labour force.

Table: 4.23 SECTORAL DISTRIBUTION OF WAGE LABOUR FORCE

	<u>PD%</u>	<u>IND. %</u>	<u>AV. PD/WK</u>
AGRICULTURE	<u>56.2</u>	<u>63.8</u>	<u>4.00</u>
FOR PEASANTS	37.6	40.9	4.16
FOR RANCHERS	18.6	22.9	3.66
CONSTRUCTION	<u>29.0</u>	<u>24.0</u>	<u>5.47</u>
RURAL	4.4	3.8	5.21
URBAN	24.6	20.2	5.51
SERVICES	<u>14.8</u>	<u>12.2</u>	<u>5.44</u>
RURAL	9.0	7.3	5.52
URBAN	5.8	4.9	5.33

The direct exploitation of peasant labour by capital is not as significant as would first appear. Table 4.23 indicates the sectoral distribution of hired labour, most of which is unskilled. Approximately 56% of the labour is in agriculture -- men working for either peasants or ranchers. Only one third of all peasants working for wages are employed by cattle ranchers (capital) while some two thirds are employed by peasants. Peasants employ other agricultural workers for an average of approximately 4.16 days a week, primarily to clear, weed, and plant corn plots of less than two hectares. Ranchers employ a few *peones* to look after the cattle, clear and weed the land for pasture, and repair or put up new fences. Cattle ranching has the lowest rate of weekly employment of all sectors, i.e., 3.66 days per week.

Construction work accounts for 29% of all paid labour and occurs mostly in the urban centres where workers are employed for an

average of 5 or 6 days per week. Rural and urban services (shopkeepers, waiters, taxi drivers, municipal employees, etc.), account for another 15% of the wage workers, also for an average of approximately 5 and a half days a week.

Nearly two thirds of the hired labour are drawn from one class: subsistence-wage workers. The rest is equally divided between full-time wage earners (14.1%) and farmer-wage labourers (16.3%) (Figure: 4.3).

Figure: 4.4 Wage-Labouring Classes (%P/D)

Given their involvement in agricultural production for the market, the farmer-wage labourers tend to devote less time to wage work than the two other classes: i.e., 3.97 days per week on the average,

or the equivalent of one adult devoting 72% of his labour time to wage work (Table: 4.24).

Table: 4.24 THE CLASS PROFILE OF WAGE WORKERS

<u>CLASS</u>	<u>PD%</u>	<u>IND. %</u>	<u>AV. PD/WK</u>	<u>W-LAB/HLD</u>
SUBSISTENCE-WAGE LABOUR	63.5	60.5	4.74	0.90
FARMER-WAGE LABOUR	16.3	18.5	3.97	0.72
FULL-TIME WAGE LABOUR	14.1	11.5	5.57	1.03
OTHERS	6.1	9.5	2.86	

Table 4.25 indicates that subsistence producers and farmers (S WL, F-WL) are hired in the agricultural sector approximately 60% of the time, usually by other peasants (seven times out of ten). The only noticeable difference between these two classes is that subsistence producers are employed more often in rural construction and farmers in the rural service sector. Their involvement in wage labour is similar in all other respects. As for full-time wage earners (WL), they are into urban construction work 37% of the time and the service sector 27% of the time, mainly in the village. In contrast to the high proportion of wage work in agriculture undertaken by households in the other wage-labouring classes, full-time wage workers are employed in the agricultural sector only 30% of the time and tend to be hired by ranchers more often than the other classes.

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Table: 4.25 SECTORAL EMPLOYMENT OF WAGE WORKERS

	AGRICULTURE		CONSTRUCTION		SERVICES		TOTAL	
	<u>FOR PEASANTS</u>	<u>FOR RANCH</u>	<u>RURAL</u>	<u>URBAN</u>	<u>RURAL</u>	<u>URBAN</u>	<u>P-D</u>	<u>%</u>
S-WL	41.8	18.1	5.8	23.4	6.5	4.4	1052	63.5
F-WL	42.6	18.9	1.4	24.1	8.9	4.1	270	6.3
WL	17.8	15.0	2.6	37.2	16.7	10.7	234	14.1

N.B. Row percentages of total person-days, except for the last column. 'Others' not included.

More should be said about construction workers. Most of them work in the construction of private homes in the cities of Coatzacoalcos and Minatitlán. A skilled bricklayer employed in the city makes approximately \$4.36 per day and an assistant bricklayer \$3.36. This is considerably more than the \$1.53 paid to day-workers in the agricultural sector. Better earnings obtained in the city, however, are offset by transportation expenses and a higher cost of living. Many bricklayers would prefer to remain in the village but work has slowed since a peak in local construction immediately following the expropriation. About 200 houses were built in 1983 and 1984 as a result of payments received by the comuneros of Pajapan in compensation for the expropriated land. Since that time, the local construction industry has been steadily declining: in the summer of 1986, only 16 houses were being built in Pajapan. Employment in the construction sector has also declined as a result of the suspension of new petro-chemical projects and a general drop in urban economic activity, adding to a growing number of

unemployed workers that have been displaced from rural sectors and yet also excluded from urban wage employment.

Class Relations and the Wider Economy

Land concentration and land redistribution, two opposite developments in the history of land struggles in Pajapan, have both resulted in the greater integration of peasant labour into the wider market economy. During the period of land concentration, permanent out-migration to urban centres was the main strategy adopted by displaced peasants. Those peasants who managed to retain small parcels were pushed off the best agricultural land and into marginal areas on the slopes of the volcano where agricultural productivity was low. Meanwhile, ranchers acquired large properties which were turned into pasture and dedicated to cattle production. This provided them with a means of capital accumulation and a productive base for the diversification of investment. The growth of the cattle sector was nevertheless limited by the subordinate position local ranchers occupied within the regional structure of production and commercialization. They engaged in the riskiest and most labour intensive stages of cattle production and provided outside cattle ranchers and merchants with a steady supply of cheap, poor quality 'feeder' calves. Dependence on outside capital has limited the development of the productive potential of the local

cattle industry by undermining capital investment in more intensive techniques of production.

The struggles of peasants for land reform has produced a class structure that is less polarized and more fragmented as both peasants and ranchers adjust to varying degrees of control over means of production. The land reform has halted the trend toward proletarianization by providing peasants with a minimal subsistence base from which to engage in a variety of supplementary activities. Workers sell their labour power and commodities (including pasture) on the market while at the same time maintaining control over vital means of subsistence production. This development has limited the concentration of wealth in land, cattle and merchant capital and contributed to the fragmentation of ranching capital. Small ranches generate few if any profits over and above their means of subsistence while large ranches are forced to diversify their investments rather than reinvest in the technical development of their ranches.

Land redistribution has also contributed to the growth of small-scale commodity production over the limits imposed by the former land tenure system. The number of small ranches has increased and more agricultural commodities are being produced compared to the subsistence economy of the past. The movement of peasant labour into non-agricultural sectors of the local economy (fishing, trades, petty trade) has diversified the base of capital accumulation and increased the level of market integration. Nevertheless, structural

integration of peasant labour through commodity production has been accompanied by the disarticulation of various sectors and populations from the market. Many of the goods produced by peasants do not enter the capital-dominated market. Rather, they are produced and consumed by peasants in a subsistence economy that extends beyond the household to include peasants in similar economic circumstances.

The land redistribution and return to subsistence production restricts the ability of capital to fully exploit the labour power of peasants. While ranchers exercise considerable local power, they are a relatively weak branch of regional capital with few opportunities to expand their base of operations. The poverty of most of the local population restricts the circulation of commodities in the local economy, thereby limiting the accumulation of merchant capital. Merchants can buy very little from and sell little to cash-poor peasants. Thus, while the Pajapan economy contributes to the minimum requirements of capital accumulation in some sectors of the economy, the subordination of peasant labour is by no means complete or fully functional to maximum accumulation.

Finally, the forcible usurpation of communal property by cattle ranchers has forced peasants into the urban centres where they were employed in urban industry. Similar processes have occurred in many rural areas of Mexico, resulting in a flood of workers descending on the cities of Coatzacoalcos and Minatitlán (see Chapter Two). This

population has created a reserve of unemployed or underemployed labour and contributed to the reduction of wages to very low levels. While industrial capital derives significant benefits from this 'reserve army' of workers, the expulsion of labour from rural areas and its concentration in urban centres is far in excess of the needs of urban capital. Unemployment and underemployment for southern Veracruz is over 25% and as high as 40% for Mexico as a whole. This extremely large 'reserve army' has many costly effects for the state and for capital such as political unrest and significant welfare costs. The Mexican government provides food subsidies, hospitals and health centres, educational facilities and many other services to a population that contributes little to state revenues. Furthermore, capital has foregone an opportunity to accumulate surplus-value that could have been created by the thousands of unemployed workers and potential consumers. An excessive reserve army of labour, while minimally functional to capital accumulation, also creates significant costs and is indicative of the inability of capital to fully exploit the labour power of workers and maximize accumulation.

The analysis of class structure presented in this chapter illustrates three concurrent tendencies in capitalism. First, The processes of land appropriation and proletarianization are only two of numerous forms of capitalist exploitation observed in rural communities. Labour mobility, the proliferation of small-scale commodity production and commodity distribution are other forms

of capitalist development. Second, peasant struggles to retain access to vital means of production have an impact on the process of class differentiation. Class structure may become less polarized and more highly fragmented as peasants and owners of capital struggle for control over means of production. Third, the impact of capitalist development on the economy and ecology of peasant societies cannot be explained in isolation from the effects of contradictory tendencies of the capitalist system. The concentration of wealth in privileged regions and sectors of the world economy and the inefficient use of peasant labour-power impose significant limitations on the maximum accumulation of capital.

The persistence of peasant control over some means of production and the fragmentation of rural capital have important implications for the development of the forces of production in Pajapan and the transformation of relations between peasants and the environment. The following chapter examines the effects of capitalist development on peasant technology and the distortion of peasant forms of ecological adaptation. The three-fold argument applied to the analysis of class structure is used to characterize the agricultural forces of production and relations of exploitation established by incorporation of Pajapan into the wider economic system.

CHAPTER FIVE

The Ecology of Tropical Agriculture

This chapter examines the impact of the cattle industry and land reform on peasant technology and modes of ecological adaptation. The analysis illustrates the various forms of subordination of peasant forces of production to capital and the effects of contradictory tendencies of class struggle and resource mismanagement. The definition of capitalism as a polymorphous structure with inherent contradictions and self-induced limitations outlined in previous chapters provides a comprehensive explanation of the forces of production in cattle ranching, *milpa* agriculture, and fishing. The first section examines the ecology of the tropical rainforest and mangrove swamp that comprise the natural ecosystems of Pajapan. The complexity and specificity of each ecosystem is highlighted to emphasize particular as opposed to universal conclusions regarding the role of the environment in economic development. Subsequent sections contrast the ecology of tropical rainforest with the forces of production of the Pajapan economy.

The analysis of local environmental and technical conditions is based on data drawn from a number of sources. Sectoral surveys undertaken by the research team in 1986 provide quantitative measures of agricultural inputs and outputs and fishing activities. Participant observations and interviews with local peasants,

ranchers and fishers are used to reinforce and interpret the quantitative findings. A Ph.D. dissertation by James Stuart (1978) provides detailed information concerning the traditional economy of the Gulf Nahua based on a year of field work in Peña Hermosa, a hamlet located near Pajapan. The works of tropical ecologists are consulted for information on the Pajapan environment and the general features of tropical ecology (Richards, 1959; Forsyth and Miyata, 1984; Buringh, 1971; Fearnside, 1986; Toledo, 1976; Whitmore and Prance, 1987).

The Tropical Ecosystem

The territory of the Gulf Nahua includes approximately 19,158 hectares of land straddling two distinct topographies; a flat lowland (30% of the land) and undulating hills that gradually rise more steeply to the foot of the volcano 'San Martin Pajapan'. The peak of the volcano, the highest point of land in the Tuxtla, towers approximately 1250 metres above sea level. Numerous streams originating in the mountains criss-cross the communal land and empty into a lagoon at its lower edge (see Map 5.1).

The climate of Pajapan is warm and wet because the slopes of the mountains intercept the moisture-laden trade winds that blow across the Atlantic and the Gulf of Mexico, resulting in one of the highest rainfalls in Mexico -- over 3000 mm. of rain a year. The trade winds and the large body of Gulf water have a thermostatic effect on the climate. Temperatures near the coast vary only 5° to

Map: 5.1 SOUTHERN VERACRUZ
AVERAGE ANNUAL PRECIPITATION

6° from the annual average of 25° Celsius. The coldest temperatures (19° C.) are experienced from September through December when strong northerly winds (Nortes) accompanying cyclones blow in from the Gulf of Mexico. Humidity is constantly high. The sky is cloudy approximately three quarters of the year although the relatively constant length of the tropical day compensates for reduced sunshine. Rainfall decreases gradually from north to south on the flat coastal flood-plain and westward to the interior of Veracruz. At higher altitudes in the Tuxtla Mountains the temperatures are somewhat lower while in the interior they fluctuate more than on the coast and reach higher extremes (cf. Instituto Nacional de Investigaciones sobre Recursos Bioticos, 1980; RIGOR, 1981; Stuart, 1978).

Annual rainfall is abundant throughout southern Veracruz but dry air masses move in from the south during March, April and May causing a short dry season. The Tuxtla Mountains experience the least severe of the seasonal dry periods with rainfall during every month of the year. The coastal flood-plain experiences a distinct dry season during March, April and May while an additional mid-July dry period is common in the interior. The severity of the dry season varies from year to year in Pajapan but there is no prolonged drought. The area probably benefits from higher levels of dry season rainfall than is generally the case on the coastal flood-plain and interior but it does not experience as much rainfall as the mountains proper (Map 5.1) (Instituto Nacional de Investigaciones sobre

Recursos Bioticos, 1980; RIGOR, 1981; Stuart, 1978; Martinez Lorenzo, 1981; Siemens, 1964)).

Climate has a significant impact on soil development in Pajapan because the abundant rainfall impoverishes the soil by creating a constant downward movement of water. The soluble bases important to plant development are leached from the soil while less soluble aluminium and iron are left behind, giving the soil a distinctive red colour. Intense rainfall also erodes the soil and alternating wet and dry periods bake it as hard as pavement. The resulting red earth soils (Ferrasols) have a heavy, clay-like texture, extreme acidity and a low nutrient status (Richards, 1952; Buringh, 1970; Fearnside, 1986; Romanini, 1978; Forsyth and Miyata, 1984).

Not all soils in Pajapan are uniformly poor (see Table 5.1). The flat terrain at the lower extreme of the communal land is composed of deep, dark brown soil formed from relatively fresh volcanic ash (Andosols). This soil is powdery when dry and easily eroded from higher ground. It accumulates where streams open out onto the floodplain. In contrast to the red earths, lowland soil is fertile and has good water retention capability. It can support agriculture during both the wet and dry seasons and is capable of producing high crop yields. Upon maturation, however, these soils tend to form red earths. Consequently, the proportion of Andosols decreases as the terrain becomes steeper and more susceptible to erosion and weathering. On the undulating slopes near the village of Pajapan the soil is a mixture of Andosols and Ferrasols, while on the hill tops and sides of the volcano the soils are almost entirely Ferrasols

(Archivo de Abel Jimenez Hdz.; Instituto Nacional de Investigaciones sobre Recursos Bioticos, 1980:50; Stuart, 1978:62-63; RIGOR, 1981; Martínez Lorenzo, 1981; Buringh, 1970:89).

Three other soil types are found in small quantities on the communal land. In the poorly drained areas near the shore of the lagoon, volcanic materials have been transformed into Histosols, a very heavy soil characterized by a superabundance of water and poor aeration. When drained, these soils lose a great deal of their bulk and are of poor agricultural quality, although they can support pasture. In a few scattered patches of high ground is found a poor quality yellow soil. Near the beach there are good quality soils composed of a mix of Andosols and sand.

Table: 5.1 MAJOR SOIL TYPES OF PAJAPAN

Location	Soil Type	Nahua Classification	Soil Fertility
Lowland	Andosol	Pistiktal	good
Near Beaches	Andosol/Arenosol	Pistik Xraltal	good
Slopes	Andosol/Ferrasol	Medio-Pistiktal	fair
Hill Tops	Ferrasol	Tatawiktal	poor
Near Lagoon	Gleysol/Histosol	?	poor
Hill Tops	(Yellow Soil)	Gostiktal	poor

Source: compilation from Archivo Abel Jimenez Hdz.; INIREB; Stuart; Rigor; Martinez Lorenzo et al.; Bozada and Chávez

Approximately 15,446 hectares or 81% of the communal land is arable (see Table 5.2). The remainder includes approximately 3,014

hectares too steep for cultivation (on the upper slopes of the volcano 'San Martin Pajapan'), 567 hectares under mangrove swamp (flooded during at least six months of the year), and 131 hectares of village sites.

Table: 5.2 ARABLE LAND IN PAJAPAN

Zone	Topography	Agricultural Potential	Area (ha)	% Area
Low	Flat	Good	5253	34.0
Mid	Undulating	Fair	6113	39.6
High	Hilly	Poor	4080	26.4
Total			15446	100 %

Source: The estimates of the distribution of arable land in Pajapan are a compilation based on various sources including original survey data, topographic maps and a map of the village lands, and secondary sources (Archvio Abel Jiminez Hdz.; Bozada and Chávez).

The rise in elevation of the communal land from sea level to mountain peak and corresponding changes in rainfall, temperature and soil types create conditions for the development of several plant associations. Tall tropical rainforest mixed with some seasonal plant species is the climax vegetation for most of the communal land including the hills near Pajapan and the lowland area. Mangrove forest is the climax vegetation for the seasonally flooded land along the shore of the lagoon. Coastal vegetation develops on the very sandy soils near the beaches and a short, wind-beaten submontane rainforest covers the peak of the volcano. The dominant features of the most important local forest types, the tall tropical rainforest and the mangrove forest, are discussed below.

The Tropical Rainforest

The current destruction of Mexico's tropical rainforests has a remote predecessor. The cool-dry climatic periods of the last ice age resulted in the disappearance of all but a few isolated pockets of tropical forest in Mexico. The Tuxtla Mountains in southern Veracruz, aided by the moderating influence of the Gulf of Mexico, was probably one of the 'areas of refuge'. When temperatures and rainfall increased with the beginning of the modern geological era, this and a few other ancient rainforests fanned out to create what is currently tropical Mexico (Toledo, 1986; Whitemore and Prance, 1987).

The survival of tropical rainforests in southern Veracruz for hundreds of thousands of years despite the major disturbances of climatic change and the poor quality of tropical soils is a tribute to both the adaptiveness and efficiency of rainforest ecology. The most outstanding features of the rainforest ecosystem are its capacity to recycle nutrients, create a closed-cover architecture to protect the soil and sustain a great diversity of plant and animals species.

Nutrient Recycling

As already noted, the soils of Pajapan suffer from a constant process of demineralization as a result of very abundant rainfall and exposure to the tropical sun. As a result, they have a low nutrient status. The rainforest overcomes this limitation by recycling

nutrients contained in the forest vegetation and capturing trace elements from the rain. Constant temperatures and high humidity in the forest interior contribute to the rapid decomposition of forest litter and its conversion into humus by soil flora and fauna. The tiny rootlets of trees and other plants quickly reabsorb this organic matter, returning to the living forest the remains of previous generations of plant life. This plant recycling process is so complete that the incoming nutrient rates in the form of litter, rain and dust closely balance the outgoing nutrient rates through leaching and streamflow. As a result, the forest derives most of the nutrients needed for plant growth from itself, without drawing on the limited resources of the soil. The soil remains in a state of relative equilibrium, serving more as a mechanical substratum for the support of the tall trees and as a reservoir for water than as a supplier of nutrients.¹

Closed Cover Architecture

The tropical rainforest in the Pajapan area is composed of three strata which protect the soil from the elements and trap moisture for periods of relative drought. The tallest trees form a dense canopy at approximately 30 metres. This canopy completely shades the forest floor and protects the soil from erosion by intercepting the heavy rainfall. Occasional emergent trees reach a height of 40 metres or more. A middle strata of trees 6 to 18 metres tall

¹ For details on the nutrient cycles of tropical rainforest see Richards, 1952; Buringh, 1970; Fearnside, 1986; Forsyth and Miyata, 1984.

provides additional soil protection and support for a myriad of vines, orchids, mosses, mistletoes and 'stranglers' that cling to the branches of trees. This vegetation intercepts and absorbs a great deal of rainfall before it strikes the ground. A lower story composed of trees, saplings, shrubs, spiny palms and ferns completes the closed cover architecture of the rainforest. The ground level of the rainforest is relatively clear and open, covered mainly by fallen trees, branches and a thin layer of dead leaves.¹

Diversity

Behind the uniform, green facade of dense tropical rainforest lies a floral and faunal world of incredible diversity. As noted by Forsyth and Miyata, in the tropics the common is rare and the rare is common. A single patch of rainforest will contain hundreds of different plant species but relatively few individuals of each. By virtue of diversity, individual plants of the same species are relatively isolated from one another, thereby creating an excellent defense against the numerous insects and diseases characteristic of the humid tropics. When one plant species suffers another may not. Distance and spatial interference by other plants may control the spread of plant diseases or have an allelopathic influence on the pests.²

¹ Stuart (1978:64-67) describes the architecture of rainforest on the slopes of the volcano 'San Martin Pajapan' Also see Andrie, 1964).

² For a complete inventory of plant species in the region see Andrie, 1964; also INIREB, 1980; Stuart, 1978; Bozada and Chávez, 1986.

A correlate to plant diversity is the great variety of fauna found in tropical rainforests. Andrie (1964) notes a total of 384 bird species in the Tuxtla Mountains including the keel-billed toucan (Ramphastos sulfuratus), the ivory-billed woodcreeper (Xiphorhynchus flavigaster), the laughing falcon (Herpetotheres cachinnans), the olive-throated parakeet (Aratinga astec), and the Montezuma oropendola (Gymnostinops montezuma). He also reports 94 species of mammals, 50% of which are bats. Among the larger animals, the most common are the spider monkey (Ateles geoffroyi), Deppe squirrel (Sciurus deppei), armadillo (Dasypus novemcinctus), the paca or *tepesquintle* (Cuniculus paca), the coati (Nasua narica), and the brocket deer (Mazama americana). Insects, reptiles, amphibians and aquatic fauna are also great in number and variety. Stuart notes that the reptiles "of most interest to the local inhabitants include the nauyaca or fer-de-lance (Bothrops atrox), a large poisonous pit viper greatly feared by everyone; the poisonous but non-aggressive coral snake (Micrurus sp.); and two large edible iguanas (Iguana spp.), a green aboriginal species and a black species frequenting stream-side vegetation near the beaches. Two, and possibly three species of sea turtle nest on the Gulf beaches, and at least two species of mud turtle are found in the streams and swampy areas." (1978:69-71).

The Mangrove Swamp Forest

Mangrove swamps are very old plant communities that have gradually been formed by reclaiming land from the sea. The

seedlings of mangrove trees have the unique ability to establish themselves under tidal conditions and tolerate prolonged flooding at all stages of development. The aerial roots of the trees disrupt water currents, thereby speeding up the deposition of silt. The vegetation binds the soil and gradually colonizes the new land. As the mangroves spread seaward, the inland margin of the mangrove swamp is succeeded by other plant communities. Richards notes that "species are arranged in zones which can be correlated with the frequency of tidal immersion, the nature of the substratum, the activity of accretion and erosion, and the salinity of the ground water. The growth of the vegetation in one zone prepares the way for that in the next. One community thus succeeds another until eventually an inland type of vegetation not tolerant of immersion in sea-water is established." (1952:301).

The ecology of a mangrove swamp differs dramatically from that of a tropical rainforest. The litter of mangrove swamps does not form a thick layer of humus, mainly because of the superabundance of water and poor soil aeration. Because organic matter remains in the soil and is not reabsorbed by the vegetation, mangroves depend chiefly on incoming drainage water for a supply of nutrients, not on the plant recycling process characteristic of the tropical rainforest (Bozada and Chávez, 1986:82; Buringh, 1970:98; Richards, 1952:216). In contrast to the closed nutrient cycles of the rainforest, mangrove swamps "are systems open to the flux of energy and materials upon which they depend" (Gallego, 1986:27). In both communities, trees predominate but the architecture and diversity

of species is completely different: mangrove swamps are composed of a single strata of four tree species arranged in bands from the shoreline to higher ground where they are replaced by other plant communities. The short, pioneer red mangrove (Rhizophora) is established on the sheltered shore and is succeeded inland by the taller white mangrove (Laguncularia racemosa). Further behind and on slightly higher ground the black mangrove (Avicennia germinans) reaches a height of 30 metres. The outer fringe of the mangrove, seldom reached by tides, is characterized by an open forest including the bottonwood mangrove (Conocarpus erecta), palms and low-growing salt-marsh plants. Depending upon the precise conditions of relief and soil, the mangrove swamp of Pajapan borders on rainforest, swamp savanna, marsh scrub and coastal dune vegetation (Bozada and Chávez, 1986:30, 82; INIREB, 1980:64).

The Transformation of the Forest Ecosystems

The tropical rainforest and mangrove swamp of the Pajapan area are diverse and highly complex ecosystems comprised of many interrelated elements. Climate, vegetation, water, soil, topography and fauna are all delicately balanced in a web of relationships that regulate ecosystem development. A change in one element causes the gradual transformation of the entire system. For example, climatic changes during the last ice age resulted in the retreat of the ancient rainforests of Mexico to the Tuxtla Mountains and a few other areas of refuge. The return to a tropical climate eventually resulted in the recovery of the forest. Also, the recovery of land

from the sea created the conditions for a gradual succession from mangrove to tropical rainforest and other plant associations. These changes occurred over thousands of years and involved many minute and gradual adjustments to evolving conditions.

By contrast, the clearing of rainforests and mangroves for agricultural uses radically alters the soil, nutrient cycles, species diversity and eventually the climate itself. Fearnside (1986) clearly warns of the global implications of rainforest destruction.

Carbon dioxide and the "Greenhouse Effect"

The burning of rainforests to clear land for agriculture contributes significantly to global carbon dioxide emissions. Atmospheric carbon dioxide in turn traps the energy of the sun in the earth's atmosphere. It is estimated that this "greenhouse effect" will result in a global warming trend of 2° to 3°C over the next few decades. Melting of the polar ice caps, the drying of some areas and increased rainfall in others are some of the predicted effects.

Nitrous Oxide and Ozone Depletion

Rainforest clearing contributes significantly to the global increase in atmospheric nitrous oxide. This gas reacts in the stratosphere to produce nitric oxide, which in turn acts as a catalyst in breaking down the ozone layer -- the protective shield that prevents intense UV radiation from entering the biosphere. Depletion of the ozone layer caused by nitrous oxide production results in higher levels of UV radiation reaching the planet's surface. Increased UV radiation is

expected to contribute to a substantial increase in the incidence of skin cancer in humans, the disruption of aquatic ecosystems and the mutation of agricultural plant species.

Hydrologic Cycle: Desertification

In many areas, deforestation is responsible for a decrease in rainfall. The process of desertification is most acute in Brazil where much of the rainfall is derived from water recycled into the atmosphere through evapotranspiration. By contrast, rain in the Tuxtla Mountains is picked up from the Atlantic Ocean and the Gulf of Mexico by westerly winds. Nevertheless, the loss of vegetation reduces the capture of rainfall and increases the albedo effect (the ratio of reflected to incident light), resulting in further declines in rainfall. Fearnside (1986: 50) argues that even small increases in the severity of the dry season could be dramatic.

Rainforest, which does not tolerate severe water stress, could be expected to gradually give way to more xerophytic cerrado (scrubland) vegetation. Such a change would have the potential for becoming a positive feedback process, where the resulting further reduction in evapotranspiration would increase dryness and accelerate vegetational changes.

Genetic Diversity: Extinction of Species and Ecosystems

Agriculture and medicine in the industrial world depends on the genetic diversity of tropical flora and fauna. The development of more productive and pest resistant plants depends upon the constant introduction of new germplasm, much of which comes from the

tropical rainforests of the world. Also, many existing pharmaceutical chemicals are derived from rainforests and the potential for new chemicals is great. Extensive deforestation in the Tuxtla Mountains and elsewhere has resulted in the extinction of many unique species of flora and fauna, with significant implications for the future of modern agriculture and medicine.

The remainder of this chapter contrasts the tropical ecosystem with the agriculture system in Pajapan. The relationship between the environment and agricultural techniques and technology is examined in an historical context. Four sectors of the local economy are analyzed: cattle ranching, *milpa* agriculture, hunting and fishing. The interaction of these sectors is examined in a concluding section on the carrying capacity of the local environment.

Cattle Ranching

Cattle ranching in Pajapan requires pasture, cattle and human labour to animate production. Each of these elements interact with the environment in unique ways, summarized in the following analysis.

Pastures

The development of cattle ranching is dependent upon the production and management of pasture for animal grazing. The techniques and technology used to produce pasture in the Pajapan area are simple: the original vegetation is slashed and burned to clear the land and planted with grass seed or vegetative material from established

pastures. Land preparation and planting are not mechanized except in exceptional cases where a plough drawn by oxen or a tractor is used to break up the soil. Because it destroys the roots of the natural vegetation, ploughing has some advantages over manual land preparation but the high costs are prohibitive for all but the wealthiest of ranchers.

Pasture in the tropics is ecologically unstable and without burning will be invaded by weeds and forest vegetation. Pasture in Pajapan is burned annually just prior to the wet season to clear out dead vegetative material and promote rapid pasture growth when the rains come. A corridor along fences is cleared so that the vegetation can be burned without risk to neighbouring fields or fences; bushes that have grown up in the pasture are cut down. While considerable care is usually taken when burning fields, some fires inevitably escape, causing considerable damage to neighbouring fields. In 1986 fires originating on the pastures of Pajapan destroyed the hamlet of Peña Hermosa, many fences and extensive areas of secondary growth.

The seasonality of rainfall is the greatest impediment to pasture productivity. The abundant rainfall of southern Veracruz favours rapid plant growth and results in heavier annual yields of pasture than elsewhere in Mexico (Rutsch, 1984:100). Nevertheless, pasture production is severely interrupted during the short dry season. Research in the neighbouring State of Tabasco suggests there is an 85-90% drop in pasture production during the dry season (Romanini, 1978:40). This scarcity of pasture results in seasonal overgrazing.

By contrast, during the wet season pasture is underutilized. Because pasture has its highest protein levels when it is young (20-30 days), overproduction and underutilization during the wet season results in the loss of a large portion of the potential nutrients and biomass (Romanini, 1978:26,29). The production of pasture in Pajapan is unmechanized and no grass is stored as hay or silage.

The effect of the dry season on pasture production varies from one ecological zone to another. Soil in the lowland area of Pajapan retains moisture longer than soil in the high ground area or on the slopes of the volcano; consequently lowland pastures remain green longer into the dry season and grow faster with the June rains. This advantage places an extra premium on the lowland area, already valued for its higher levels of soil fertility. When this area was expropriated by the government to make way for an industrial port, ranchers lost not only the most fertile land but also land best suited to dry season grazing.

While the amount and seasonality of rainfall are the most important factors influencing pasture production in Pajapan, the poor quality of the grass species also affect productivity. The survey data indicate that approximately 20% of Pajapan's grassland is composed of talquetzal, a bunch grass of little nutritional value for cattle except when it is very young. This grass grows spontaneously in areas with sandy soil and comprises Pajapan's only natural savanna. Some 60% of the pasture is Guinea grass (Panicum maximum) which grows throughout the communal land. While it has a moderate to high nutritional value, Guinea grass is very

susceptible to weed invasion as a result of its poor reseeding capability and tendency to grow in bunches. The remaining 20% of pasture is comprised of good quality grasses planted in various environments depending upon specific soil conditions. The main species in this group are African Star, Pangola, and Aleman.

Despite the seasonality and poor quality of pasture in Pajapan, the stocking rate is high in comparison to parts of Mexico with lower rainfall. The survey data indicate that the average stocking rate for pasture is between 0.8 and 1.0 head of cattle per hectare of pasture per year.¹ This compares favourably to stocking rates of below one animal per hectare in the drier interior of Veracruz.

While stocking rates in Pajapan are presently high, they may not be sustainable in the long term. The ecology of pasture production is a dramatic departure from sustainable natural ecosystems characteristic of tropical environments because the nutrient recycling process is much less efficient than under rainforest conditions. Land preparation exposes the soil to erosion and volatile plant nutrients such as Nitrogen are lost when the vegetation is burned. Also, grazing converts plant nutrients drawn from the soil into bone, fat and meat 'exported' from the local ecosystem. Even though approximately 80% of the Nitrogen ingested by beef is recycled in urine and manure, the nutrient recycling process is far from complete. Although fertilization can maintain pasture

¹ The Pajapan survey data indicate an average stocking rate of 0.82 head/ha. (N88) while the agricultural survey shows an average rate of 1.0 head/ha. (N47). A report by an agronomist who examined the lands of Pajapan in 1984 (Archivo de Abel Jimenez Hdz.) indicates a stocking rate of between 0.7 and 1 head/ha.

productivity for a while, many of the nutrients applied to pasture are leached away before they can be absorbed by the plant root systems (Fearnside, 1986:57). Also, the large plant biomass produced with fertilizers is underutilized during the wet season, adding to the inefficiency of fertilization (Romanini, 1978:25).

Fearnside (1986) argues that pasture growth inevitably declines as the level of available phosphorous in the soil drops. While other soil nutrients such as nitrogen may remain constant or even improve with special grass and legume mixtures, the reduced levels of available phosphorous prevent sustained grass growth. In Brazil, where the field work for these conclusions was undertaken, the decline in available phosphorus levels reaches its nadir after only five years. Fertilization with phosphate rock could improve pasture production but it too is inefficient because much of the applied phosphate is 'fixed' in the soil and remains unavailable for pasture growth. Fearnside concludes that "the question of whether production can be sustained through fertilization is first one of economics, and ultimately one of nonrenewable resource stocks" (1986:57).

The problem of nutrient recycling is compounded by a second difference between pasture and the tropical rainforest it replaces. The 'plant architecture' of pasture cannot adequately protect the soil from the elements. While rainforests provide a multi-tiered, year-round umbrella for the soil, the single layer of vegetative cover provided by pasture is reduced by overgrazing and significant seasonal fluctuations in growth. The rainforest provides a much

better buffer to nutrient loss, especially during the rainy season. Because pasture cover is incomplete, sheet erosion and compaction under the hooves of the animals degrade both the soil and the pasture.

A third difference between rainforest and pasture is the diversity of plant species. While rainforests have hundreds of different kinds of plants, pasture is comprised of a few grass and legume species. The loss of soil fertility and the inherent instability of pasture promotes weed invasion as the natural environment attempts to recuperate the variety and diversity of plant growth.

Weed invasion, soil erosion and compaction and the loss of soil fertility significantly reduce the prospects of sustainable pasture production in the tropics. In some areas, grazing must be abandoned after only five to ten years. Furthermore, abandoned pasture may be permanently deflected to shrubs and sage unpalatable to animals and radically different from the original rainforest vegetation (Fearnside, 1986:55-57).

The effects of pasture production on the Pajapan environment are severe. As already noted, the rainforest that once covered most of the communal land has all but disappeared. The ancient rainforest of the Tuxtla Mountains is one of the only large forest areas remaining in Mexico and it is shrinking at an alarming rate. In addition, the soil resources of Pajapan have been degraded. Stuart reports that the streams running through the communal land of Pajapan are muddy during most of the wet season, in contrast to the clear

waters of streams in Peña Hermosa where there is little pasture. He attributes this to sheet erosion on the pasturelands of Pajapan. Ranchers in Pajapan reported to us that weed invasion is increasingly burdensome on the older pastures and that soil compaction is severe on heavily grazed areas. Our survey data also provide some indication of the process of soil degradation associated with pasture production in the Pajapan area. In a sample of 49 parcels, approximately 60% of the soils with pasture showed a red colour observed from the surface, an indication of the loss of the fertile humus layer. By contrast, only 40% of the soils of *milpas* showed a red colour. These differences suggest that soil degradation is more advanced on land used for pasture production than on land used for *milpa* cultivation.

Cattle Production and Reproduction

The selection and breeding of cattle appropriate to the tropical climate is of considerable importance to the development of the cattle industry. High ambient air temperatures, high humidity and severe solar radiation negatively affect grazing behaviour, the intake and utilization of feed and water, growth, milk production and reproduction.¹ The ability of cattle to withstand these conditions differs markedly between breeds and individuals within a breed.

The dominant breed in southern Veracruz is the 'Suizo-Zebú', a cross between humpless and humped breeds (*Bos taurus* x *B. indicus*) with both beef and milk producing capacities. From the 'Suizo'

¹ For details see Williams and Payne, 19xx:10-19).

(Brown Swiss), a temperate-type animal, the cross-breed acquires efficiency in the conversion of feed into beef and milk. From the Zebu, a tropical breed, the cross-breed acquires a greater degree of acclimatization to the stresses of a tropical environment. Zebu cattle have a higher heat tolerance than temperate-type breeds and are better foragers in environments that lack good quality pasture. Also, Zebu will browse shrubs and are more resistant to a number of diseases and parasites common in the tropics than temperate-type breeds. Cross-breeds such as the 'Suizo-Zebu' are the primary cattle of choice for tropical regions, with the desired percentage of temperate-type *Bos taurus* blood dependent upon the specific environmental conditions and purpose of production.

The breeding stock in Pajapan is poor in comparison to more agriculturally advanced countries and is not ideally suited to the local economic context. Approximately 60% of the total herd in Pajapan are 'Suizo-Zebu' cross-breeds, some 20% are mainly Zebu and the remainder are divided between Criollo and Holandés. Ranchers in Pajapan received their initial breeding stock from Coatzacoalcos and Minatitalán where 'dual purpose' cattle are valued. Most ranchers in Pajapan would prefer a higher percentage of Zebu blood to improve acclimatization and increase resistance to parasites as there is no local demand for milk. Superior quality cross-breeds suitable for beef production have been developed in recent years but these animals are not available locally and artificial insemination has not yet been introduced into the area. Ranchers are therefore forced to continue breeding with bulls drawn

from their own herds or rented from other local ranchers. Rudimentary culling of cattle that are weak, hard to handle or that have failed to calve occurs whenever possible and cross-breeding is common.

The growth rate of cattle in Pajapan is poor. The seasonal nature of range production produces significant fluctuations in the local food supply. Cattle in Pajapan typically experience cyclic growth patterns, losing liveweight during the dry season and undergoing compensatory growth during the wet season. Pasture shortages force many ranchers to sell cattle at the onset of the dry season even though the animals have not reached full growth. Most of the cattle sold by ranchers in Pajapan are still immature (2-3 years) and will be 'grown out' and fattened by larger cattle operations on the coastal flood plain with access to dry season pasture. If supplementary feed were utilized by the ranchers of Pajapan during the dry season, their cattle would probably attain a slaughter weight of 400 kg at a little more than 2 years of age instead of the 4 to 5 years currently required (Williams and Payne, 1987:336).

The animal population in Pajapan is free from major tropical epidemic diseases, largely as a result of massive government vaccination and inoculation programs. From 1946 to 1955 foot and mouth disease (astofa) plagued the cattle industry in Mexico, threatening the lucrative calve export market to feedlots in the United States. With the assistance of the United States, government treatment programs eventually reduced the incidence of astofa; nevertheless, disease outbreaks are still closely monitored.

Ranchers in Pajapan usually vaccinate their cattle against a number of diseases and animal mortality is low (2.5%).¹

Parasites are endemic to the local cattle population. Abundant rainfall and high humidity provide a favourable breeding environment for ticks, a parasite that attaches itself to the skin of cattle and consumes blood. Ticks cause irritation, open sores and considerable weight loss. Although ranchers in Pajapan spray their animals to control ticks, the economic loss to these parasites is still considerable. Virtually all cattle in Pajapan suffer to some degree from roundworms, an internal parasite that causes parasitic gastro-enteritis resulting in diarrhoea, digestive disturbances, poor growth rates and loss of condition. This disease is treated only in extreme cases.

The productivity of cattle ranches in Pajapan is low due to poor breeding stock, inadequate animal nutrition and parasites. These factors also contribute to a low rate of animal reproduction.² The survey data suggest that approximately 75 percent of breeding cows in Pajapan produce one calf per year, a calving rate lower than animal potential but higher than rates attained in some tropical regions (45-50% in Africa).³ Data collected over a longer period would probably indicate periodic fluctuations in calving rates and a lower long-term average. The data also indicate that approximately

¹ Based on a sample animal population of 200.

² For a discussion of the relationship between animal nutrition, disease and reproduction see Williamson and Payne,

³ Based on a sample animal population of 200. Moises de la Peña reported in the 1940s that calving rates in Veracruz were 80%. For comparisons with other tropical regions see Williamson and Payne, 332.

40% of the herd are cows of reproducing age, a ratio which suggests that herds increase at an average rate of approximately 30% per year.¹

Most breeding occurs in June, July and August so that calves are born during the later part of the dry season, thus ensuring that the total demand for feed peaks at approximately the same time as the maximum supply of pasture. Once calving occurs, ranchers must ensure that calves are not separated from the dams. They must also watch for signs of disease or poor development. Calves are usually weaned, branded and vaccinated by the seventh month. Castration of bulls, a management technique widely practiced in temperate zones where high-fat beef is required, is not practiced in Pajapan. Bull calves grow more rapidly than castrated steer calves, so where there is no premium for the production of high-fat beef, castration has no advantages.

Labour Requirments

Ranchers must have a detailed knowledge of the life cycle of cattle and considerable skill in horsemanship for herding. Nevertheless, cattle ranching is not labour intensive and is subject to seasonal peaks of activity (Figure 5.1). During the dry season, pasture is maintained by clearing corridors around fences, slashing and burning brush, repairing fences and corrals and planting trees for new fence

¹ de la Peña (1981:559) found that in the 1940s herds increased at a rate of 18-20% on 'poor' ranches and 25% on 'better' ranches.

Figure 5 1 -- Cycle of Production, Pajapan Area.
Solid lines indicate regular activity; broken lines, irregular activity

posts. The care and handling of the herd involves seasonal breeding and calving, the rotation of cattle between paddocks, spraying animals with tickicide, supplying salt and checking animals to ensure that they have not escaped from the paddock. The amount of time devoted to these tasks depends upon the size of the individual herd and the extent of pasture.

Based on interviews and survey data it is estimated that ranchers with fewer than 10 head of cattle average approximately a day or two a week in the care and handling of their cattle while ranchers with larger herds devote approximately three days a week to these tasks. Between 1.7 and 2 person days per hectare per year are required to maintain pasture, compared to 81 person days per hectare required for corn cultivation (Stuart, 1978; see section on *milpa* cultivation for details).

Although cattle ranching in Pajapan requires very little labour, it may be more labour intensive than in other parts of tropical Mexico where ranches are much larger. An agronomist points out that, on average, one person-year is required to maintain 100 hectares of pasture in southeastern Mexico (Romanini, 1978:4). Revel (1980:37) suggests that Veracruz ranches of 500 head of cattle on 1,500 - 2,000 hectares of land create one job per 500 hectares of land.

The Technical Development of Cattle Ranching in Pajapan

Cattle ranching in Pajapan has passed through two distinct phases of technical development since cattle were first introduced to the area. The first phase, characterized by large herds of poor quality

animals and extensive grazing conditions, began during the 1950s when the number of cattle and the amount of pasture increased rapidly. The existing communal land tenure system enabled a few locally powerful ranchers to gain control of large blocks of land. They initially occupied natural savannahs but, as time passed, abandoned corn fields were seeded with grass and vast areas of second growth were converted to pasture. Peasants were forced to clear mature forest for *milpa* cultivation, which in turn made way for more pasture once the plot was abandoned. By the early 1980s virtually all of Pajapan's arable land had been cleared of mature forest and two thirds was under pasture (10,150 hectares).

The total herd grazing on the communal land reached an all-time high of approximately 11,000. While herds ranged in size from a few animals to 700 head, approximately 84% of the total herd was owned by 40 families with average herds of 230 animals. There were few small or medium sized herds. Cattle grazed extensively over large areas of pasture. There were few fences and the only rotation of pastures was seasonal: lowland pastures were utilized during the dry season and highland pastures during the wet season. Ranchers usually controlled land in both these areas. Because ranchers controlled large areas of pasture, there was little incentive to improve pasture or use it efficiently. Depending upon the size of the herd and location of the land, some areas were undergrazed while others were overgrazed.

The second phase of development, characterized by smaller herds and more intensive grazing conditions, was initiated in 1982 when

land reform was introduced. One quarter of the communal land was expropriated to make way for the industrial port and the remainder was divided into parcels of 12 hectares each. As already noted, the amount of available pasture dropped by 32% from approximately 10,150 hectares to 6,950 hectares. Of special significance was the loss of the lowland, an area of prime dry season grazing. Ranchers were forced to move their cattle off the expropriated land onto much smaller individual parcels of land and reduce the size of their herds (see Chapter Four for details).

Major changes in management practices have resulted from the land reform. The division and reduction of pasture has forced the rotation of cattle among many smaller paddocks rented from peasants without cattle of their own. While pasture rotation is potentially a good management practice because it allows time for the pasture to recover from grazing, the scarcity of pasture and the extra costs of pasture rental encourage many ranchers to graze the pasture to the maximum before moving their cattle. The survey data indicate that the average grazing period on a single 12 hectare parcel of land is approximately 6 months, a period far in excess of the monthly rotation recommended by agronomists.

The survey data also suggest that rented pasture is grazed more intensively than pasture owned by ranchers, creating a double standard in pasture management. Stocking rates for rented pasture are on average 1.7 to 2 head of cattle per hectare while on pastures owned by large ranchers the stocking rate is usually less than one animal per hectare. Rented pasture also tends to be located on

poorer quality high ground near the foot of the volcano. Overgrazing these pastures results in even more severe sheet erosion than on the lowland pastures.

Pasture management is more problematic now than before the land reform because individual herds have to be moved between widely separated parcels of land, a difficult proposition when the land has become criss-crossed with fences. This has discouraged investment in cattle management facilities such as corrals and tick baths. Dependence upon rented pasture also discourages investment by ranchers in pasture improvement because they cannot be assured of access to the improved pasture. Finally, some parcels with pasture are not suitable for grazing cattle because they do not include access to a stream where cattle can drink.

The reduction of the size of herds poses serious problems for breeding potential and the improvement of grazing stock as a whole. Because bulls are costly to maintain and only required during the breeding season, herds of less than 20 animals do not usually include a mature breeding bull. These small ranchers instead rely on breeding bulls rented periodically from larger herds. The results of this kind of breeding are consequently less certain than when a herd has a bull constantly available for breeding. In addition, very small herds leave the rancher with little room for culling lesser quality animals and few opportunities to improve the stock through cross-breeding.

The loss of dry season pasture in the lowland area has contributed significantly to the process of soil degradation in

Pajapan. As already noted, the survey data and other local studies suggest that the average stocking rate for pasture in the Pajapan area during the early 1980s was between 0.8 and 1.0 head of cattle per hectare of pasture. This rate did not change following the expropriation and land reform despite the loss of the very productive lowland zone. Rather than significantly reduce the animal load on the poorer quality land, ranchers are presently maintaining it. This practice will probably result in overgrazing and accelerate the process of soil compaction, erosion and weed invasion.

To sum up, the stable equilibrium of the rainforest and its numerous resources has been replaced by a ranching system with restrictions on the development of its productive potential and the maintenance of soil resources. Tropical pastures are seasonal and ecologically unstable. Prior to the reform, ranchers were able to use extensive parcels of land with dry season pastures and thereby reduce some of these limitations. Nevertheless, the rainforests were destroyed and the productivity of production remained low. Since the reform, the scale of production has been reduced and there has been an intensification of land use. This has not resulted in the *concentration* of energy output normally associated with the capitalist development of forces of production. On the contrary, the intensification of cattle ranching has exacerbated problems of inefficient land use, animal management and low productivity. Meanwhile, trends of soil impoverishment and pasture degradation initiated by the introduction of cattle into the local economy continue and deepen under the new system, with negative long-term

impacts for both the environment and agricultural productivity. This latter issue is examined in the following section on *milpa* cultivation.

Milpa Cultivation

Cattle ranching in Pajapan has displaced an agricultural system based on the cultivation of food crops. This section examines the ecology of *milpa* cultivation and demonstrates that the expansion of cattle ranching in Pajapan has undermined food self-sufficiency and many of adaptive features of food agriculture. As a result of the cattle industry, the total amount of land dedicated to food agriculture and the size of individual *milpas* has declined. Fewer households engage in dry season corn cultivation or intercropping and the amount of fallow land available for crop rotation in Pajapan is greatly reduced. In short, the cattle industry has transformed the traditional *milpa* model and resulted in long-term negative impacts on the environment.

Milpa Ecology

The essence of *milpa* cultivation in the tropics is its impermanence. A field is cleared from rainforest, cultivated for a few years and then abandoned. The process repeats itself in another area while the cultivated land recovers its fertility under second growth. Contrary to first appearances, the *milpa* system is not necessarily a voracious consumer of mature rainforest. Isolated plots of

cultivated land are swallowed-up by the rainforest without threatening either the survival of the rainforest or the soil base. As many scientists have noted, the use of small pieces of land for *milpa* agriculture is similar to the occasional destruction of the forest by natural causes; the rainforest will be regenerated from the genetic pool in the untouched forest.

The image of *milpa* cultivation as a forest-linked agroecosystem is relatively recent. A few decades ago it was more frequently described as 'robber economy' bent on the rapid destruction of the rainforest environment. The extensive nature of the *milpa* system was contrasted with the intensive use of land associated with the agricultural inputs and techniques of temperate agriculture. But in recent years an understanding of the virtues of *milpa* agriculture has emerged, emphasizing the ability of the system to copy key characteristics of rainforest ecology. Like the rainforest it replaces, *milpa* cultivation utilizes a plant to plant recycling process, protects the soil with a closed cover architecture and maintains a high diversity of plant species as protection against pests and diseases. While all agroecosystems 'leak' nutrients from the system as a result of limited recycling mechanisms and the removal of energy through produce harvested, the traditional model of *milpa* cultivation is perhaps the agricultural system most similar to a tropical ecosystem.

Nutrient Recycling

When a *milpa* is cleared, fallen trees, saplings and slash are left on the field. The vegetation dries in the hot sun and may be burned after a month or so. Burning clears the field for planting but also converts the vegetation into a uniform layer of ash rich in plant nutrients. The poor tropical soils benefit as much from increased levels of pH, phosphorus, calcium, magnesium and other plant nutrients as from decreased levels of toxic aluminum ions (Fearnside, 1986:53). Enough plant nutrients are transferred from rainforest vegetation to the soil to support crop cultivation. While some of the energy locked up in the rainforest vegetation is lost when it is burned, plant nutrients are redirected into annual crops useful to humans, without drawing heavily on the limited resources of the soil. Thus, the plant to plant recycling process accomplished by decomposition on the rainforest floor is replaced by the slash and burn techniques of land preparation.

Close-Cover Architecture

The traditional *milpa* does not resemble the orderly fields of temperate agriculture. Instead, the *milpa* is chaotic. Stumps of burned trees, an occasional living tree and perennial plants such as bananas and fruit trees protrude through the main crop, creating an upper strata of vegetation. Crops are planted in rows but they are inter-twined and inter-planted with a variety of plant species at different times of the year. The crops grow at different rates and root at various levels in the soil. The general effect of this planting

strategy is to cover the field with vegetation at all times and create strata of vegetation that break the force of the rain, provide shade to the soil and conserve soil moisture. While the canopy is by no means as complete as that provided by mature rainforest, a degree of closed-cover architecture is achieved.

Plant Diversity

The traditional *milpa* contains many inter-planted crop species. Corn, beans, sweet potatoes, yucca, squash, chiles, banannas, and many other food crops are intermixed or planted in small quantities in different parts of the *milpa*. As a result, plants of the same species are relatively isolated from each other by plants of another species. This planting strategy reduces the spread of pests and plant diseases while at the same time providing a wide variety of food crops available in times of shortage or crop failure. The diversity and relative isolation of plant species is not nearly as great as that found in tropical rainforest but the advantages of this strategy over monocropping are significant.

Although nutrient recycling, closed-cover architecture and plant diversity are features of the rain forest ecosystem copied in *milpa* cultivation, the imitation is incomplete: the rainforest is self-perpetuating while the *milpa* is not. The food plants cannot feed upon themselves and repeated slashing and burning cannot sustain the nutrient cycle. Because of soil impoverishment, pests, plant diseases, and competition with weeds, agricultural productivity

falls off considerably after a few years. This decline in productivity eventually forces peasants to abandon the fields.

Abandoning a field to second growth is an effective strategy for restoring the potential agricultural productivity of cultivated land in the tropics. While in temperate zones forages accumulate biomass and nutrients more efficiently than natural vegetation, in the tropics the efficiency of second growth is greater (Romanini, 1978:16,19). The plant species characteristic of second growth are adapted to the low nutrient status of the soil and grow rapidly in the first five years. Nutrients depleted from the soil and from original vegetation as a result of burning, cropping and exposure to the elements are replaced under second growth and imbalances in the availability of nutrients are corrected. Soils compacted and hardened under the impact of rain are softened and weeds that compete with food crops for plant nutrients are shaded out.

Fallowing is an integral part of *milpa* cultivation. Farmers view second growth as a potential *milpa* and will return to the abandoned field once the agricultural productivity of the land has been restored. Second growth is preferred over mature forest because less labour is needed to clear the land: 16 to 18 days per hectare of second growth compared to 20 to 25 days for the equivalent area of mature forest.¹ Thus, the progression of the *milpa* tends to be cyclical. If an adequate period of fallow is allowed, the cycle can be

¹ Stuart (1978) argues that the villagers of Peña Hermosa also prefer to clear second growth because in the first year of cropping on land converted directly from mature forest the roots of the trees compete with food plants for soil nutrients.

repeated indefinitely. In this critical sense, there is considerable similarity between the rainforest ecosystem and *milpa* ecology.

The Agricultural Cycle

Milpa cultivation in Pajapan revolves around wet season corn production. While other crops are grown in the *milpa*, the production of corn sets the stage for all agricultural activities. This section examines the corn cycle including the techniques of cultivation, productivity and labour requirements. The analysis is based on survey data, direct observation and research by Stuart (1978) into the agricultural practices of peasants in the area.

Preparations for planting corn begin well in advance of the wet season. Land clearing begins in February or March so that the vegetation can dry thoroughly for burning in May. The all-purpose machete is used for clearing land although an axe may be needed for felling large trees. Mature forest requires more time to clear and dry than second growth or fields that have been recently cultivated. An hectare of mature forest can be cleared in approximately 20 to 25 days; a month or more of sunshine is needed to dry the vegetation thoroughly. The equivalent area of second growth can be cleared in 16 to 18 days and the cut vegetation will dry in a couple of weeks. A one hectare field covered with a light stubble or young second growth requires 12 to 16 days to clear and the vegetation dries in only a few days.

The dry vegetation is burned to clear the land, convert the forest into a nutrient-rich ash, kill insects and weed seeds and soften the

soil for planting. Burning can usually be completed in a day but each type of vegetation requires different weather conditions. Fields cut from mature forest should be burned on windless days to reduce the risk of wild fires. Second growth requires a day with light winds so that the fire can spread across the vegetation without the danger of flying sparks. Burning a field with very little vegetation requires a day with strong winds so that the fire can spread evenly. Stuart (1978:123) notes that because "fields require different lengths of time for drying and different weather conditions for proper burning, all fields are not burned on the same day or even during the same week." Nevertheless, clearing and burning must be completed before the onset of the rains in late May or early June.

Planting is undertaken with a dibble stick used to punch a small hole in the ground into which seeds are placed. The surface of the soil is not disturbed, thereby minimizing the risks of soil erosion and the loss of soil moisture. Very few peasants in Pajapan utilize a plough. The timing of planting depends upon a number of factors. Low-lying areas where the soil has good water retention capacity can be planted immediately after the first rains of late May or early June. Hillside *milpas* where the soil is very dry or *milpas* with sandy soil must be planted after the rainy season has begun in earnest and the soil has become well watered. Moisture is critical to corn production at germination and flowering although at other times the plant can withstand dry conditions. While premature planting can result in crop failure, planting too late increases the risk of damage to the crop during the storms of September (Stuart,

1978:78). No fertilizers are introduced into the soil but most peasants mix a small amount of pesticide or kerosene with the seed to minimize damage caused by ants that may dig up the planted seed. An hectare of corn can be planted in approximately 6 days.

Corn is very susceptible to weed competition and requires relatively clear cultivation. While burning the original vegetation kills the weed seeds in the *milpa*, more seeds are blown onto the field from nearby second growth, from rainforest or are accidentally carried by clothing. *Milpas* are typically weeded twice, in July and then in August. If weeding is incomplete or late, competition for plant nutrients and soil moisture will slow development of the corn and the harvest will suffer. To weed a field, the worker proceeds down the rows of corn loosening the earth around the weeds with the tip of a machete and removing them from the field. Herbicides are not commonly utilized to control weeds in Pajapan. Pajapeños devote more time to weeding than any other stage of the cultivation process, approximately 30 person days for each hectare of corn planted. Fields that have been cultivated for several seasons tend to be invaded more heavily by weeds and may require additional labour.

Corn requires approximately 10 weeks to mature. The pace of growth is determined by plant physiology, sunshine and rainfall. Depending upon the time of planting, the first tender ears of corn may be harvested beginning in late August. By September the corn is usually mature. Once the plant has stopped growing, the stalks are doubled over to protect the ear from the elements. Rain runs off the down-turned husks of corn and the doubled plant will not be blown

down by the 'Nortes'. The protected corn continues to dry on the stalk and can be harvested piecemeal throughout October and November. Dryness is important too if the grain is to mature free from mould. A donkey or horse may be used to carry the harvest from the field to the home or, if none is available, the back of the peasant will do. Stuart notes that approximately 12 person days are required to harvest one hectare of corn, depending upon the size of the yield.

In many parts of Mexico the wet season is the only time of year when corn production is possible without irrigation. However, in Pajapan dry season corn cultivation is possible in areas where the *milpa* is protected from the hot, southern winds and the soil has good water retention capability. The flat lowland area is suitable for dry season cropping as are narrow strips of land in gullies and stream beds on the rolling land near the village of Pajapan. By contrast, the higher, well drained land near the base of the volcano is very hard and dry during the dry season and is exposed to the southern wind. These differences are clearly reflected in table 5.3.

Table: 5.3 PARCEL LOCATION AND DRY SEASON CROPPING*

<u>LOCATION</u>	<u>ONE HARVEST</u>	<u>TWO HARVESTS</u>
VOLCANO	80%	20%
MID ZONE	65%	35%
LOWLAND	44%	56%

* % of households with one or two harvests by location.

The dry season *milpa* is planted in November or December and harvested in April or May. Techniques of production differ in several respects from the wet season. For example, the dry season *milpa* is usually planted on the same field as the previously harvested wet season *milpa* and as a result relatively little vegetation must be cleared to prepare the land. The slash produced from weeds and the stalks of corn plants is not burned but rather is chopped finely to act as a mulch for conserving soil moisture during the height of the dry season. Because of the dry climatic conditions, less weeding is required and corn stalks do not need to be doubled, thereby reducing the amount of labour required to cultivate dry season corn. However, the dry soil conditions also reduce productivity by more than one third compared to wet season production (see below).

Our survey data indicate that in Pajapan the 1985 wet season corn harvest averaged 1.37 metric tons (MT) per hectare and the 1986 dry season harvest averaged 0.84 MT per hectare. As could be expected, soil fertility had a significant impact on *milpa* yields (table 5.4).

Table: 5.4 CORN YIELD PER HECTARE

	GOOD LAND	AVERAGE LAND	POOR LAND
WET SEASON	1.61 MT/HA	1.39 MT/HA	0.94 MT/HA
DRY SEASON	1.16 MT/HA	0.78 MT/HA	0.50 MT/HA

These yield figures are low in comparison to reported yields from previous decades. Blom and La Farge (1924) noted yields of 3-4 MT

per hectare for the area during the 1920's and local informants report that yields of 3 MT per hectare or more were common in the 1930's and 1940's. The beginning of the decline in corn yields is associated by local peasants with the removal of an Olmec statue of a corn god during the early 1950's, a date that also corresponds to the first local development of cattle ranching.

The amount of labour involved in corn cultivation is considerable. Stuart (1978:272) estimates that approximately 89 days of labour per hectare are required for wet season corn production while dry season corn requires some 36 days (Table: 5.5). The organization and execution of work activities can be undertaken by a single individual although various members of a family are usually involved. The division of labour is very simple. Men and older boys undertake heavy tasks such as clearing while all members of the family including women and children participate in weeding and harvesting. Judgement and careful planning are required to minimize the uncertainty and risks associated with variable weather conditions. Farmers nevertheless exercise very little control over the timing and pace of agricultural work or the kinds of tasks that must be completed. The outcome of production is always in doubt.

TABLE: 5.5 PERSON-DAYS OF LABOUR FOR 1 HECTARE OF CORN

<u>TASK</u>	<u>WET SEASON</u>	<u>DRY SEASON</u>
clearing ¹	20	12
piling and burning	6	NA
planting	6	6
weeding	30	10
doubling	9	NA
guarding	2	2
harvest and carrying ²	12	4
storing	4	2
	---	---
Totals	89	36

Notes: ¹ Clearing task refers to a field cut from acahual. ² Harvest and carrying during the wet season assumes a 700 kilo yield; dry season assumes a 210 kilo yield. Source: Stuart, 1978:272.

Bush beans, the common black bean of southern Mexico, is the most important secondary crop planted in *milpas* in Pajapan. Stuart (1978:393) reports that there are two potential seasons for planting bush beans in southern Veracruz: "the venturero planting in June, followed by a September harvest; and the cosechero planting in September and early October, for harvest in December." The latter planting time is generally preferred because the beans can be planted in between the drying corn plants, thereby reducing the amount of land that must be cleared. Beans do not grow well in soils with a high aluminum saturation, low nutrient status or in areas with high temperatures and rainfall. Because of the frequent Nortes and heavy rains that strike the Gulf coast throughout the fall season, bean production in the Pajapan area is limited. The beans lose many

of their flowers to the rains and under the wet conditions of the fall pods of the ripened beans do not dry and open. This prevents satisfactory threshing and poses the risk that the beans will sprout inside the pods. While some beans can be dried in the rafters of the peasant's kitchen, the amount that can be stored and dried in this manner is limited to about 60 kilos per household (Stuart, 1978:323) Planting and harvest times for corn other crops are given in Figure 5.1 (shown previously in this chapter).

The Milpa Model and the Development of Cattle Ranching

Peasants of Pajapan have been cultivating corn and other staple crops since time immemorial. But beginning in the 1950s, land was increasingly diverted from *milpa* cultivation to pasture. Ranchers forcefully occupied the fertile lowland area where dry-season pastures could be produced and displaced peasants to the poorer quality land above the village. Land covered by rainforest was gradually cleared for *milpa* cultivation only to be diverted to pasture production by an expanding cattle sector. As the amount of new land available for cultivation declined, many peasants were pushed out of agriculture altogether and into other sectors of the rural and urban economy. Local food self-sufficiency was undermined and the economy became dependent upon imported foodstuffs including corn, the basic grain of the Mexican diet. Local informants report that there were severe food shortages in Pajapan during the 1960s and 1970s and that some segments of the population suffered from chronic malnutrition.

The land reform of 1982 has facilitated a partial return to *milpa* cultivation. As already noted, the proportion of landless in Pajapan fell from 60% to 40% of the population as a result of land reform. By 1986 approximately 80% of the local population was cultivating a small plot of corn on their own land, on land rented from *comuneros* with landholdings or in the expropriated zone. Despite the loss of 25% of the communal land holding to the petrochemical industry, the total land area devoted to *milpa* cultivation increased following the land redistribution. Our survey data indicate that in 1986 approximately 1183 hectares of the communal land were devoted to *milpa* cultivation: 1083 hectares of corn and 100 hectares for other food crops including beans, sweet potatoes, manioc, bananas, etc. Corn production for the 12 month period extending from 1985 (wet season) to 1986 (dry season) amounted to 1,100 metric tons of shelled corn, worth approximately \$150,000 on the local market. According to local informants, this represents a sizeable increase in corn production compared to the 1970s.

Even though more households are growing corn than prior to the reform, the total cultivated area still only represents approximately 8% of the arable land of Pajapan.¹ Furthermore, the productivity of the *milpa* system is much lower in Pajapan than the traditional model would indicate. In Peña Hermosa, an isolated Nahuatl hamlet east of Pajapan unaffected by the cattle industry, there are significant differences in the size of the *milpa*, the variability of output provided by intercropping, the number of corn harvests per

¹ Including the expropriated zone, some of which was cultivated by Pajapeños in 1986.

year and other indicators of *milpa* productivity. In the following sub-sections, findings from our Pajapan survey data are compared and contrasted with Stuart's analysis of the traditional *milpa* system in Peña Hermosa. The differences between the two village *milpa* systems can be attributed to the influence of the cattle industry.

Milpa Size

Milpas in Peña Hermosa average approximately two hectares. This is usually divided into several plots ranging in size from a few *tareas* to an hectare or so. By contrast, Pajapeños cultivate on average only three quarters of an hectare, usually in one plot. Of the 12 hectares of land owned by each *comunero*, an average of 9 hectares are devoted to pasture production, leaving little land for *milpas* and second growth.

Yield in MT/hld.

In Peña Hermosa, households produce on average approximately 1475 kilos of corn per year. According to Stuart, households in Peña Hermosa are self-sufficient in corn and many other foodstuffs. By contrast, the average yield per household in Pajapan was approximately 1000 kilos of corn per year, 32% lower than household production reported in Peña Hermosa. While 80% of all households in Pajapan produce corn, approximately 45% of the households engaged in corn production must purchase corn during the year, usually for a

period of 4 to 6 months. Only 55% of all corn producers in Pajapan are self-sufficient in this essential grain.

Dry season Planting

In Peña Hermosa, all milperos cultivate both a wet season and a dry season *milpa*. While dry season yields are lower than wet season yields, the additional harvest provides an important supplement to the corn supply at a time of the year when the stores of corn are running low for many families. By contrast, in Pajapan only 22% of all *comuneros* produce two harvests a year. Few households in Pajapan cultivate dry season corn because most of the lowland best suited to dry season cultivation is dedicated to pasture production.

Intercropping

In Peña Hermosa, the *milpa* includes many crops other than corn. In 1975, more than two-thirds of all households harvested beans, sweet potatoes, manioc, plantains and bananas.

In addition to maize, most *milpas* contain from three to ten second crops. The most common of these, all grown by 50% or more of the cultivating groups, are plantains/bananas, volunteer quiletes, volunteer perennial chiles, vine beans, sugar cane, manioc, sweet potatoes, squash, and dasheen. Other wet season crops planted in milpas include rice, tannia, chayote, yam bean, annato, papaya, pineapple, bush beans, annual chilies, garlic, pigeon pea, and sesame (Stuart, 1978:147).

By contrast, only one fifth of all village households in Pajapan cultivate food crops other than corn. Even those few Pajapeños who

intercrop cultivate only three or four staple plant species. In fact, the total number of hectares devoted to food crops other than corn in 1986 was very limited: approximately 100 hectares or less than 1% of Pajapan's arable land. Approximately 44 hectares were dedicated to beans, 27 hectares to sweet potatoes, 19 hectares to manioc, 5 hectares to chayote and 5 hectares to bananas. The total harvest and market value of these products was negligible compared to corn (Table 5.6).

Table: 5.6 FOOD CULTIVATES OTHER THAN CORN

	PEÑA HERMOSA 1976 <u>% Hlds</u>	COMMUNAL LAND 1986		
		<u>Hlds</u>	<u>HAS</u>	<u>MT</u>
BEANS	93	125	44	33
S. POTATOES	68	43	27	101
MANIOC	71	33	19	228
CHAYOTE	46	20	5	145
BANANA	93	22	5	-

N.B. Communal Land = 1480 Hlds.; Peña Hermosa = 28 Hlds.

All peasants in Peña Hermosa have access to land capable of producing a variety of crops. In addition, they are extremely isolated from commodity markets in foodstuffs, cattle and labour. Survival depends upon a high degree of food self-sufficiency and few if any benefits can be had from cash crop specialization.

In contrast, the relative absence of intercropping in Pajapan is a consequence of increased pasture production. Table 5.7 shows that the frequency of intercropping and the amount of land devoted to crops other than corn decrease as more land is given over to pasture. The survey data also indicate that 82% of the land devoted to sweet

potatoes is cultivated by landholders with less than 10 hectares of pasture; 86% of the land devoted to manioc is cultivated by households that have no pasture on their parcel. In effect, many Pajapeños have been forced to limit their *milpa* production to corn for domestic consumption.

Table 5.7 INTERCROPPING BY LAND USE
LANDHOLDING HOUSEHOLDS (1 PARCEL) ONLY

HAS IN PASTURE	<u>CROP STATISTICS</u>						
	<u>ALL HLDS</u>	<u>INTERCROPPERS</u>		<u>AV. HAS</u>		<u>% LAND</u>	
	ROW %	C1 %	C2 %	C1	C2	C1	C2
NONE	29.5	24.0		0.80		51.2	
LESS THAN 10	12.6	18.0	44.0	0.79	0.45	16.2	79.0
10 AND ABOVE	57.9	15.0	19.0	0.41	0.16	32.6	14.0

N.B. C1 = General survey data (N 592); C2 = Small agricultural survey data (N 49)

Labour Productivities

Stuart's analysis of labour productivities for *milpa* cultivation in Peña Hermosa indicates that the *milpa* system he observed was at least as efficient in terms of the return to labour as *milpa* systems documented in similar environments elsewhere in Mexico.¹ Weed invasion, a major cause of lower labour productivities in degraded *milpa* systems, is not a serious problem in Peña Hermosa. By contrast, interviews with local informants in Pajapan suggest that the amount of work required to weed *milpas* has been increasing in recent years, thereby reducing the return to labour. The main

¹ Our own data on labour inputs and total agricultural outputs is not as detailed as Stuart's and precludes any direct comparison of the two systems.

reasons for increasing weed invasion in Pajapan are that fields are being cultivated more frequently and insufficient time is being allowed for second growth to shade out the weeds. The root cause of this pressure on land resources is the domination of the cattle industry.

The Ratio of Cropping to Regrowth

The time period required to fully restore soil quality varies greatly from place to place and depends upon a number of factors including rainfall, soil type, the period of cultivation and agricultural techniques and technology. It is generally held by agronomists that 90 percent or more of the total agricultural cycle should allow the regrowth of natural vegetation if long term soil impairment is to be avoided. This means that one year of cultivation must be followed by 9 years or more of regrowth. Under special circumstances cycles of regrowth can be shortened without impairing soil quality but "when crop-fallow time ratios of 2:4 or 3:5 or less are found, it is almost certain that steady deterioration of the soil base is occurring" (Watters, 1971:30 quoted in Stuart, 1978:316).

The ratio of cropping to regrowth in Peña Hermosa does not conform to the recommendations of agronomists. Stuart observed that in the mid 1970s the cropping ratio in Peña Hermosa was approximately three to five years of cultivation followed by an equal number of years during which the vegetation was allowed to regrow. He points out that the period of cultivation was unusually long in Peña Hermosa because the *milpas* in the area had only recently been

cleared from virgin forest. The peasants were benefiting temporarily from the high fertility of virgin land, a situation expected to change overtime. His informants believed that the cropping ratio on their land would stabilize at two years of cultivation followed by four years of regrowth. The villagers of Peña Hermosa based their assessment of future fallowing practices on previous experience with land they cultivated in their home villages of Pajapan and San Juan Volador. According to these informants, the cropping ratio for Pajapan during the 1970s was 2:4 and yields had remained stable for many years. "No informants reported having used longer fallow periods in the past, nor do they consider fallows longer than five years to be in any way superior to present fallowing periods" (Stuart, 1978:315).

Stuart maintains that regrowth of from three to five years following one or two years of cultivation is sufficient to maintain long term cultivation (1978:317). He examines the effects of short periods of regrowth on soil quality and concludes that the present practice does not result in irreversible soil degradation. Analysis of local soil samples indicate that regrowth of 4 - 5 years restores the nutrient status of the soil to the same levels found under mature forest. Also, the land cultivated by the villagers does not suffer from soil erosion.

No channel erosion was observed in any field, including some with slopes up to approximately 30°, nor did informants report channel erosion on their previous fields in the long cultivated areas surrounding their original villages. ... Sheet erosion does occur, but does

not appear to be great. ... From my observations, and the memory of informants, it does not appear that erosion is or was a serious problem, even with the short fallow periods common in the area (Stuart, 1978:311).

Stuart explains the difference between the expected consequences of very short periods of regrowth and the absence of environmental degradation in Peña Hermosa by closely examining the way peasants make decisions to cultivate fields. He points out that the decision to allow the natural vegetation to regrow is based solely on the previous year's harvest. Cropping is continued until yields drop below a minimum standard (10 cargas of corn per hectare or approximately 600-700 kg of shelled corn). Yield decline provides feedback to the farmer which in turn results in occasional modifications in the length of the cropping period.

If yields fall to that [minimum] level, the field is fallowed for three to five years and is then recropped. If, after numerous cycles of cropping and fallowing, first year yields fell to below 10 cargas, present decision rules would result in fallowing after only one year, thus establishing a cropping-fallow ratio of 1:3-5, comparable to the 1:4 ratio recommended by Watters (Stuart, 1978:316).

Stuart argues that the short cropping cycle practiced in Peña Hermosa is sustainable in the long term. It is very unlikely, however, that the same can be said of Pajapan because intensive cropping is even greater. The survey data indicate that in Pajapan two years of cultivation are on average followed by only three years of regrowth. The amount of regrowth available for rotation is very

limited; only 26% of the arable land is covered by natural vegetation and 38% of the 12 hectare parcels controlled by *comuneros* have no tree-covered land whatsoever. Many peasants cultivate one part of the parcel while the rest is dedicated to pasture production for grazing cattle. When the field is allowed to rest, the farmer shifts the *milpa* to an area of pasture that has been degraded by the partial invasion of forest vegetation. Thus, resting land has in many cases been reduced to the rotation of land from pasture to *milpa* and back to pasture with only limited amounts of regrowth being established in between.

In addition to the very short periods of regrowth, the agricultural system in Pajapan suffers from the absence of mature forest in the ecosystem for overall stability and regeneration of cropping areas. Since there is very little surrounding forest, regrowth is slower and crops do not benefit from pest and disease protection offered by a buffer zone of forest.

There are many signs that overcultivation is beginning to undermine the *milpa* system in Pajapan. While at one time the land near the base of the volcano was covered by a thin layer of black soil over red earths, presently the land has been reduced to a hardpan made up almost entirely of red earths. Our survey data indicate that approximately 45% of the land under corn cultivation is composed of these poor quality soils. As already noted, the communal land suffers from sheet erosion and weed invasion. In some areas, regrowth has been reduced to an inferior shrub growth. The

productivity of corn has also declined compared to harvests that predate the introduction of cattle into the area.

To sum up, the cattle industry has restricted the reproduction of a viable peasant economy and the overall development of food agriculture in this part of Mexico. Land reform has increased the villagers' capacity to provide for their own subsistence needs but the limited amount of land available for food agriculture and the unequal distribution of quality land has reduced the productivity of the *milpa* system. The potential yield per unit of cultivated land and the number of harvests per year is lower than during decades prior to the development of cattle ranching. The diversity of food production has declined dramatically as has the size of the average *milpa*. Very few households in Pajapan are self-sufficient in corn production let alone other food items. The conversion of forested land into pasture has also reduced the cropping ratio to levels that have contributed to the degradation of the soil resources and undermined the long-term productivity of the agricultural system.

Hunting

Analyses of peasant agriculture in the tropics have frequently focused on the role of non-agricultural foodstuffs in the maintenance of a subsistence system (Roosevelt, 1980; Gross, 1975). Stuart argues that in Peña Hermosa adequate dietary protein cannot be provided from agricultural products alone because of limitations on the production of beans. Animal protein must be

included in the diet of the villagers in order to attain a minimum standard of nutrition. He notes that the major sources of protein in the present diet are corn (41%), meat and poultry (17.5%), fish (15.8%) and beans (14.9%). Hunting provides approximately 70% of the meat and 13% of the protein consumed by the villagers of Peña Hermosa. Some 15 species of animals considered potential food sources are known to inhabit the tropical rainforest surrounding the village. The brocket deer, paca, agouti and armadillo are killed and eaten regularly while two species of iguana, peccaries, tapirs, racoons, freshwater turtles and several species of birds are taken occasionally.

Because the wild animal population in the rainforest is widely dispersed and many species can easily escape into the forest canopy, hunting is difficult. Most of the animals killed in Peña Hermosa are not encountered in the forest but rather in or near *milpas* where they have come in search of food. Pacas, brocket deer and raccoons are attracted from the forest to the *milpa* during the late spring and early summer when the maize is young and again in late summer when the ears form. They are hunted by villagers before dawn with firearms or a bow and arrow. Iguana and some species of birds are killed when farmers are walking to and from their *milpas*. These forms of hunting occupy little time because many of the animals are encountered during the course of normal agricultural activities (Stuart, 1978).

Night hunts in the forest by small parties of men with dogs are undertaken occasionally to drive armadillo, paca or agouti into a

burrow where they can be dug out and killed with a machete. As well, hunters armed with guns or bow and arrow may search for brocket deer, peccaries or tapirs in the forest. These hunts are seasonal, occurring mainly in the dry season when the footing on the forest floor is more secure and visibility is better. Unlike the chance encounter of animals in *milpas*, night hunts and forest hunting require a large amount of energy for each unit of catch.

The animal population in tropical rainforests is usually very small. Because the forest's abundant vegetation is mainly composed of wood unpalatable to most animals, they must spread out to search for scarce food resources. This limits both the rate of animal reproduction and the proportion of animals that humans can harvest each year. Many species can be easily overhunted. For example, in the few years since Peña Hermosa was settled, tapirs and peccaries have been hunted to near extinction in the area. Many other forms of wildlife once abundant in Los Tuxtlas are now rare or non-existent as a result of loss of habitat and overpredation.

In addition to the hunting activities already described, some wild animals are killed for their pelts by petty traders travelling through the rainforest from Pajapan to remote villages. Ocelot, margay and jaguarundi encountered along jungle trails may be shot and their pelts sold to a few fur buyers in Coatzacoalcos. Olive-throated parrots are also occasionally captured in the rainforest on the upper slopes of the volcano and sold in the city as are young spider monkeys. The hunting of a few forest animals for sale in urban

markets contrasts with the traditional use of the forest fauna as a source of protein for human consumption.

While constant predation has greatly reduced the local animal population, the loss of habitat resulting from the development of the cattle industry has hastened the decline of the rainforest fauna. Pasture over most of the communal land and the frequent clearing of second growth have destroyed natural habitats. Animals that venture beyond the forest edge onto cultivated land or animals such as white-tail deer that thrive in second growth have been subjected to overpredation by a human population which is itself deprived of access to land and adequate food resources. The result has been the extinction of many species of tropical fauna in the area and the loss of a traditionally significant source of protein essential to human nutrition. Presently, only a few individuals in Pajapan engage in hunting activities.

Fishing

The land crisis created by the expansion of cattle ranching in Pajapan has pushed peasants out of farming and into other sectors of the rural and urban economy. Fishing has absorbed some of this labour on a full or part-time basis. As a result of technical developments, a growing regional demand for fish and improvements in transportation between Pajapan, neighbouring communities and urban centres an increasing number of landless peasants have been integrated into the fishing sector. Heavier fishing pressure has in

turn undermined the ability of the environment to renew resources. The decline in the fish population has long term negative implications for the viability of the peasant economy.

The analysis that follows is based on extensive field research into the dynamics of fishing in the area. The data include the survey of the village of Pajapan utilized in other analyses (N 592), a survey of lagoon fishers (N 209), a complete census of Jicacal (N 74) and a census of all the coastal fishing boats in Las Barrillas (N 13) as well as nine months of participant observation in several Mexican fishing communities along the Gulf coast of Veracruz.

The Ecology of Fishing

The unique geographic situation of Pajapan provides the villagers with access to a wide variety of aquatic resources. The tropical streams that make their way from the Tuxtla mountains to the sea contain crayfish and small herbivorous fish. Only a few kilometres from the villages of Pajapan and San Juan Volador a wide variety of ocean fish thrive in the surf off the sandy beach or migrate seasonally along the shore. The lagoon at the lower edge of the communal land is an unusually productive aquatic environment containing many varieties of ocean and freshwater fish as well as oysters, clams, crabs and shrimp.

The exploitation of these varied aquatic resources is fraught with uncertainty. With the exception of the oyster and clam banks, the fish and crustaceans of the streams, lagoon and ocean are difficult to locate and capture because they are mobile and

scattered in the water. Also, the abundance of fish and crustaceans varies both seasonally and annually. Crayfish in the tropical streams and estuaries are available only during the dry season when they migrate downstream to spawn. The peak fishing season in the lagoon occurs during the dry season, followed by a short season in August for the shrimp fishery and in December when sea mullets enter the lagoon to spawn. The supply of ocean fish is seasonal and unpredictable because the fish population experiences natural cyclical fluctuations and is exposed to predation by fishers beyond the boundaries of the Gulf Nahua area. Furthermore, when the 'Nortes' of September, October and November strike the coast they create rough water conditions and turbulence, making it difficult to harvest oysters, clams and some fish. Thus while many aquatic species are found in the nutrient-rich lagoon and coastal environments, their abundance is subject to significant seasonal and periodic fluctuations in abundance (Figure: 5.2).

Figure: 5.2
Seasonal Variations in the Number of Species
and Organisms

Source: Bozada, L. and Z. Chávez, 1986 Seasonal fluctuations in the number of species and organisms captured in the Laguna del Ostión during a trial period in 1980 and 1981.

Uncertainties related to the mobility, seasonality and unpredictability of aquatic resources are compounded by the difficulties of storing production. In the tropics, fresh fish does not keep for more than a few hours and even when preserved by salting, smoking and drying it spoils within a few days. Without continuous refrigeration, the exploitation of fish resources is limited to levels that can be consumed or sold within a relatively short period. By contrast, agricultural products such as corn and beans can be preserved and consumed between periods of production.

Because the supply of fish is restricted by natural reproductive cycles, the aquatic environment imposes severe limits on the development of resource productivity. Unlike agricultural resources, marine resources cannot be readily improved through the application of labour and technology. While this limitation depends partly on the level of technological development in a particular context, the marine environment (unlike the terrestrial one) has by and large frustrated human attempts to increase resource productivity. In fact, aquatic resources are subject to drastic depletive transformations. Many of the fish species captured in the lagoon are spawning in rich intertidal waters. The chucomite, an ocean fish, enters the lagoon to deposit its eggs near the mouth of the Huazuntlán and Tecolapan rivers. The lisa also enters the lagoon from the ocean to spawn, congregating in great numbers at its mouth and entering enmasse. Overfishing at these critical times can seriously deplete fish populations.

Marine ecology significantly affects the development of fishing technology and work organization. The great variety of marine species requires a parallel development of highly specialized technologies with narrow, seasonal applicability. The mobility of the resource restricts the concentration of the fishing labour force and the application of large scale technology. Fishing units of production are necessarily scattered and limited to small-scale technologies. Seasonality and the unpredictability of supply impose frequent interruptions on work activities and inhibit planning. The limitations on storing fish make it difficult to even out the seasonal

disparity in fish supply. In short, the ecology of aquatic resources limits the amount of control that fishers can exercise over the 'object of labour'. Fishing technology and work organization, examined below, consequently assume a central role in the development of the forces of production.

The Technical Transformation of Fishing in Pajapan

The villagers of Pajapan have access to three fisheries: freshwater streams, a lagoon and coastal waters. Each of these fisheries has a distinct technical profile.

The Freshwater Fishery

Numerous freshwater streams originating on the upper slopes of the volcano flow through the communal land and empty into the lagoon and Gulf of Mexico. The Gulf Nahuatl's traditional freshwater fishery involved the use of fish poisons, crayfish traps and a bow and arrow. Small streams were dammed by work parties and the sap of barbasco roots and vines was added to the water. Fish were stunned by the poison and floated to the surface where they were collected. Conical crayfish traps some 1.5 meters long were constructed from palm and placed in a narrow part of a stream. Crayfish migrating downstream entered the trap and were held by the pressure of rushing water until they were collected. A bow and arrow were also used to shoot fish in deeper waters.

When Stuart undertook his research in Peña Hermosa during the mid 1970s, fish poisons and the bow and arrow were no longer used

by the villagers. Some employed crayfish traps. In Pajapan, traditional techniques have been slightly modified by the introduction of a few simple tools. Crayfish are captured in a 'matayahuale', a circular hoop approximately three quarters of a metre in diameter strung with a filament net. Fishers stand in the water and use the hoop to scoop crayfish moving downstream. As well, fishers armed with short spears powered by a heavy elastic band and equipped with face-masks hunt small fish and crayfish in the streams. These techniques are only marginally more productive than traditional methods, if at all, although they involve a more active and mobile approach to locating and capturing aquatic resources. The limited effectiveness of the technology probably holds the level of production below sustainable levels.

The Lagoon Fishery

The traditional lagoon fishery exploited a limited number of aquatic species using locally produced technologies. Oysters were collected by hand in the shallow waters and among the roots of the mangrove trees. They were located with the feet and hands and pulled from the muddy bottom. Fishers could not reach the clams and large oysters found in very deep water. Land crabs were speared when forced to the surface of their burrows along the banks of the lagoon following heavy rains and freshwater crabs were captured in simple baited traps. Large fish were killed with a bow and arrow. To accomplish this, several fishers would canoe to the edge of the mangrove swamp or to one of the rivers entering the lagoon. The

fisher armed with the bow would climb into a tree overlooking the water while the other fisher slapped the surface of the water in the hope of startling fish resting among the roots of the mangroves. Fish that appeared would be shot with the arrow and collected by the fisher in the canoe. This technique was only effective with larger species and acceptable labour productivities depended upon an abundant fish population.

Traditional technology had limited productive potential. Only a few of the many species of fish and crustaceans present in the lagoon could be harvested and the technology relied upon very abundant fish populations and easily accessible oyster and clam banks. These limitations held the level of exploitation below the sustainable maximum yield. Only the manatee, a mammal with a very low rate of reproduction, seems to have suffered local extinction using traditional technology.

The introduction of a few simple tools during the 1950s and 1960s had a profound impact on the lagoon fishery. A face-mask and flippers allowed divers to exploit the deep oyster and clam banks and harvest shallow water banks more effectively. The introduction of purchased spear-guns made it possible for fishers equipped with face-masks and flippers to seek-out large fish in the deep, fast-moving water at the mouth of the lagoon. A cast net, woven from lightweight monofilament fishing line and hung with lead weights, facilitated the capture of very abundant small and medium sized fish feeding in the main body of the lagoon. Hand-held spears in combination with nets designed to trap fish in an enclosed area

allowed the harvest of small and medium sized fish in parts of the lagoon otherwise inaccessible.

As a result of using these simple tools, the amount of control exercised over lagoon resources increased. Many more species of fish could be readily exploited and a much larger surface area could be fished. The technology could also be used at times of the year when traditional methods proved ineffective, thereby extending the fishing season. The effectiveness of the new fish catching technologies is such that fishers with cast nets average approximately 5 kilos of fish during a six hour day while divers equipped with face-masks and flippers collect on average 40 clams and 6.5 litres of oysters in the same time period. These levels of exploitation were not possible in the traditional fishery.

The intensification and diversification of lagoon fishing was accomplished without radically altering the scale and type of production. There has been no mechanization of either the fish catching technologies or fishing vessels. The new tools of production are still 'artificial extensions of the person' controlled directly by the fisher. The unit of production has remained small and the division of labour is still very limited. Traditional knowledge concerning the ecology of fishing is preserved and even increased as net fishers must understand the movements of a greater variety of fish species. In short, the development of the forces of production in lagoon fishing does not reflect the 'real subordination process' whereby the labour force is concentrated into fewer but larger units of production. Nor has there been a

systematic differentiation between the conception and manual execution of labour or a deskilling process.

The Coastal Fishery

The traditional coastal fishery in Pajapan was limited to the occasional exploitation of a few fish species. Large fish such as sabalo, cason and peto were speared from a platform raised on poles erected beyond the surf in water two or three metres deep. Smaller fish were caught with a hook and line from the platform or the rock outcroppings that dot the coast of the communal land. These methods were successfully employed by villagers of Pajapan and San Juan Volador until the late 1950s when increasing coastal contamination by the oil industry forced migrating fish further from the shore and out of reach of simple technology.

In many Mestizo areas along the Gulf of Mexico, the traditional coastal fishing method was a labour intensive beach seining operation. Stuart reports that the residents of Peña Hermosa assisted crews of beach seiners that were spotted off the beaches (1978:192). Traditionally, beach seining involved the use of several 'piraguas', 10-12 metre wooden vessels with oars, and crews of 30 to 40 individuals. Only a few individuals in each crew needed to be skilled in the art of locating fish and directing the work. The rest of the labour force was composed mainly of temporary workers. A net one kilometer or more in length was let out in a wide arc stretching from one point beyond the breakers to another further along the shore. The two ends of the net were then brought together and

hauled ashore by the crew stationed on the beach. Schools of fish migrating up the coast were blocked by the net and guided into a large bag at the centre point. Beach seining concentrated on seasonal migratory species of fish such as spanish mackerel and peto and was easily disrupted by poor weather or strong ocean currents. It was also very destructive of marine life because all fish above a certain size were captured in the sweep of the net. Many fish fry and species with little commercial value were killed.

In the mid 1970s, coastal fishing in the Gulf of Mexico was transformed by the widespread introduction of small fibreglass boats, outboard motors and a 'package' of fishing technologies including various types of gill nets and longlines. Many more species of fish could be captured with this technology which also allowed fishers to be more selective than the wasteful methods of beach seining. Weather became less problematic and the greater mobility of the craft facilitated the exploitation of a much wider area. Fishing crews were reduced to three or four individuals, one person skilled in the location of fish, a 'motorista' and one or two additional crew. In short, the forces of production were mechanized, miniaturized and adjusted to smaller units of production. As a result, the productivity of fishing improved significantly. While intensification and diversification are consistent with the capitalist development of the forces of production, the process of fractionalization of coastal fishing units differs from the processes which characterize other primary resource sectors.

Overpredation and Contamination

There are numerous indications that the development of the forces of production in fishing are undermining the long term ability of the lagoon environment to renew resources and sustain productivity. Local informants report that oyster and clam banks have been overharvested in recent years and that the productivity of diving is declining. The more easily accessible banks in shallow water and along the shore of the lagoon have been virtually wiped out and the average size of oysters and clams collected is declining. While clams of 90 mm or more in length used to be common, they are now a relatively rare find. Fish species such as constantino and sabalo are now extinct in the lagoon while robalo prieto and robalo blanco are greatly diminished. Because 65% of the aquatic life in the lagoon are marine species, these populations are also subject to heavy predation beyond the boundaries of the lagoon by coastal and high seas fisheries.

Overfishing of the lagoon has serious implications for the wider ecosystem. Mangroves and associated aquatic systems provide many forms of aquatic life with a breeding ground, protection from predators and food during various stages of their life cycles. Odum and Heald estimate that 80 - 90% of the fish in the Gulf of Mexico are linked to food chains originating in mangrove swamps along the shore of lagoons and rivers (Odum and Heald, 1975:129-136; cited in Gallegos, 1987). The loss of this relatively small ecosystem would have much wider repercussions.

While overfishing has reduced fish populations in the lagoon fishery, far greater problems affecting the area are the contamination of the aquatic environment and destruction of habitat. Contamination from the petrochemical industries along the Coatzacoalcos river has destroyed the ability of the river system to support aquatic life. This river is considered to be one of the most polluted bodies of water in the world. The coastline for many miles on either side of the port city has also been heavily polluted. The beaches of Pajapan are periodically polluted by oil and urban refuse while lagoon waters suffer influxes of sulfur originating from factories near Jáltipan via the Huazuntlán River. These contaminants pose a grave threat to both the habitat of many aquatic species that use the lagoon during part or all of their life cycle and to the health of the human population that consumes them.

Technology and Ecological Adaptation

This chapter has examined the contradictory effects of land concentration and land redistribution on agricultural and fishing forces of production. The analysis shows that the capitalist transformation of peasant technology and modes of ecological adaptation has taken various forms. An agricultural system originally devoted to the production of a wide variety of foodstuffs has been reoriented toward the production of specialized surpluses (beef) exported from the local economy. Many of the essential agricultural inputs associated with cattle ranching such as improved

varieties of grasses, specialized animal species and methods of disease prevention are controlled by regional merchant capital and multinational agribusiness. Despite these technical changes, cattle ranching relies on a relatively extensive use of land resources and the employment of very little labour or advanced technology.

The development of cattle ranching has resulted in the distortion of the traditional system of *milpa* cultivation. Peasant labour invested in land-clearing has benefited ranchers who planted abandoned fields with pasture. Agricultural production has become more specialized (mainly beef and corn), resulting in the loss of local food self-sufficiency. The total amount of land dedicated to food agriculture and the size of individual *milpas* has declined. Fewer households engage in dry season corn cultivation or intercropping and the amount of fallow land available for crop rotation in Pajapan has been greatly reduced. In short, the productivity of the *milpa* system as a whole has declined dramatically and many of the adaptive features of *milpa* ecology have been undermined.

The forces of production that have emerged in Pajapan as a result of the development of the cattle industry do not conform to the narrowly defined logic of technical advances normally associated with capitalist development. The land reform and the loss of dry season pasture in the fertile lowland has restricted the concentration of production in fewer and larger enterprises. The division of land into parcels and the rotation of cattle among many smaller paddocks has *intensified* production but it has not resulted

in the *concentration* of energy output. Problems of inefficient land use, animal mismanagement and low productivity have been exacerbated for both large and small ranches. Cattle ranching in Pajapan has been relegated to the relatively labour-intensive stage of breeding while large, capital-intensive operations owned by outside capital control the fattening of animals for slaughter, transportation and all aspects of commercialization. Thus, the integration of cattle ranching into the wider market economy has resulted in the subordination of labour to a process of capital accumulation in privileged sectors of the regional and national economy and the relative underdevelopment of local forces of production.

The development of cattle ranching in Pajapan has disrupted the relative balance that once existed between natural resources and traditional agroecosystems. The conversion of mature forest into pasture has destroyed the tropical rainforest environment and with it an ecosystem vital to traditional agriculture, hunting and the survival of numerous plant and animal species. Patterns of land use characteristic of stable agricultural systems have been undermined. The agricultural system resulting from the expansion of cattle ranching violates the essence of milpa cultivation in the tropics, that is, the shifting of plots to reduce soil depletion and erosion. Peasants have been forced by the domination of cattle ranching to intensify the use of land and labour resources beyond the limits of the natural ecosystem. While fishing partially compensates for the

loss of hunted animal protein, there are indications that present levels of fishery exploitation cannot be sustained.

The long term viability of the agricultural system is doubtful. Without significant changes in management practices and massive technical inputs in the form of phosphate fertilizers, the pasture grazed by cattle will be degraded and the basic soil resources required of all forms of plant life will be irreversibly depleted. In a matter of a few dozen years, the landscape of Pajapan will probably resemble a poor, dry scrubland of little use to people or animals.

The Pajapan case illustrates the contradictory and self-destructive tendencies of capitalism in this part of Mexico. The following chapter will examine the broader theoretical issues raised by the analysis and situate the three-fold argument of capital growth, class struggle and endemic mismanagement in the Mexican literature on peasant forces of production.

CHAPTER SIX

Theories of Technology and Nature in Mexican Agriculture

Introduction

The Pajapan case illustrates a three-fold argument concerning relations of conflict and exploitation. I argue that peasant societies such as Pajapan's are transformed by a capitalist economy which is driven to accumulate profits and rife with internal contradictions and self-induced limitations. The development of the cattle industry has resulted in the emergence of significant class differences within the community and the greater integration of peasant forces and relations of production into the wider market economy. Surplus value created by the working classes of Pajapan is transferred to owners of capital both within and outside of the local economy. Nevertheless, the creation and appropriation of surplus value occurs without the complete separation of workers from ownership of some means of production or the total loss of worker control over the labour process.

Despite economic exploitation and political subordination, the peasants of Pajapan have played an active role in the transformation of political and economic structures. Individual parcels of land, while limited in size and productive potential, have provided peasants with a means of survival and a concrete alternative to full proletarianization. However, these gains cannot be attributed only

to the resistance of peasants to capitalist penetration of the local economy. Land reform required the intervention of an external force to challenge the power of ranchers. Peasants were able to make use of tensions between the state-owned oil industry and a weaker branch of ranching capital to force concessions of their own.

Low levels of agricultural productivity in Pajapan are partly the result of contradictory forces of growth and misgrowth characteristic of both the local and the wider economy. The system of cattle production that has developed in Pajapan is restricted by the subordinate position local ranchers occupy within the regional industry. The fragmentation of ranching capital resulting from the land reform has weakened the cattle industry so severely it is unable to overcome technical and ecological limits on the development of efficient techniques and technology. Land use has been intensified to such a degree that erosion and the overexploitation of the soil threatens the resources that make capital accumulation possible in the first place. These limitations and destructive tendencies are to some extent self-imposed and not simply the result of an incomplete process of capital penetration.

The preceeding argument contrasts with Marxist analyses predicated on the assumption that the peasantry will eventually give way to the development of capitalist forces and relations of production. For example, the position developed in the work of Roger Bartra (1982, 1974), a leading Mexican anthropologist, is that the peasantry survives *outside* of capitalism as a separate social class,

neither proletarian nor bourgeois, but rather belonging to a pre-capitalist mode of production. He argues that self-employed peasants are subject to a process of *decomposition* under the influence of capitalist penetration. He emphasizes the dependence of the Mexican peasantry on rural and urban wage labour as evidence of capital penetration and characterizes the low levels of peasant technology in Mexico as the effect of economic backwardness in pre-capitalist societies.

The contradictory effects of capital penetration on the rural structure noted by Roger Bartra, in particular the persistence of some self-employment, are explained in terms of the *discontinuous* nature of the process of proletarianization. Bartra argues that the periodic slowing of the development of capitalist agriculture is an outgrowth of Mexico's subordinate position in the world economy and the inability of industrial and agricultural capital to absorb the labour force normally 'liberated' by the decomposition of peasant agriculture. For the sake of political stability, the Mexican State is forced to intervene in the normal operation of the capitalist mode of production and 'brake' the destruction of peasant agriculture.

In contrast to Roger Bartra's emphasis on the proletarianization of the peasantry, analysts such as Armando Bartra (1979, 1976) have stressed the *recomposition* of the peasantry as a functional feature of capitalist economies. He agrees with Roger Bartra that the development of capitalism in Mexico has partially destroyed the peasant economy but redefines the peasantry as a subordinate class

within the capitalist system of production. Armando Bartra's analysis emphasizes the positive role peasant production and labour play in the expansion of urban industry and the development of capitalist agriculture. He argues that the peasantry has not been replaced altogether with capitalist agriculture because of the significant benefits for capital that can be derived from the persistence of a large class of self-employed peasants.

These two opposing positions regarding the role of the peasantry in the capitalist mode of production have important political implications. By defining peasant agriculture as a non-capitalist mode of production subject to a dominant process of decomposition, Roger Bartra has characterized peasant struggles against capitalist domination as essentially archaic and of little long-term relevance to the development of a revolutionary class consciousness. Peasants may struggle for land but they are fighting a losing battle. He argues that peasant demands are manipulated by the bourgeois State to veil the contradictions between proletarianized labour and capital in the countryside and consequently detract from the revolutionary movement promoted by the rural and urban proletariat.

By contrast, Armando Bartra emphasizes the mechanisms of exploitation of peasant labour by capital and the anti-capitalist nature of the peasant class as defined from within capitalism. He argues that 'the objective structural base' of the peasant class forces peasants to struggle against full capitalist exploitation. Peasant demands for land and better prices for their products

influence the process of decomposition and recomposition and are therefore historically relevant. Armando Bartra argues that the struggles of peasants are compatible with the struggles of a rural and urban proletariat because peasants are fully integrated within capitalism. They have a 'revolutionary potential' as significant as that of the proletariat.

Both Roger and Armando Bartra attempt to explain the *specificity* of class relations and forms of class struggle in the Mexican countryside. Like many other Mexican social scientists, they reject general, universally necessary processes of capitalist transformation and instead emphasize the historical and geographic uniqueness of the Mexican social formation. Roger Bartra characterizes this specificity as an articulation of capitalist and non-capitalist modes of production where the agrarian transition to capitalism has been periodically *blocked*. Armando Bartra attempts to explain the specificity and variability of peasant agriculture in Mexico from *within* the logic of the capitalist mode of production. He views the development of Mexican capitalism as a series of historical conjunctures influenced by class struggle and the functional requirements of capital within a specific social formation.

The three-fold argument illustrated throughout this thesis differs from the articulationist and integration arguments presented by the two Bartras and many other theorists. Building on the theoretical and empirical work of Chevalier (1982, 1983), it

attempts to redefine the debate over whether peasants are exploited from within or articulated from without by recognizing the 'polymorphous structure' of capitalism and its inherent weaknesses. The first part of the argument emphasizes the variable forms of subordination of peasant labour to a system of production based on the antagonism of capital and labour. The second part acknowledges the resistance of peasants to full capitalist exploitation and their struggle to maintain control over vital aspects of production. The third and final part of the argument postulates that capitalism is subject to self-induced contradictions and limitations that may prevent the full realization of the process of proletarianization and undermine the long-term development of the forces of production.

This general argument could be applied to a theoretical discussion of politics, class, and labour processes. However, time and space do not permit this broader endeavour. In this chapter, the argument is situated within a specific theoretical context, namely, Mexican debates informed by general theories concerning the development of peasant forces of production and the relationship between economy and the environment. I will not refer back to the analysis of the Pajapan case. Rather, the central issues concerning agricultural labour processes illustrated in the analysis will be expanded in the theoretical context.

The chapter is divided into three sections. The first examines the theoretical position of Mexicanists regarding differences and similarities between peasant and capitalist technology. This is

followed by a review of debates concerning the impact of capitalist development on the productivity of peasant labour. Finally, the discussion focuses on the analysis of ecological variables and the social construction of relations between people and nature. Throughout the chapter, the theoretical context of the three-fold argument outlined above is presented.

Peasant Techniques and Capitalist Technology

The existence of a vast technological gap between the 'capitalist' and 'peasant' sectors of agriculture is a prominent and persistent feature of Mexico's contemporary agrarian structure. The significance of this gap is a contentious issue. Theorists do not agree on how to characterize peasant forces of production (capitalist/pre-capitalist), the degree to which peasant forces of production have been transformed by the development of capitalism in Mexico, the relative efficiency of peasant and technologically advanced agriculture, or even what kinds of commodities peasants actually produce.

The thinking of many Mexican social scientists is grounded in a Marxist understanding of the development of capitalist forces of production. Marx argued that the drive for capitalist profit thrives upon the continuous development of the forces of production. He postulated that the reorganization of work and improvements in the techniques and technology of production increase the productivity of

labour and therefore the amount of surplus value available for appropriation by capital. In a capitalist society, advances in technology, extension of the division of labour, and socialization of techniques of production are not ends in themselves but rather means of increasing profit accumulation. Profits are both the impetus and the consequence of the thorough transformation of the forces of production.

The absence of a thorough transformation of peasant agricultural techniques and technology runs contrary to the apparent logic of capital accumulation. Chronic or long term underdevelopment of peasant agriculture brakes the production of relative surplus-value and thereby restricts the accumulation of capital. Why is it that capital has failed to develop this important avenue of profit-making? This dilemma in Marxist theory has generated a debate in the Mexican literature about the role of peasant agriculture in the development of modern Mexico. This section will examine the solutions proposed by proponents of different schools of thought and outline an alternative position concerning the nature and development of peasant agriculture. It begins with the question of how peasant techniques of production are influenced or altered by the development of capitalism. Later sections examine theoretical and empirical debates about the relative productivity of peasant and capitalist agriculture in Mexico and varying views on what kinds of commodities peasants produce in response to the demands of capital-dominated markets.

Models of Technical Development

Roger Bartra (1974), in his influential book "Estructura Agraria y Clases Sociales en Mexico" was one of the first students of the Mexican peasantry to systematically apply Marxist theory to an understanding of agrarian transition in the Mexican countryside. Building on a Marxist-Lenninist tradition, he argues that simple commodity production is associated with the early stages of the development of capitalism in agriculture; it is useful to capitalism for the limited purpose of breaking up landed property but is ultimately doomed to disappear under the weight of its own internal contradictions and backwardness. The Mexican Revolution brought about the first stage of the bourgeois transition, the fractionalization of the *latifundios*. What remained and still remains to be done is the full absorption of the newly created small farm holdings (*minifundios*) into the mainstream of an emerging capitalist agriculture.

Bartra contends that the gradual disappearance of the simple commodity mode of production, and with it relatively backward techniques and technology, is assured by basic structural limitations on the organization of peasant production. First, "the most important internal contradiction of the simple commodity-producing economy is its division into millions of productive units. This blocks the introduction of advanced productive forces that can only be applied given a concentration of production" (1974:94, my translation and emphasis). Thus, both the small-scale nature and

the dispersion of peasant enterprises result in an ever-widening gap between their productive capacity and that of capitalist farms, thereby restricting the ability of the peasantry to compete with capitalist agriculture in the capital-dominated market.

Second, the peasant unit of production is based on unpaid family labour subject to a limited division of labour. The tremendous advantages in production to be gained by specialization and the application of large amounts of labour are therefore beyond the means of most peasant producers. Relatively low levels of total output is an inevitable consequence.

Based on these distinctions, agricultural systems can be divided into two types characteristic of differing modes of production:

CAPITALIST MODE OF PRODUCTION

- complex division of labour
- large scale, concentration of land
- high levels of technology
- high levels of production

SIMPLE COMMODITY MODE OF PRODUCTION

- unit of production based on family labour
- small scale, atomized and dispersed
- low levels of technology
- low levels of production

A later section dealing directly with the relative productivity of peasant and capitalist labour will further develop Bartra's argument. For present purposes, however, consider some of the implications of Bartra's central thesis that peasant and capitalist agriculture represent different modes of production. He implies that the technical development of the forces of production in agriculture can

only occur when peasants have been separated from ownership of the means of production or, conversely, when peasants have been transformed into capitalist farmers. It is only when capitalist property relations are in place and wage labour is widely employed that the forces of production in agriculture can be fully developed.

Although Bartra's argument, in a strict sense, is true to Marx's general understanding of the preconditions for the development of capitalist forces of production, it does little to reveal the many ways peasant agriculture is integrated into a dominant trend of technological development without transforming property relations. The dramatic developments in industrial technology used in European, North American and Japanese agriculture testify to the high degree of technical development possible within the 'confines' of small scale, owner-operated farms. Bartra falsely assumes that technological development in agriculture must necessarily follow trends similar to those found in industry. Goodman and Redclift (1980:11) summarize of some of the peculiarities of the development of agriculture in advanced industrial societies:

First, production becomes increasingly specialized, bringing changes in the social division of labour and the greater use of technology in production. Production becomes, in effect more differentiated than under pre-capitalist conditions. Second, although the production processes become more specialized, the application of advanced technology and the closer articulation with the market, bring about a concentration of production in fewer and larger enterprises. The size of farms increases but, paradoxically in the light

of the way industrial enterprises develop in the early stages of capitalism, the number of workers employed by these farms declines. Concentration of ownership and control in agriculture is often associated with greater regional specialization and the geographical dispersal of production units --again, a tendency that is often reversed in manufacturing industry.

The Variability of Technological Development

Roger Bartra's book drew considerable attention and criticism from students of the Mexican peasantry convinced of the importance of explaining the unique features of Latin American agriculture in the modern age. Although Bartra did make a significant contribution to the debate, his perspective was limited to factors 'braking' a unitary process of capital penetration and not to a rethinking of the logic of capitalist development *per se*. His work on this issue was surpassed by a group of Mexican social scientists who "began to conduct original research on the way in which the surplus generated by peasant labor passed through, and interacted with, a national and international circuit of capital" (Hewitt:1984:188). Hewitt calls this the 'circulationist' argument because of its emphasis on relations of exchange.

One of the first people to take this question into the field was Luisa Paré (1977) who later published an influential book entitled "The Agrarian Proletariat: peasants without land or agrarian proletariats?". In a discussion of the capitalist transformation of peasant forces of production, Paré argues that peasant agriculture is

increasingly tied to capitalist spheres of production. Consequently, peasant control over the labour process is reduced and production is reorganized along lines compatible with capitalist agriculture. She illustrates this argument with material from the sugar cane industry in Mexico. Paré observes that "the productive process is completely organized and controled by the sugar refinery that, with its monopoly over the purchase of sugar cane within a specific region, takes charge of the entire process, from how much to plant, on what date, when to harvest, how much will be supplied to the docks, the rate of pay for manual labour, etc." (1977:178). She points out that those peasants do not participate in the basic decision-making process and that their traditional agricultural skills such as knowledge of the environment are of little relevance to production.

Paré contends that self-employed peasants producing sugar cane have become like proletarian workers carefully coordinated into a single large-scale operation controlled by capital. These peasants are 'proletarians disguised as peasants' not only because they have been stripped of their ability to control the labour process but also because they only earn a subsistence 'wage' from their production. "The agricultural worker in the broad sense includes all thoses producers (whether or not they are own or rent land or are ejidatarios) whose production is financed and organized by State or private capitalist enterprises, producers that generate a surplus appropriated by capital and yet recieve no more for their work than

the quantity required to reproduce their labour power. These are what we could call *proletarians disguised as peasants* or *piece-work proletarians*" (1977:51, her emphasis, my translation). Even though peasants continue to own land and other means of production, their work may be organized in ways similar to capitalist agriculture and subject to trends of technological development such as the use of fertilizers and pesticides observable in advanced agricultural economies. Her findings support the thesis that the process of capital penetration may involve the maintenance of some relations of peasant production such as legal ownership of land while effectively transforming the techniques and technology of production. Thus, while the long term trend is towards the fully capitalist development of agriculture, capital can, in the meantime, derive significant benefits from a peasant sector undergoing gradual technical development.

The theoretical underpinnings of this argument have been most thoroughly developed in a book by Armando Bartra (1979) entitled The Exploitation of Peasant Labour by Capital. As the title suggests, Armando Bartra is interested in how the surplus created by peasant labour is appropriated by capital. He argues, in keeping with orthodox Marxist theory, that the separation of peasants from direct ownership of the means of production (formal subordination) is vital to the capitalist development of the forces of production (real subordination). If formal subordination is blocked, as in the case of Mexican *ejido* agriculture, it "brakes the real subsumption

of agricultural labour to capital, which is expressed in the form of a slow development of productive forces within a sector that is not intrinsically capitalist, with the inevitable consequences: growth of demand over supply, relatively high costs, etc." (1979:66).

Bartra departs from the orthodox Marxist argument by theorizing the conditions under which agricultural labour may be subject to the process of real subordination without formal subordination. He builds his argument on the concept of ground rent, a notion too complex to develop here but which for present purposes can be defined as an extra amount of surplus-value available to capital by virtue of the monopoly of land owners over scarce means of production. Non-agricultural branches of capital have some advantages over agricultural capital because they are able to appropriate rent from the peasantry through pricing mechanisms and other forms of market domination. "A process of real subsumption, that does not part from a generalized formal subsumption, has for global capital the advantage of avoiding the detour of large amounts of surplus value [ground rent] towards private agricultural enterprises, and is at the same time compatible with the ever greater extraction of unpaid labour through the route of relative surplus value" (1979:68). This is reinforced by the historical failure of plantation agriculture and other backward forms of agrarian capital to compensate their control over rent with a rapid and thorough development of the forces of production. By contrast, in peasant agriculture the ground rent is transferred to capital as a

whole and some real subsumption is possible, usually taking the form of very gradual changes in the organization and social division of labour under the influence of agribusiness, the credit system and state policy.

This argument provides a theoretical justification for an alternative form of capitalist development in agriculture, a path of development which involves the gradual transformation of peasant techniques of production within the context of traditional property relations. The argument is limited, however, in its ability to explain variations in levels of production, mechanization and other forms of technical development observable in different regions of Mexico. At what point do the restrictions on technical development in peasant agriculture become a greater drain on the process of capital accumulation than the gains from the suppression of ground rent? Bartra tends to underestimate the significant contribution full technical development in agriculture can make to the accumulation of capital. In comparison to the revolution in technology on capitalist farms, the production of relative surplus value by peasant agriculture is highly restricted. I am suggesting that any discussion of the underdevelopment of peasant techniques of production that relies solely on examining the advantages to capital, cannot possibly explain away the incredibly protracted development of peasant forces of production. Technical underdevelopment in agriculture can only have negative effects on the long-term process of capital accumulation.

An alternative explanation developed below proposes that while capitalism gradually transforms the techniques of peasant agriculture it is also subject to contradictory tendencies and weaknesses which limit technological change. But before examining this alternative, we will briefly explore the understanding of peasant techniques of production provided by the 'peasant economy' school, social scientists influenced by both Cultural Ecology and Marxism.

The Persistence of Peasant Technology

The focus of the 'peasant economy' school in Mexico has been to explain the internal logic of peasant forms of production. Eric Wolf (1957, 1959, 1966) provided one of the earlier systematic definitions of the unique logic of peasant forms of production, drawing mainly on his experience with the Mexican peasantry. He identified four factors that distinguish peasant agriculture from a capitalist system of production. They are:

- i) the frequent use of human and animal labour (as opposed to machinery),
- ii) labour intensity and reliance on traditional skills,
- iii) the intensive use of land,
- iv) the restricted ability to expand productive capacity by lengthening the growing season.

Wolf contends that peasant agriculture is capable of producing significant surpluses, usually expropriated by a dominant group of power-holders who exercise domain over land or other levers on the peasantry such as debt (1966:49). The development of capitalism may involve the forceful extraction of ever greater amounts of surplus but it does not necessarily alter the internal logic of the system unless social and ecological limits are exceeded. If this occurs, peasant production enters into a phase of crisis and may disappear.

Arturo Warman (1980, 1976), a central figure in the 'Cultural Ecology' school in Mexico, has developed a similar position in several detailed studies of peasant agriculture in the state of Morelos in central Mexico. Warman shares the view expressed by Armando Bartra and Paré that the peasantry is subject to an integrative trend of technological development but he gives much greater weight to the ability of the peasant economy to resist and influence the course of capitalist development. He argues that peasant labour processes have been partially transformed by the development of capitalism but along lines that have not been solely dictated by the needs of capital. For example, Warman (1976) observes that peasants are forced by unfavourable market conditions to *intensify* their commodity production. But instead of radically transforming peasant labour processes, this brings about higher levels of production through the intensification of *existing* forms of production. The overall logic of the system remains qualitatively the same. The

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intensive use of peasant labour and land, a central feature of the traditional peasant economy, is reinforced and pushed to the limit by the development of capitalism. Over time, this process spirals into ecological crises as peasants are obliged to expand into ever more marginal areas and overexploit the resources of the soil.

The influence of peasant forms of production on the particular path of capitalist development in Mexican agriculture can also be illustrated by the process of mechanization. Warman points out that the property relations of peasant production have had an influence on the type of mechanization that occurs in Mexican agriculture. The introduction of machinery and increases in the scale of production have been partially determined by legal limitations on the size of agricultural plots. As a result, mechanization has tended to emphasize mobility, flexibility and speed rather than the productivity of labour as is the case in fully capitalist agriculture.

According to Warman (1976), capitalist development may also result in the *diversification* of peasant production as peasants seek out new ways of adapting to unfavourable market conditions. Contrary to the industrial model of specialization, peasant families in Mexico have diversified all aspects of their production and consumption in an effort to develop a flexible form of adaptation. This may involve the introduction of some commercial crops in combination with subsistence production.

Although the intensification of peasant labour and the diversification of production are consistent with the logic of the

peasant economy, Warman recognizes that in the long-term, peasant forces of production are partially transformed. The use of fertilizers, pesticides and other technology are some of the inevitable consequences of the greater commercialization of peasant production. Peasants may also lose control over the types of crops, the timing of planting and other productive norms dictated by the needs of capital-dominated markets. Thus, the dual trend of technical development and peasant resistance to technological change may gradually give way to the dominant trend of technical development, at least in some branches of production. In Morelos, Warman's place of field research, peasants have begun to rely upon national and international resources such as fertilizers and pesticides and the requirements of the corresponding markets. Warman concludes that "The new technology does not have a local rationality but rather a world rationality. The new agricultural system in the east of Morelos is a combination of international and local resources" (1976:237, my translation).

Warman argues that although peasants are increasingly integrated into the capitalist market, in most cases they continue to rely upon labour intensive techniques of production, traditional skills and the intensive use of agricultural land. The central features of peasant forces of production identified earlier by Wolf are not fundamentally altered and are in fact reinforced by the development of capitalism (1976:217,237). Warman maintains that peasant and capitalist forms of production are distinct yet

functionally articulated in such a way that the persistence of the peasantry with its own logic of production is compatible with the continued development of capitalism. This is possible because the peasantry is able to adapt to the needs of capital and in some ways force capital to adapt to its own logic of production: Although Warman makes no bones about the worsening situation of peasants increasingly integrated into circuits of capital, he does not share the orthodox Marxist view that the peasantry will soon disappear as a distinct social group with unique, non-capitalist forms of organization.

So far we have reviewed three distinct views of the impact of capitalism on peasant forces of production. While both Marxists and Cultural Ecologists agree on the non-capitalist nature of traditional peasant forces of production, the impact of capitalist development on the peasantry is conceived in very different terms. Orthodox Marxists argue that traditional forms of production are becoming a thing of the past as the Mexican peasantry is progressively integrated into the dominant trends of technological development. Market forces and the direct intervention of the State are the principal mechanisms of technological change and proletarianization is the inevitable consequence. Neo-Marxists such as Armando Bartra (1979), Beaucage (1975), Coello (1975) and Diaz-Polanco (1977) contend that the process of capital penetration may effectively transform the forces of production while maintaining some relations of peasant production such as legal ownership of land and other

means of production. Peasant production may persist indefinitely in a distorted form. Bartra explains this deviation from the formal logic of capital in terms of the function peasant production plays in the global process of capital accumulation.

While neo-Marxists foresee the long term persistence of peasant forces of production, they argue that the distorted reproduction of peasant technology is possible mainly because it is functional to the accumulation of capital. The influence of peasant resistance to domination by capital, although very prominent in Armando Bartra's discussion of peasant struggles for land, is oddly absent from his discussion of the real subordination process. By contrast, Warrnan, Moguel, Esteva and others make this aspect of the contradictory nature of capitalist development a central feature in their analysis of the capitalist development of peasant forces of production. Peasant techniques of production and technology persist because the peasantry must rely upon traditional forms of organization in order to survive.

The Underdevelopment of Peasant Technology

In contrast to the focus of Marxists and Cultural Ecologists on the essential non-capitalist nature of peasant forces of production, the 'dependency' approach embraces all forms of production, technically advanced or otherwise, as part and parcel of the capitalist system of production. This position relies upon a fundamentally different notion of the dynamics of capitalism. Proponents of the dependency

school contend that the underdevelopment of certain regions and branches of the world economy is the direct result of the development of other areas or branches of production. In such a scheme, the existence of a vast technological gap between peasant and capitalist sectors of agricultural production is not due to the *incomplete* penetration of capital but rather is a consequence of *full market integration* into the world capitalist economy. The differences between peasant and capitalist forces of production are consequently explained not as remnants of a pre-capitalist past but rather as an effect of the underdevelopment of satellite economies by the development of metropolis. Underdevelopment is a consequence of capitalist growth, not an effect of economic backwardness.

Mexican social scientists influenced by the dependency paradigm have analysed the role of colonial domination on the development of Mexico and economic relations between regions and sectors of the modern national economy (cf. Osorio, 1984; Stavenhagen, 1969; Hewitt, 1978; Feder, 1970; CEPAL, 1982; Pozas, 1971). A strong case is made that the backwardness of vast segments of rural agriculture is the result of systematic contribution by agriculture to the development of urban industry. Cythnia Hewitt summarizes one of the principal conclusions of dependentistas working in Mexico during the 1960's:

The macroeconomic picture which emerged [from dependentista studies] in Mexico was one of an agricultural sector which systematically provided more to the national economy as a whole than it received in return, and which thus supported industrial growth at the expense of the increasing decapitalization of agricultural activity. ... The end result of this peculiarly distorted process of capitalist modernization in the countryside was the increasing underdevelopment of many agrarian communities, concurrently with a wasteful 'overdevelopment' of large private agriculture (1984:126-127).

Dependentistas argue that peasants are fully integrated into the capitalist system. They also recognize that underdevelopment produces a great variety of labour systems different from the capitalist model. Mexican social scientists using this approach consequently focus on the historical expression that capitalist underdevelopment finds in the dependent areas and in particular the role of multinational corporations, the state and national elites in the development of underdevelopment (cf. Barkin and Suarez, 1985).

Ernest Feder was a leading proponent of the dependency approach in Mexico. He argued that "For industrialized countries the preservation of agriculture in underdeveloped countries, even with its unjust and obsolete agrarian structure, is of great importance as a source of [cheap] food and raw materials, and as a potentially huge market for all kinds of manufactured goods, including agricultural inputs" (1976:59). In "Strawberry Imperialism" (1977b) Feder examines how multinational capital fomented and dominated strawberry production in Mexico. The development of the industry

involved technical advances in the areas of processing and distribution on the one hand and continued technical backwardness in the earlier phase of primary production on the other. Massive numbers of poorly paid workers were employed under shocking working conditions to produce and pick strawberries that were then processed and distributed using the most advanced techniques and technology. United States financial interests had gained monopoly control over financing, processing, distribution and marketing including the technology associated with these aspects of production while at the same time coordinating the labour intensive and technically underdeveloped phases of production.

The Human Factory

Enrique Astorga Lira (1986), in a recent book gaining a great deal of attention on the Mexican scene, has challenged neo-Marxist, Cultural Ecologist, and 'dependentista' explanations of the backwardness of peasant technology. Astorga shares some common elements with the dependency school, especially an emphasis on the full integration of peasant production in the process of capital accumulation. He does not share the implication of dependency analysis that these forms of production are 'underdeveloped'. Astorga's vision is more deeply pessimistic in its assessment of the role of the peasantry in the functioning of the capitalist system of production. He argues that the peasant economy, even with its low level of technological development, is a very well developed system that neatly fits the

requirements of capital. These requirements are not the production of agricultural commodities but rather the reproduction of labour-power.

Astorga contends that the production of surplus value through the progressive development of peasant commodity production is of little importance to capital. He illustrates this argument by pointing out that peasants are *net consumers* of agricultural commodities. Thus, peasant forces of production can languish in their backwardness or be partially transformed by the development of capitalism without really affecting the main role of the peasant economy in the production process. That role is to 'produce' wage-workers for a labour intensive rural and urban labour market. Astorga's thesis is that the peasant economy is a 'human factory' in the business of producing wage workers.

From the point of view of the reproduction of labour power, the 'peasant factory' is indeed very efficient; who else but the peasantry could produce so many workers with so few productive resources? The limited development of peasant forces of production is consequently not so much the result of the absence of capital penetration as orthodox Marxists and Cultural Ecologists would have it or an effect of the development of capitalist agriculture and urban industry as argued by some neo-Marxists and dependentistas. Rather, it is an integral feature of a branch of capitalist production whose sole purpose is to reproduce cheap labour power.

A common thread that runs through all of the arguments made so far is that peasant forces of production respond to the demands of capital-dominated markets. Market forces may result in the gradual or partial transformation of peasant technology, as argued by Bartra, Paré and Warman, provide an arena for the systematic transfer of value from underdeveloped state-lite economies to developed metropolis, as argued by dependentistas, or transform the peasant unit of production into a factory of extremely cheap labour for consumption in rural and urban labour markets, as argued by Astorga. In the first two approaches, the peasantry is articulated to capitalism from without while in the latter two the Mexican peasantry is fully integrated into the functioning of the capitalist system of production. What unites all of these arguments is the view that the nature and development of peasant forces of production are functionally linked to the growth of capital. The arguments range from extremely functional (Astorga) to partially functional (Warman).

Technological Growth and Misgrowth

In opposition to prevailing theories of rural underdevelopment discussed above, the argument presented throughout the thesis is that peasant forces of production, albeit distinct, are subject to the variable effects of capital growth and misgrowth. The contradictory nature of capitalism proceeds from a) various forms of subordination of labour to capital, b) resistance of the peasantry to

their full exploitation by capital and, c) weaknesses and self-induced limitations of the capitalist system. The remainder of this section is devoted to explaining how these contradictions influence the capitalist development of peasant forces of production.

The first point to be made is that capitalist forces of production can take a number of forms. Peasant labour is subordinated when capital gains control over,

- a) agricultural techniques and technology,
- b) labour processes, or
- c) distribution and commercialization¹

In the case of agricultural techniques and technology, capital may gain control over the quantity, quality and type of agricultural inputs such as machinery, equipment, land, labour, fertilizers, insecticides, technical assistance, research, and agricultural administration (cf. Feder, 1977:18). This can range from the introduction of advanced forms of industrial technology to rudimentary improvements in tools and techniques of production.

Capital may also control significant aspects of the labour process such as how to plant, when, and how much to plant, how to care for the plants, the time and method of harvesting, and the type and variety of plants, etc. Through capitalist control over labour processes, peasants may be forced to *specialize* in the production of

¹ Distributive processes are conceived as part of production rather than an aspect of market relations. cf. Marx, 1973:534.

a few cash crops. Also, in response to market requirements, peasants may *intensify* production and use labour more *continuously* in the production of a larger marketable surplus, without any corresponding change in technology. Capitalist control over labour processes may also result in a new division of labour where capital undertakes the more technically complex tasks of processing and marketing commercial crops while peasant enterprises produce the primary product using traditional technology. Loss of control over labour processes may also result in an increase in labour mobility between different sectors of production and a reduction in the significance of traditional peasant skills. Specialization, the intensification of production, labour mobility, and the *redirection* of peasant agriculture to labour-intensive stages of production, contribute to the production of surplus value. They are forms of technical subordination that may gradually transform peasant technology or leave intact traditional technological norms.

The subordination of peasant labour to capital also occurs when capital gains control over the distribution and commercialization of peasant production. Capitalist enterprises usually make decisions concerning where the product is marketed, the method of transportation, packaging, storage, and distribution. Their control is assured through institutions of finance and credit, government policy and investment, or simply as a consequence of market forces.

Increases in the overall production of relative surplus-value can be achieved through the radical transformation of agricultural

techniques and technology or through the distorted reproduction of pre-capitalist forms of production. Peasants may still control the simple tools used to cultivate many crops and rely on some traditional skills while at the same time contributing to an increase in the productivity of labour. The possible mechanisms of real subordination of peasant labour to capital identified above should nevertheless not be overestimated. The absence of a *thorough* transformation of peasant techniques and technology ultimately represents a loss to capital and an important limitation on the production of relative surplus-value. Chronic underdevelopment is contrary to the logic of capital growth and partly dysfunctional to the expanded reproduction of capital. If the inherent drive of capital is to destroy non-capitalist forces of production and replace them with techniques of its own, why has this not occurred more vigorously in peasant agriculture? The answer to this dilemma must not overestimate the extent to which capital thrives on the underdevelopment of peasant agriculture and must avoid creating an image of capitalism free of internal contradictions, tensions and limitations.

Armando Bartra is an eloquent spokesman for a growing number of Mexican social scientists who are attempting to go beyond a strictly functional conception of the exploitative logic of the capitalist mode of production (see also Grammont, 1986; Terán, 1976; Otero, 1980; Moguel et al., 1981). In "The Exploitation of Peasant Labour by Capital" Bartra states:

Various authors have demonstrated that a peasant economy subordinated to the capitalist mode of production fulfills decisive structural functions and is reproduced by the system. We have also provided arguments along the line that the peasant economy is not only dismantled by capital but is also reproduced by capital. Nevertheless, we insist also on the other side of the question: the peasantry survives in capitalism thanks to the fight to maintain possession of at least a part of the land. Neither the most reformist legal formulas of agrarian legislation, nor the most 'populist' protectionism of the bourgeois State, not even an imminent social and economic catastrophe would be enough to protect the peasantry from the rapacity of capital which seeks to gain territory, if peasants were not capable of developing a permanent fight for existence, a fight which is usually expressed in the form of a movement to maintain possession of some land (1979:48, my translation).

While Bartra recognizes the significance of peasant resistance, his argument is limited to class action through political organization and peasant demands for land. By contrast, the argument proposed here is that peasant resistance to capital is not confined to political action proper or the defense of access to means of production but rather also applies to the distorted reproduction of peasant forces of production. To the concept of political resistance to capitalist exploitation can be added the concept of economic resistance (cf. Chevalier, 1984; Laclau, 1977). Just as the objective economic condition of declining access to land forces peasants to engage in an ongoing struggle, so too the predatory nature of the capitalist development of peasant forces of production obliges

peasants to develop strategic actions to avoid increasing levels of exploitation.

The argument is that the capitalist development of peasant forces of production is also subject to the contradictory influence of class conflict. Concretely, peasants may succeed in developing strategic actions (or inactions) that avoid increasing levels of exploitation associated with technical and technological change and permit the distorted reproduction of some less exploitative peasant forces of production. Capital may be forced by this resistance to adapt to a less than ideal productive environment and adjust itself to limitations on the real subordination process. The movement of the peasants of Pajapan between subsistence production, simple commodity production and wage labour as well as the maintenance of peasant techniques of *milpa* cultivation are examples of economic resistance to full capitalist exploitation.

The question of peasant resistance to the capitalist system appears in the work of Arturo Warman but is fundamentally different from either Bartra's notion or my own. Whereas I have argued that peasant resistance to capitalist exploitation arises from their position as a distinct class *within* the capitalist system of production, Warman conceives of the peasantry as a non-capitalist mode of production resisting capitalism from *outside* the system. As noted by Hewitt, "the peasantry was in Warman's view caught up in a struggle to defend itself not only from a capitalist system of production but also from an urban industrial way of life" (1984:160).

The effectiveness of peasant 'adaptive strategies', according to Warman, rely upon a non-capitalist system of forces and relations of production which continues to give the peasantry some access to the physical resources needed to survive. "The defensive reaction of the peasants in the face of technical advances and indiscriminate modernization could be understood as a logical decision, economically suited to the better management of limited and untransferable (peasant) resources" (1983:28, my translation). To Warman's ultimately romantic understanding of peasant resistance from outside, I would counterpose an argument for the strategic resistance of peasants to full exploitation by capital from within the capitalist system of production. This resistance may involve the distorted reproduction of some peasant social relations, including traditional techniques of production.

Finally, all of the perspectives reviewed above provide salient observations about the chaotic and wasteful deployment of human and natural resources resulting from the capitalist development of peasant agriculture. The explicit or implicit implication of these observations is that capital is operating in a rational manner from the point of view of global capital accumulation but wastefully when viewed from the 'outside' or from a human perspective. The image of capitalism is one of a perfectly functioning machine with deplorable human consequences. For example, Cynthia Hewitt concludes her analysis of the modernization of Mexican agriculture since World War Two with a forceful denouncement of the particular

path of capitalist development in Mexico, arguing that Mexican agriculture is characterized by the:

waste of natural resources, especially of the subsurface water reserves, by agriculturalists imbued with a 'mining mentality'; waste of manufactured agricultural inputs (and the foreign exchange needed to acquire most of these inputs) in a process of modernization of agriculture in the irrigated areas, without the type of planning required to utilize these inputs with certain efficiency; waste of the utilities generated by rapid technological change, that ended up in ostentatious consumption and speculative investments instead of being applied to the creation of new productive enterprises; and on top of it all, waste of the human talents, possessed by the landless workers whose presence in the mechanized fields was less important with each passing year, by the 'ejidatarios' and 'colonos' whose control over their own land has escaped through their fingers during the course of the technification of agriculture, and by the majority 'agricultores de temporal', that were abandoned during three decades (1977:301, my translation).

An alternative to Hewitt's humanistic view of the irrationalities of the capitalist system is that capitalism itself is characterized by self-induced limitations that weaken its own productive base. To the notion of capitalism as a perfect exploitative machine can be counterposed an understanding of the self-destructive tendencies of capitalism as seen from within the logic of its own system of relations. Thus, the underdevelopment of peasant forces of production may also be an effect of the *mismanagement* of resources by capital. For example, the systematic transfer of

profits to industrial centres may weaken agricultural capital in some areas so severely that it is unable to overcome technical or ecological limits on the development of labour processes. Likewise, capital may force the intensification of peasant production to such a degree that erosion and the overexploitation of the soil threatens the resources that make capital accumulation possible in the first place. In short, the underdevelopment of peasant forces of production is partly the result of contradictory and self-destructive tendencies within capitalism.

Agricultural underproduction or overproduction

The question of what is meant by capitalist transformation of peasant agriculture has generated both theoretical and empirical debates about the impact of capitalist development on the productivity of peasant labour. If the capitalist development of peasant agriculture tends to transform the techniques and technology of production then it follows that the productivity of peasant labour must also change. Orthodox Marxists usually argue that capitalist agriculture, with its obviously higher level of technical and technological development, is more productive than peasant agriculture and that the continued development of capitalist agriculture can only bring about a further decline in the relative productivity of peasant labour. Proponents of the 'peasant economy' school, on the other hand, argue that the productivity of peasant

labour compares favourably to capitalist agriculture but concur with orthodox Marxists that capitalist development has a negative impact on peasant production. Some neo-Marxists and 'dependentistas', building on a theory of the transfer of value from agriculture to industry, recognize the relative inefficiency of peasant agriculture but argue that this is optimal to the development of capital as a whole. Finally, other neo-marxists dismiss the question of the relative productivity of capitalist and peasant food production to focus on the efficiency with which the peasantry produces wage workers.

The theoretical debate which lies behind the discussion of the relative productivity of peasant labour is rooted in the labour theory of value and predicated fundamentally upon the *criteria* used to define the productivity of labour. This section will examine the arguments made by competing schools of thought on *how much* peasant agriculture produces in comparison to capitalist agriculture. By showing that all of these positions ultimately share a rigid concept of capitalism, an alternative definition of capitalism can be proposed.

Peasant Underproduction

Marxist economic theory suggests that capitalist development tends to drive down the cost of labour power by increasing the productivity of labour through technical and technological development. "Capital ... has an immanent drive, and a constant

tendency, towards increasing the productivity of labour, in order to cheapen commodities and, by cheapening commodities, to cheapen the worker himself" (Marx, 1976:437) The value of the worker is reduced in the sense that more productive workers are able to produce their wages in a much shorter time and are therefore able to perform much more surplus-labour for appropriation by capital (Kay, 1975:54). It is this latter element, the total amount of surplus labour available for use by capital, that provides the measuring stick for the productivity of labour: the more productive the labour, the greater the total amount of surplus-labour.

This definition of the productivity of labour is at the heart of capitalist relations of exploitation: the capitalist development of the productivity of labour results in an increase in the total amount of surplus value produced by workers and consequently an increase in surplus value available for appropriation by capital. As noted by Armando Bartra, "In the capitalist system, 'efficiency' [or productivity] is synonymous with exploitation" (1980:47). The question to be asked of peasant production then is whether or not peasant forms of agriculture produce surplus-value and if so how can it be measured? Do changes in the way peasant production is organized involve changes in the amount of surplus-value produced? In other words, is peasant labour increasingly exploited by capital or does capital gain relatively little from the persistence of peasant agriculture?

Roger Bartra was one of the first Marxists in Mexico to systematically examine the peasant economy using the labour theory of value. He begins his analysis by asking whether or not peasant labour-power has an exchange value and is consequently capable of generating surplus-value. According to Bartra, it is only when labour-power is circulated as a commodity to be bought and sold that surplus-labour can be appropriated and transformed into surplus-value. Since peasants sell a product on the capitalist market and not their labour-power, does peasant labour have an exchange value? Bartra answers this question in the affirmative, arguing that "in a society dominated by the capitalist mode of production, everything that comes in contact with the market acquires exchange value; the peculiarity of the peasant is that he does not offer his labour in the market but rather his product. But this does not save him from being trapped in the dynamic of capitalist society" (Bartra, 1982:98).

Roger Bartra goes on to argue that the value of peasant labour-power is determined in the same way as the value of the labour-power of wage workers; as the value of the means of consumption socially necessary to sustain and reproduce labour-power. In the capitalist market this value takes the form of the prevailing minimum wage in the countryside. Thus, the value of the labour-power of peasant producers can be calculated on the basis of the labour-time used in the production of specific commodities and the going wage for agricultural labour. Both theoretically and

empirically this calculation makes it possible to examine the difference between the value of peasant labour-power embodied in the product and the market price peasants receive for their product. The balance between these two figures is the amount of surplus-value generated by a peasant producer.

Roger Bartra illustrates this point with national data on the total inputs and total product of three types of agricultural enterprises; units with less than five hectares (peasants), units with more than five hectares (capitalists), and *ejidos*. Bartra calculates an index of productivity with the following formula: $Mp / C + V$, where Mp is the average market price, C is the average cost of constant capital (the instruments of production) for each sector and V is the average sectoral cost of variable capital (labour-power, including the labour-power of the direct producer). In opposition to some dependency theorists who exclude the value of unpaid peasant labour when adding up the inputs of peasant enterprises, Bartra concludes that "the 'minifundios' are the ones with the lowest index of efficiency" (1977:44).

In this same study, Bartra calculates the total contribution of the three types of agriculture to the money value of agricultural production. He excludes from his calculations the portion of agricultural production that was not sold in the market (subsistence production with no exchange value) and concludes that the larger units produced more money value per hectare than the smaller units and the *ejidos*. This finding also opposes dependency analyses based

on the *total* value of agricultural production and results in a negative evaluation of the relative efficiency of peasant versus capitalist units of production in Mexican agriculture.

Bartra recognizes the theoretical possibility of surplus-value being generated in the sphere of peasant agriculture and embodied in the product of peasant labour. He argues, however, that capitalist agriculture, with its higher level of technical and technological development, is more productive of surplus-value than peasant agriculture. The continued development of capitalist agriculture can only bring about a further decline in the relative productivity of peasant labour. As the productivity of peasant labour declines, so too does the amount of surplus-value generated by peasant agriculture for appropriation by capital. In Hewitt's words,

As capitalist development proceeded, that part of the total social product attributable to human labor constantly declined, while that attributable to technological innovation constantly increased. Workers on capitalist farms could produce more and more with relatively less and less effort -- a trend reflected in the price structure for agricultural commodities, which tended to increase only in proportion to the average amount of labor expended in production. But family labor on peasant holdings, deprived of any meaningful possibility of increasing output through technological innovation, could not produce more without expending more effort. Therefore the relatively low prices which peasant produce could fetch in regional or national markets would not adequately remunerate producers for their effort and would force them to work ever harder in order to satisfy the minimum needs of their families (1984:138).

According to Bartra, the chronic underproduction of peasant agriculture is the result of inherent limitations on labour-intensive, technology-poor agriculture, limitations that are both symptomatic of and exacerbated by the articulation of peasant and capitalist modes of production. Bartra goes on to discuss whether or not these differences contribute in any way to the accumulation of capital. He points out that the value of peasant production is determined by a fixed factor, the total amount of labour-time used in production. Prices, on the other hand, are determined in the market and as such are subject to the influence of competition from the relatively more efficient capitalist enterprises. Because of the difference between the value of labour time and market price, peasant commodities are constantly *undervalued* in the capital-dominated market. Bartra concludes that the relationship between peasant and capitalist agriculture "is constituted by unequal exchange (or exchange of non-equivalents). Unequal exchange arises from the difference between the magnitude of value and price of commodities: when a peasant sells his commodity at a price less than its value, he is undertaking an operation of exchange of non-equivalents. This mechanism of transference of value is one of the deepest roots of the structural impossibility for the peasant economy to coexist in the capitalist system without tending to disappear and destroy itself" (1982:99, my translation).

While a relation of unequal exchange is a major disadvantage to peasants, Bartra contends that it does not in and of itself comprise a relation of exploitation. In Bartra's words, "One thing that must be kept clear: neither rent nor unequal exchange generate value. That is, in themselves they do not constitute a relation of exploitation. In reality, they are relations of distribution, and as such do not contribute to the formation of value" (1982:101, my translation).

This general line of reasoning has been extended by Francisco Lerda in a critique of the theory of the transfer of value via prices. Lerda emphasizes the *social* nature of labour productivity. He argues that peasant labour-power does not generate as much value as labour-power employed by capitalist agriculture because it is not employed at the *socially necessary level of production*. In Lerda's words, "those who have worked more than socially necessary to produce each article will find that their work counts as work of less specific weight, of less productive force in relation to the whole. Their work will not be equal to social work but rather inferior to it" (1985:20). The consequence of these differences in productivity is that the labour-power of peasants is constantly *devalued* in relation to the labour-power of workers employed by capitalist agriculture. It follows that the amount of surplus-value generated by peasant producers cannot approach that produced by workers operating at socially necessary levels of productivity. In short, peasant agriculture is *inefficiently exploited* because its level of productivity is well below the social average. Hewitt notes,

As a number of Marxists summarized the situation, surplus value which was not created could not be transferred; and therefore the extremely labor-intensive methods of the peasantry (qua enterprise) implied no more than the donation to the wider society of an astonishing amount of human effort for which inadequate compensation was obtained -- a development as deplorable as it was unjust, but which served no useful purpose for the process of capitalist accumulation as a whole. The peasantry was not, then, from this point of view, exploited in the process through which its component families invested inordinate amounts of labor to produce goods remunerated at an average level established to cover the much less labor-intensive requirements of efficient capitalist enterprises (1984:139-40).

The Relative Efficiency of the Peasant Enterprise

Marxists such as Roger Bartra argue that the peasant unit of production is equivalent to an inefficient capitalist enterprise destined to be squeezed out of agriculture due to its innate uncompetitiveness. This characterization is strongly rejected by many Mexican agronomists, proponents of the 'peasant economy' school and some 'dependentistas' who argue that peasant agriculture can provide a viable and efficient alternative to capitalist agriculture. These proponents of a 'via campesina' find common inspiration in the work of the Russian social scientist A. Chayanov. Without getting into a detailed discussion of Chayanov's work and its influence on research undertaken in Mexico I would like to draw attention to two aspects of his 'theory of peasant production' that

are key to the arguments made about the productivity of peasant agriculture. The first is that the peculiarities of agriculture actually favour small-scale forms of production that can be better organized by peasants. The second is that from the point of view of the 'subsistence logic' of peasant production the peasant enterprise actually deploys resources in a highly efficient manner. We now turn to these two points in order.

Chayanov argued that the nature and development of agricultural forces of production is fundamentally different from those of manufacturing industry due to specific technical constraints (Harrison, 1977, 1979). First, Chayanov foresaw a long term diminishing return to agriculture resulting from the fixed nature of agricultural inputs for given amounts of product. This was based on assumptions regarding soil exhaustion, the dependence of agriculture on given amounts of sunshine and the spatial distribution of land. Second, he argued that the optimum scale of organization of labourers declines as the intensity of production increases due to changes in the types of skills required. For example, production may rely on the specialized knowledge of peasant producers familiar with the idiosyncrasies of specific productive regimes.

The implications of these constraints for an understanding of peasant productivity contrasts dramatically with Marx's argument that the destruction of the peasantry is a precondition to the development of the forces of production. As Harrison notes, "If the

impact of progress over time necessarily and constantly reduces the optimum size of the work-team and the optimum area of the farm, then it is improbable that the forces of production will ever be seriously held back by the institutional framework of peasant agriculture ---the family household farm" (1977:327). Furthermore, "with rational organization, peasant property and the family farm were the form most suited to raising the level of agricultural inputs, employment and production" (1979:88).

Although some of the limitations of Chayanov's argument, in particular his inability to foresee the development of large scale agricultural machinery and significant improvements in the ability of science to manipulate agricultural resources (eg. fertilizers), have been widely recognized, the general thrust is still supported within some circles in Mexico. This is reflected in an increasing interest in the wisdom of traditional techniques of agricultural production and the development of 'appropriate' technology. This work is seen as an important counterbalance to dominant research priorities that have emphasized the development of technologies suited to specialized and large-scale capitalist agriculture on the untested assumption that this is the best way to improve agricultural outputs. As noted by Redclift, the research priorities of the 'via campesina' would "include developing crop strains as used by campesinos, devising fertilisers and insecticides which can be used by small producers, and finding ways of improving production which

both absorb labour and improve yields, thus raising campesino living standards" (Redclift, 1980:499).

The 'via campesina' suggests that the problem is not the inherent inefficiency of peasant agriculture but rather its neglect, a situation that could be righted by the judicious use of state intervention in the areas of land redistribution, credit, technical assistance, etc. The most outspoken proponent of this approach, Gustavo Esteva (1980) has devoted a great deal of attention to the possible role of the Mexican government in the promotion of a 'peasant centred' model of agricultural development. Not surprisingly, his optimistic concept of a 'benevolent' state has been widely criticized by theorists on the left (de Marsh, 1985; A. Bartra, 1979:17-21; Redclift, 1980; Warman, 1980).¹

The other aspect of the argument for a positive evaluation of peasant productivity is that peasant agriculture was traditionally an efficient form of production and that it is only under the distorting influence of capitalism that it has become inefficient. This argument draws on a 'Chayanovian' understanding of the inner logic of peasant production. Chayanov argued that the organization of peasant production is oriented towards the satisfaction of subsistence needs with a minimum of effort, a logic fundamentally different from the logic of capital accumulation and the

¹ Otero (1980) has strongly criticized not only 'campesinistas' but also many of the neo-Marxists studying the Mexican peasantry for the absence of a theory of the State in their analysis.

maximization of profit. The logic of peasant production is to minimize drudgery, that is, to regulate the relationship between the amount of work required to support family members and the fatigue caused by that work. Thus, peasants will limit their output to the satisfaction of basic subsistence needs because once these needs are met their next objective is to minimize the drudgery of work. Within this context, peasant labour can create little or no surplus-value as the level of output roughly equals the value of their labour-power. From the point of view of capital accumulation, peasant agriculture is inefficient because it produces very little surplus value. From the point of view of the subsistence logic of peasant production, peasant agriculture fulfills the basic needs of producers very efficiently.

The notion of a peasant subsistence logic suggested by Chayanov has informed the work on peasant productivity by Arturo Warman (1976), Rodolfo Stavenhagen (1979), Moguel (1976) and others. Warman argues that the gradual incorporation of peasant agriculture into a capitalist economy has had negative and unexpected effects on the productivity of peasant labour. As already pointed out, Warman contends that peasant response to the capitalist market has been to intensify the use of labour and, to the degree possible, the use of land. Higher levels of peasant production are only gained with proportionally much higher levels of peasant labour and as such add little to the production of surplus-value. Warman goes on to argue that from the point of view of the peasant enterprise the return to

peasant labour *decreases* under the impact of capitalist development. In the face of the encroachment of capitalist agriculture, peasants are forced to overexploit the soil and extend production into ever more marginal regions in order to maintain or increase levels of production. The capitalist development of peasant agriculture has consequently not brought about a decrease in the amount of labour-time socially necessary in production but rather an increase in the amount of labour required to produce the same or slightly higher levels of production (1976:299). Warman concludes that under capitalism the efficiency of peasant production is being constantly eroded.

These observations are compatible with Roger Bartra's but Warman gives them a very different emphasis. Whereas Bartra argues that peasant agriculture is the equivalent of an inefficient capitalist agriculture, Warman contends that surplus-value production is not the objective of peasant agriculture and if judged from the point of view of its own objectives is still highly efficient. Thus, the traditional peasant system of production meets the subsistence needs of the peasantry with the minimum deployment of labour. Also, even under the pressures of capitalist development, peasants continue to make rational use (intensive use) of the limited resources available to them (mainly labour). The superior efficiency of the peasantry referred to by Warman, Stavenhagen and others using this argument consequently refers to the rationality with which individual peasant units of production allocate their scarce

resources. In short, the problem with the peasantry is not the innate inefficiency of peasant agriculture but rather the encroachment of capitalism on the resources essential to peasant agriculture. This argument implies that the peasant enterprise *could be* a viable and more rational alternative to capitalist agriculture *if only left alone*.

It is important to point out that the arguments made regarding the relative efficiency of peasant agriculture have central implications for a variety of issues ranging from the role of the state in the development of peasant agriculture to the possibility of alliances between a food-producing peasantry and a food-consuming urban proletariat. While these questions must be left for another discussion, it is useful at this point to highlight the circular logic of perspectives which support an alternative 'via campesina'. In Gutelman's words, "To draw the conclusion that if the 'minifundios' had more land and greater technical capital they would be more efficient is to hide the structural conditions that impede or make very difficult a larger accumulation in these enterprises. In short, the argument consists of affirming that the 'minifundios' would be more efficient if they weren't 'minifundios' " (1971:287, my translation).

The orthodox Marxist position on the question of productivity represented in the work of Roger Bartra has some similarities to the argument made by the 'peasant economy' school. Both concur that peasant agriculture makes little or no contribution to the production of surplus-value because the peasantry is organized along lines

quite different from the capitalist system of production. From the point of view of capital accumulation, peasant agriculture is underexploited because it operates outside of the direct control of capitalism. For Bartra, "peasant production was never seen as fitting efficiently into the overall economic design of capitalism" (Hewitt, 1984:148). For Warman, peasant agriculture is only marginally functional to capital.

Socially Necessary Production

The focus of Roger Bartra, Warman and others on the relative efficiency of peasant and capitalist agriculture has been challenged in Mexico by neo-Marxists and some 'dependentistas' (cf. A. Bartra, 1979; Astorga, 1985; Beaucage, 1975; Coello, 1983; de la Peña, 1981; Diaz-Polanco, 1982). These later theorists redefine the issue by emphasizing the function of peasant production in the process of capital accumulation.

The argument that peasant agriculture is functional to capital accumulation in its role as a producer of agricultural commodities is based on the 'theory of the transfer of value via prices' developed initially in the work of Kostas Vergoupoulos (1979). Whereas Roger Bartra (1974, 1982) argued that relations of unequal exchange are secondary relations of distribution that contribute little to the production of surplus value, these theorists argue that market circulation is the main arena in which relations of exploitation between peasants and capital occur.

Orthodox and neo-Marxists alike argue that the differing levels of productivity of peasant and capitalist agriculture arising from mechanization reflect the investment of different amounts of labour-time. Peasant agricultural commodities contain more labour-time than the same quantity of commodities produced by capitalist farms. Differences arise, however, in the criteria used to examine the transformation of value into price, the function of prices as regulators of the market, and in the interpretation of pricing mechanisms in the process of unequal exchange. Whereas Roger Bartra argues that the price of agricultural commodities is established by the price of production (defined as the costs of production plus average profit) of capitalist firms, authors such as Armando Bartra suggest that it is peasant agriculture which sets the lower limits of commodity prices. According to this view, it is the capacity of the peasant unit of production to reproduce itself under conditions unacceptable to capitalist enterprises which allows the price of agricultural products to fall below the price of production. The ability of the peasantry to "postpone bankruptcy until the point when reproduction is not possible ... is the origin of a distortion in the setting of market prices and the counterbalancing cause that leads to a transfer of value" (A.Bartra, 1979:93, my translation). In other words, peasant commodities are systematically underpriced in the capital-dominated markets and the surplus value generated in production is transferred to capital as a whole.

While it is a question of survival of individual peasant enterprises which, according to this argument, allows the price of agricultural commodities to fall below levels acceptable to profit minded capitalists, the reproduction of peasant enterprises would not be possible even at these low levels if capital were able to meet all of its food needs. Armando Bartra (1979) argues that even the most 'marginal' or inefficient peasant production is *socially necessary production*. He rejects the concept of marginality in so far as it suggests that the production of 'marginal' groups is superfluous to the needs of food production. He points out that the generalization of the conditions of production under the influence of competition on a world scale so evident in industry does not apply in the same way to agriculture. Given the material limits to agricultural production, not even the poorest land or lowest levels of productivity could be left out of production without affecting the global market. For example, Bartra proposes that if the poorest 10% of the world's agricultural lands were pulled out of production because uncompetitive, the better lands would have to compensate for this production by increasing their production. While this may be possible, the investment in fertilizers and other technical advances may be so great that it is simply more economical to produce that 10% on poor lands with low levels of productivity. While peasant agriculture may be less efficient than capitalist agriculture, the transfer of value from agriculture to urban industry made possible

by the existence of peasant agriculture is optimal to the development of capital as a whole.

The precise mechanisms of exploitation referred to by this school of thought refer not only to the underpricing of agricultural commodities but also the overpricing of agricultural inputs. The subsistence motivation of peasant units of production implies not only that they sell their goods at prices lower than the price of production but also that they must buy inputs even if they are priced above their value. In Armando Bartras' words,

If in the first case the key is that the peasant can sell at prices much less than those feasible for a capitalist producer, in the second case the key is that frequently the peasant can buy at prices much higher than those which would be acceptable to the capitalist enterprise. In the first case this sale was a transfer because the products of the peasant had not been produced as 'bearers of profit' and entered into a market that necessarily presupposes profits. When profits are unpaid they are appropriated for free. In the second case the purchase is a transfer because the means of production acquired by the peasant has been produced under conditions which permit the realization of an average profit, and since the seller is able to systematically sell them for a higher price, he obtains a permanent extraordinary profit (1979:99-100, my translation and emphasis).

The ability of the peasantry to produce agricultural commodities without profiting from production represents an extraordinary opportunity for capital to benefit from an extremely cheap form of production. Vergoupoulos argues, "The objective of this giant

operation is to ensure that the system as a whole receives cheap agricultural goods that permit the acceleration of the rate of capital accumulation in the urban sectors of the economy" (1979:39, my translation).

Armando Bartra, Luisa Paré and others have devoted numerous articles to discussing how peasant agriculture contributes to the development of capitalist agriculture and, more importantly, to the development of urban industry (cf. A. Bartra, 1979c; Paré, 1982; Barkin and Suarez, 1985; Diaz-Polanco, 1982; Esteva, 1980; Feder, 1977b; Goodman and Redclift, 1981; Hewitt, 1978; Moguel et al. 1981; Rama and Rello, 1979). They argue that the transfer of peasant surplus value to other sectors of the economy is a constant and massive drain of value from the country to the urban centres or from agriculture to industry. One can conclude from these analyses that peasant agriculture is in fact very efficiently exploited by *industrial capital* and represents a highly efficient means of producing food at low cost to capital.

The Efficient Production of Workers

The 'circulationist' argument clearly relies upon the existence of a significant agricultural surplus from peasant agriculture, a surplus whose absolute and relative magnitude has a clear bearing on the amount of surplus-value appropriated by capital. In the work of Enrique Astorga (1985), as well as in a critique of the transfer of value by Francisco Lerda (1985), the empirical basis of this

argument is strongly challenged. Both authors argue that peasants are in fact net consumers of agricultural commodities. Even corn, the most basic of peasant foods, must be imported into Mexico in large quantities and purchased by the majority of peasants. Lerda argues that food prices actually favour agriculture over industry, not the other way around (1985:45). But rather than dismiss the relevance of peasant agriculture to the process of capital accumulation, Astorga has identified other mechanisms by which peasant production can be seen as contributing to the creation of surplus value.

As already stated, Astorga's innovative thesis is that the commodity produced by the peasant unit of production is not agricultural foodstuffs but rather agricultural workers to be consumed in the capitalist labour-market. "It is not the objective of the peasant economy to produce goods; these are intermediate products whose purpose is to contribute to the feeding and formation of other more complex final products" (1985:84, my translation). The final product is the worker, produced very efficiently by the peasant household economy and efficiently exploited by rural and urban capital.

Astorga's thesis is supported by a detailed analysis of how peasant labour-power has been finely tuned to the needs of labour markets. He points out first that the labour-power required of capitalist agriculture is produced in the peasant economy. This involves not only the physical production of workers but also the

development of skills in agricultural work. These 'skills' extend beyond the minimal knowledge of agricultural work required of labour-intensive capitalist agriculture to include also the development of certain traits such as an ability to withstand pain and deprivation. Specific types of workers, for example children whose small stature and soft hands are appropriate to the harvest of delicate fruit, are demanded by some labour markets while short and wiry men able to pick low coffee bushes and carry loads up steep hills are required of others. These traits have also come to be associated with specific ethnic groups, for example the small-statured Indians from the mountainous regions of Oaxaca. These very specific kinds of workers are produced at no cost to capital and are held within the peasant economy until they are needed to work in capitalist agriculture. Furthermore, the limited resources of the peasant economy forces most peasants to engage in at least some wage labour, resulting in an abundance of agricultural workers and severe downward pressure on rural wages. This may even end in the rapid consumption of the human commodity as workers are increasingly exploited in ever worsening conditions:

In agriculture, there are few jobs for people over 45 years of age; one of the most significant tendencies with respect to the form of labour is the continuous substitution of day-work for piece-work, such that the form of pay makes the worker subject to his productivity, which declines with age. In this way, the great proportion of workers must reproduce their lives in ever worsening conditions as they grow older, a vicious circle that deepens at great speed, rapidly

shortening the life of the worker (Astorga, 1985:38, my translation).

To sum up, the question of peasant productivity reflects a number of basic issues in a Marxist theory of agricultural economics. Essentially, the question is whether or not surplus-value is generated by peasant agriculture and, if so, is it appropriated by capital? The Orthodox Marxist position is that little or no surplus-value is created for appropriation by capital. Peasant agriculture is inefficient as a producer of agricultural commodities in comparison to capitalist agriculture and is inefficiently exploited by the capitalist mode of production. The analysis suggests that relations of exploitation between the peasantry and capital are restricted to the wage-labour contract and the practice of usury, not the peasantry's role as a producer of agricultural commodities containing definite amounts of surplus-value. Students of the 'peasant economy' school argue for the relative efficiency of peasant units of production when examined from within the logic of their own objectives; peasants meet their subsistence needs in a highly efficient manner through the careful deployment of their limited resources. However, these analysts essentially concur with Orthodox Marxists in their evaluation of the relation between peasants and capital; they too argue that as capitalist development proceeds, peasant agriculture becomes increasingly *inefficient* as a source of surplus-value. These two positions are united by their assertion that

peasant agriculture is not exploited in the sense of being fully integrated into the capitalist system of production.

By contrast, the 'circulationist' argument contends that peasant agriculture is an important source of surplus-value for urban industry. The contribution of peasant production to the process of capital accumulation arises from the relative weakness of peasant versus capitalist sectors. Although capitalist techniques and technology are more efficient, the ability of peasants to produce agricultural commodities without regard to profitability permits the transfer of surplus-value from agriculture to industry as a whole. This transfer would not be possible if all agriculture were undertaken by capitalist firms. Peasant production is consequently *optimal* to the accumulation of capital in urban industry and is very efficiently exploited by the capitalist system as a whole.

In opposition to the arguments outlined above, Enrique Astorga (1985) does not focus on the role of the peasantry as a producer of agricultural foodstuffs. He agrees with Orthodox and neo-Marxists alike that capitalist agriculture *can* produce agricultural commodities more efficiently (whether or not this optimally benefits capital as a whole) but argues that the real issue is not food commodities at all but rather labour-power as a living commodity. In Astorga's words, "the irrationality of the peasant economy arises when one analyses its internal organization and function from the point of view of a unit which produces for the product market, without understanding that the production of

material goods is an indispensable part of the raising of children and the mutation of these children into *peones* for the market" (1985:84, my translation). He concludes from his analysis of urban and rural labour markets that peasants make a significant contribution to the production of surplus-value in their role as wage workers, produced and trained efficiently within the peasant economy at little or no cost to capital.

The Management of Mismangement

The debate I have outlined and characterized reflects a range of thinking on the nature and logic of the capitalist system of production. In essence, all of the positions have a teleological bias; great store is placed in the assumed needs that capitalism must satisfy. The controversy revolves around the degree to which peasant agriculture contributes to the maximum accumulation of surplus-value on the unchallenged assumption that this end is inherent to capitalism. Theories of capitalist development which focus on the principle of maximum profit accumulation are inevitably forced to explain variations in the development of peasant forces and relations of production as evidence of the *incomplete* penetration of capital or functional *deviations* from the formal logic of capitalism. In the end, capitalism always gets what it needs, either in the short term through the distorted reproduction of peasant forms of production useful to capital or in the long term through proletarianization.

While capital growth is by definition a central feature of the capitalist system, it may be misleading to explain the evolution of capitalism by consideration of this end only. The alternative argument proposed throughout this discussion suggests that the contradictions of capitalism may limit the production and accumulation of surplus-value to *minimum* requirements needed for the system to function. Thus, capitalism is far from the perfect machine for maximum profit accumulation idealized by most theorists on the left and right, but rather is characterized by contradictory forces of capital *growth* and *misgrowth*. This argument was applied in the previous section to the question of the capitalist development of peasant techniques and technology. It can also be applied to the present discussion of peasant productivity.

All of the theorists reviewed are concerned with discovering how capital appropriates surplus-value from peasant agriculture. One mechanism for creating surplus-value identified by Astorga is the seasonal or temporary employment of peasants as wage workers on capitalist farms or in urban centres. The very low cost of this labour is due in large part to the ability of the peasant economy to produce and train workers and maintain this labour force in the countryside until it is needed by capital. Thus, capital gains an extraordinary amount of surplus value directly from peasants employed occasionally as wage workers by reducing the proportion of value that must be paid in the form of wages. The peasant 'factory' of workers creates the conditions needed to appropriate

additional surplus value that would not be available to capital if all of its wage workers were proletarian. In this sense, the preservation of the peasant economy is functional to the maximum accumulation of surplus value.

A second mechanism of surplus value appropriation identified in the literature is the transfer of value from the peasantry to capital through relations of unequal exchange. This relation of exploitation is 'realized' in the capital-dominated market through the systematic underpricing and overpricing of agricultural commodities, inputs and means of consumption.

The insights of these two arguments are important to an analysis of the capitalist system; surplus-value produced by the peasant economy is transferred to capital through relations of unequal exchange and is appropriated directly in the labour market. Nevertheless, the benefits to capital should not be overestimated. Armando Bartra, Astorga and others are overstating the case when they argue that peasant agricultural production in Mexico is the best thing that could happen to urban sectors of the economy. For example, the present crisis in food self-sufficiency and the reliance of Mexico on basic food imports is ample evidence of the inability of Mexico's current agricultural system to provide the foodcrops necessary to continued urban development. Also, the supply of labour provided by the peasant economy is grossly out of proportion to the needs of urban and rural capital in Mexico. Unemployment and underemployment affects some 40 % of Mexico's eighty million

people. While some labour reserve is functional to capital as a way of depressing wages, aren't a few million unemployed enough? These effects of rural underdevelopment suggest that peasant agriculture is not necessarily the most productive or optimal way of producing and accumulating surplus-value.

The low levels of productivity of peasant agriculture cannot be explained in isolation from the determining effects of other tendencies of the capitalist system of production. These include the struggles of peasants against the efficient exploitation of peasant labour and the endemic mismanagement of peasant resources by capital. When these factors are considered, peasant underproduction can be explained not simply as a *deviation* from the formal logic of capital but rather as an effect of contradictory tendencies within the capitalist system. A definition of capitalism as a polymorphous structure with inherent contradictions and self-induced limitations provides a comprehensive framework for analysis of the variable forms of subordination of peasant labour to capital observed in Pajapan and possibly other agricultural regions of Mexico as well.

Ecosystems and Social Determinations

The preceding discussion of the capitalist development of peasant forces of production has focused on the social construction of relations between people and nature. Very little has been said about the natural environment upon which production relies. By way

of concluding remarks, this final section examines how the literature on the Mexican peasantry has treated the question of nature and presents my own argument illustrated by the Pajapan case study.

Cultural ecologists, dependentistas and Marxists are united by the materialist assumption that the production of the means of subsistence is the basic fact to be taken into account in any analysis of social life. Natural limits to production are consequently a key to understanding some of the peculiarities of economic development. Usually, these limits are considered to be very different in agriculture and industry. Goodman and Redclift have neatly summarized the basic argument:

a case can be made for considering agriculture as less susceptible to the rules that govern industrial development. According to this position, the common factor which underlies the relatively weak development of capitalist relations in agriculture is the dependence of agricultural production on nature. It is usually suggested that when machinery assumes a larger part in the productive process, as it does in industry, there is a greater freedom from this constraint. However, the importance of natural resources in agriculture, especially land and water supplies, reduces many of the technological benefits which normally flow from utilizing machinery (1981:11).

The uniqueness of agriculture is usually taken as a point of departure for analysis of the obstacles posed by the environment on the formation, rhythm of development and characteristics of

agrarian capital. For example, variations in the distribution and resource endowment of agricultural land are considered when discussing the origin and implications of ground rent (cf. A. Bartra, M. Margulis, R. Bartra). Also, the slow rhythm of agricultural production in comparison to industry is considered to be the result of natural limitations on the growth of plants. It is an important reason why capitalization has tended to occur in industry rather than in agriculture (Ariel José Contreras 1980:11-17). Climatic conditions, the short storage life of agricultural commodities, the ecological disadvantages of specialization and the fact that land is not reproducible in the same way as capital are only a few of the features of the environment cited in the Mexican literature.

The Ecosystem

The analysis of peasant production as an ecosystem for producing food from the soil has been the special focus of Cultural Ecologists such as Eric Wolf, Angel Palerm and Arturo Warman. These authors argue that peasant production be understood as a system of adaptation to environmental conditions consisting of specific *sets* of resources, instruments of production and labour processes. Wolf writes,

The basic distinction between [peasant] ecotypes can be expressed in terms of the amount of land used. We shall also consider the labor requirement of one ecotype, as compared with another, and the degree to which occupancy of a piece of land requires a given input of labour. That

labor is always applied through use of a given implement, and here we shall --in the traditional anthropological manner--ask whether the system principally utilizes hand labor applied by means of the hoe, or also employs animal labor in providing traction for a plow. We shall also point to the length of the growing season, or its shortness, as a criterion in forming a peasant ecotype. The distinction here is between systems which can extend work throughout a long productive period and those which must compress their labour into shorter periods of time (1960:20).

Wolf goes on to identify specific peasant ecotypes based on the combination of various elements. Swidden cultivation, for example, is a system of production dependent upon three factors: "availability of land, availability of labor required to produce the key crop, and the length of the growing season during which the key crop or crops may be produced or alternated with other supplementary crops" (1966:22). Each of these are a function of environmental conditions: the recovery period of cultivated land, the labour requirements of soil preparation and climatic conditions.

The strength of this approach is that it takes the internal logic of peasant systems of production seriously, providing the basis for an understanding of the interrelationship of ecological and economic factors. Analyses of the logic of *milpa* cultivation in Pajapan undertaken in Chapter Four make it possible to identify the concrete effects of cattle ranching on agriculture.

The weakness of this approach is that there has been a tendency within Cultural Ecology to derive the systemic features of peasant production from environmental variables only, leaving them open to

charges of 'vulgar materialism'. Critics of an overly deterministic view of the influence of ecological systems on peasant production correctly point out that environmental constraints are themselves partly determined by the social relations giving rise to a specific stage of technical development (cf. Godelier, 1973; Harrison, 1977:335, Chevalier, 1982:99). Land reform and the distribution of 12 hectare parcels among the *comuneros* of Pajapan has fundamentally changed the logic of *milpa* production and the management of cattle. Ecological factors such as cropping ratios cannot be treated as fixed elements to which all social relations must rigidly adapt. Similar environments have historically allowed for considerable variation in technical development and adaptive strategies. Variations in the nature and development of these productive systems cannot be derived from environmental variables only but rather will depend upon the inter-action of specific environmental and socioeconomic factors in structured systems.

The Social Environment

While Cultural Ecologists have focused on ecological determinations, most other Mexican social scientists have emphasized the socially determined nature of the capitalist transformation of peasant forces of production (cf. Barkin and Suarez, 1985; Astorga, 1985; Hewitt, 1977; de la Peña, 1984). This reflects a broad rejection of the 'vulgar materialism' of earlier functionalist and ecological perspectives. Nevertheless, Marxist theoretical and empirical

research into the interrelationship of the environment and the economy has tended to focus on the functional requirements of the economic system *per se* and treat environmental factors as isolated obstacles in the way of technical development. The weakness of this approach is that it overlooks the fact that the structural constraints imposed by the environment on the development of the forces of production are themselves part of structured systems. For example, without an understanding of the interrelationship of dry season and wet season pastures in Pajapan, it would be difficult to explain the full significance of the expropriation of the fertile lowland. When the lowland was expropriated, ranchers lost the potential for a relatively steady annual supply of feed and with it the possibility of raising calves to adult weight. The restriction of cattle grazing to the slopes of the volcano accelerates the process of environmental decline and violates a key feature of ranching ecology, that is, the relationship between climate and pasture supply.

Most Marxists do not examine the logic of ecosystems and as a result tend to over-simplify the complex relationship between the requirements of peasant systems of production and those of the wider capitalist economy. Ecology is frequently reduced to a list of a few elements which set basic constraints on production, or it is passed over altogether. This is reflected in the almost complete absence of ecological analysis in most of the empirical research on the peasantry done by influential Marxists in the 1970's and early

1980's (cf. Paré, 1977; Roger Bartra, 1974; de la Peña, 1981; Diaz-Polanco, 1982).

The more comprehensive notion of the relationship between ecology and economy promoted throughout the thesis recognizes both the complexity and structural features of ecosystems and the socially determined character of systems of agricultural production. Natural conditions limit the actions of people but these limits are also mediated by systems of social relations. For example, the analysis presented in Chapter Four examines the interaction of rainforest and agriculture as structured systems, each with their own internal logic. These ecosystems influence and are in turn influenced by broader natural and economic systems. This approach permits internal variations in systems without losing sight of their structural features.

CHAPTER SEVEN

Conclusion

The systematic exploitation of the vast majority of the world's rural population is one of the most pressing issues of the day. I first became aware of this problem as it relates to Mexico in 1977 while living in San Miguel de Allende, a small artistic community north of Mexico City. There, I saw the vivid portrayals by the Mexican mural painters of the revolutionary struggles of the peasantry. Subsequently, in my travels throughout the Mexican countryside, I encountered many shocking truths that brought to life the painted history. Disregard for human needs, violence, and wanton destruction of the environment had shaped the history and the current lives of the Mexican people. Many apologists for the *status quo* would argue that the poverty of the rural population is the result of ignorance or the scarcity of natural resources. This is not so. These problems are rooted in relations of conflict between landowners and peasants, industrialists and workers, the governors and the governed. I realized then that a better understanding of the causes and evolution of these conflicts was needed to address the unjust conditions suffered by rural people.

The Pajapan case illustrates a three-fold argument concerning relations of conflict and exploitation. First, studies of rural development must recognize the *variable* forms of subordination of peasant labour to capital. The processes of land appropriation and

proletarianization are only two of numerous forms of capitalist exploitation observed in rural communities. Second, peasant struggles to retain access to vital means of production have an impact on political structures, class differentiation and the development of the forces of production. The complex and highly fragmented class structure in Pajapan and the persistence of peasant forms of ecological adaptation are partly the result of peasant resistance to the appropriation of their land and the gains made from the reform. Third, the impact of capitalist development on the economy and ecology of peasant societies cannot be explained in isolation from the effects of contradictory tendencies of the capitalist system. The destruction of essential natural resources, the concentration of wealth in privileged regions and sectors of the world economy, and the inefficient use of peasant labour-power create significant costs and inhibit the maximum accumulation of capital. These tendencies of capital *misgrowth* are inherent to the development and underdevelopment of rural societies.

A definition of capitalism as a polymorphous structure with inherent contradictions and self-induced limitations provides a comprehensive framework for analysis of the impact of cattle ranching on the economy of Pajapan. The dissertation clearly shows that the development of cattle ranching has degraded the environment, undermined local food self-sufficiency and contributed to extreme inequalities in the distribution of economic and political power. Mestizo ranchers from regional urban centres first introduced cattle onto the communal land of Pajapan and supported

the development of a rancher class within the community. The communal land tenure system and political institutions of Pajapan were the instruments used by ranchers to usurp the best quality communal property and convert it into pasture. This forced peasants in search of land to cut down the tropical rainforest on the slopes of the volcano, resulting in severe soil erosion. As land became even scarcer and the productive capacity of the soil was depleted, an increasing number of peasants abandoned agriculture and entered other sectors of the rural and urban economy. By far the greatest number of peasants displaced from the village were incorporated into the lower echelons of the urban proletariat. They worked in construction and supplied a variety of menial services to the expanding petro-chemical industry of southern Veracruz.

These developments contributed to the accumulation of capital by local and regional ranchers, merchants, and industrialists. The economy of Pajapan was reoriented from subsistence agriculture to the production of cheap, poor quality 'feeder' calves for regional and national markets. The raising of calves on the communal land became an effective means of acquiring wealth in land and cattle and a productive base for the diversification of capital investment in other sectors of the rural economy. Nevertheless, the dependence of Pajapan's ranchers on outside merchants for grass seed, breeding stock and medicines as well as dry season pasture for fattening cattle restricted the technical development of the industry. Most importantly, the larger regional ranchers controlled markets for adult animals and relegated Pajapan's ranches to the subordinate

role of producing calves. These problems weakened the development of local merchant and agricultural capital.

The communal land tenure system and political institutions in Pajapan were manipulated by ranchers to gain control over the communal property and resulted in a class of dependent day-workers who cleared land, maintained pasture and cared for cattle. Although the peasant population far outnumbered that of the ranchers, peasants lacked economic and political resources needed to resist the loss of their land. Despite periodic state intervention, the wealthy and politically influential ranchers were able to delay equitable land distribution for many years. The relations of political power were modified, however, by the expansion of the petro-chemical industry and the subsequent expropriation of communal property controlled by ranchers. The plans of the state-owned industry required the rapid resolution of land struggles in Pajapan, achievable only by satisfying incessant peasant demands for land. Land redistribution on part of the communal property was exchanged for the expropriated land and political stability.

The struggles of Pajapan's peasants resulted in the greater integration of the Indian political system into the national society. Conflict over the definition of land tenure was channeled through the national legal system and bureaucratic institutions and eventually resulted in the development of new distinctions between *comuneros* with land rights and villagers without. These changes to local land tenure and the manipulation of laws created by the state to regulate communal land use depended upon the control ranchers exercised

over local authorities and communications with the outside. Positive relations with external power holders such as the PRI, ranchers associations and the rural police were important instruments with which ranchers thwarted peasant demands. When peasants developed independent links with the state, the media, and academics, they were able to challenge the power of ranchers and precipitate state intervention. The analysis of this process indicates that the Mexican state did not intervene on behalf of the wealthy (ie. ranchers) or simply as a mediator between classes in conflict. Rather, it intervened on its own behalf by protecting both the political interests and economic base of state capital (ie. the oil industry). Peasants in Pajapan were able to make use of the tensions between state capital and a weak branch of ranching capital to force concessions from the Mexican state and the cattle ranchers.

The resistance of peasants to the appropriation of their land had a profound impact on the class structure of Pajapan. Inequities in the distribution of land were reduced by land reform, resulting in the proliferation of small ranches and a resurgence of small scale commodity production and subsistence agriculture. The class structure became less polarized and more fragmented as both peasants and ranchers adjusted to varying degrees of control over means of production. Peasants developed new links to the wider market economy by engaging in a variety of activities such as petty trade, commercial fishing, pasture production, trades, and wage labour. At the same time, they could satisfy a greater proportion of

their subsistence food needs through *milpa* cultivation. These changes were accompanied by a reduction in the concentration of wealth in cattle and a further weakening of the position of ranchers within the regional industry.

The disarticulation of peasant subsistence production from the wider market is only one effect of peasant resistance to full capitalist exploitation. Many of the agricultural goods, fishery products, and distributive services produced by peasants are consumed by other peasants without the direct intervention of merchant capital. In some cases, these transactions occur without the use of money. Also, wage work undertaken by peasants is frequently for other peasants who require assistance for the production of subsistence crops. The development of these forms of labour are effects of peasant struggles to retain control over vital aspects of production and limitations on the ability of local merchant and agricultural capital to expand the base of accumulation.

Class struggle has also had an impact on the development of peasant forces of production and the environment. The concentration of land ownership involved the conversion of arable land into pasture and the destruction of one of Mexico's last remaining rainforests. The implications of deforestation in the context of similar occurrences throughout tropical Latin America are global in scope and threaten human survival as well as the numerous species of plant and animal life that thrive in rainforest environments.

The capitalist transformation of peasant forces of production and modes of ecological adaptation has taken various forms. Peasant labour invested in land-clearing for *milpa* cultivation benefited ranchers who planted abandoned fields with pasture. An extensive form of cattle production developed, undermining food self-sufficiency and many adaptive features of *milpa* ecology. As a result of the expansion of the cattle industry, the total amount of land dedicated to food agriculture and the size of individual *milpas* declined. Fewer households engaged in dry season corn cultivation or intercropping and the amount of fallow land available for crop rotation in Pajapan was greatly reduced. Agricultural forces of production became more specialized in the production of a few subsistence crops and land use was intensified. The agricultural system resulting from these changes violates the essence of *milpa* cultivation in the tropics, that is, the shifting of plots to reduce soil depletion and erosion.

The clearing of forest and displacement of food agriculture made way for the production of poor quality 'feeder' calves for regional and national markets. Levels of cattle production relied more on the extensive use of land resources than on the application of technology and labour. Pasture production and the quality of breeding stock was low and management techniques were not efficient.

The land redistribution and the loss of dry season pasture in the fertile lowland has reduced the scale and efficiency of the large cattle producers. The division of land into parcels and the rotation of cattle among many smaller paddocks has not resulted in the

concentration of energy output normally associated with the capitalist development of forces of production. On the contrary, the intensification of cattle ranching has exacerbated problems of inefficient land use, animal mismanagement and low productivity. Meanwhile, trends of soil impoverishment and pasture degradation initiated by the introduction of cattle into the local economy continue and deepen under the new system, with negative long-term implications for both the environment and agricultural productivity.

The persistence and systematic distortion of traditional agriculture caused by the dominance of the cattle industry has satisfied some of the basic food needs of the peasantry and consequently reduces the subsistence wage paid to day-workers employed by ranchers. Meanwhile, land converted to the production of cattle for export to regional and national markets contributed to the accumulation of agricultural and merchant capital. The benefits to capital of this form of development should nevertheless not be overestimated. The system of cattle production that has developed in Pajapan is highly restricted by the subordinated position local ranchers occupy within the regional industry. The fragmentation of ranching capital resulting from the land reform has weakened the cattle industry so severely it is unable to overcome technical and ecological limits on the development of efficient techniques and technology. Land use has been intensified to such a degree that erosion and the overexploitation of the soil threatens the resources that make capital accumulation possible in the first place. Without the soil, the peasants of Pajapan will not be able to produce surplus

value and owners of capital in this region of Mexico will lose a source of profit accumulation. While the productive resources of Pajapan are not in themselves essential to regional capital, the underdevelopment of this village along with many similar village in the region amount to a significant reduction in the opportunities for maximum accumulation.

The three-fold argument of capital growth, class struggle and endemic mismanagement is applied in this dissertation to the analysis of politics, class structure, and labour processes in the village of Pajapan. The argument is situated, however, within a specific theoretical context, namely, Mexican debates informed by general theories concerning the development of peasant forces of production and the relationship between economy and the environment. The broader implications of the argument for an understanding of peasant societies could be developed at a theoretical and empirical level applied to the political realm and class relations. Other relevant issues that could be examined include the sexual division of labour and distinctions between Western scientific definitions of ecosystems and the native perception of the environment. For example, my observations suggest that the division of labour between sexes and between different age groups in Pajapan has been affected by the wider market economy. Women are now less involved in working the fields than was the case in the traditional setting and more frequently engaged in petty trade and fishing. These activities take them into urban centres previously visited by men only. The incorporation of

women's labour into the market economy is in addition to the preparation of food for domestic consumption and the raising of children. This new sexual division of labour is becoming part of the system of labour mobility between many different occupations that has resulted from pressures on land resources. Class differentiation, outmigration and greater reliance on wage labour rather than reciprocal labour exchanges between family members and neighbours have also distorted traditional kinship relations and the practice of polygamous marriage.

Full discussion of these and other issues is beyond the scope of this dissertation. Analyses of social structure and cultural practices will be included in the larger team research project of which this dissertation forms a part. I hope that the analysis presented here can contribute to a better understanding of rural problems and the development of solutions.

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Technical Appendix

The survey data used in this dissertation was collected by myself, Dr. Chevalier and a team of research assistants in 1986. The sample for the general economic survey was selected from a total population of 1,200 households in the village of Pajapan (including the associated hamlets of Batajapan, Tecolapan, and Toronjal). Approximately half of the village households were interviewed (N 592). A detailed questionnaire was developed and ten local youths were hired to conduct the survey. Based on a street map of the village, each assistant was assigned an area and instructed to interview half of the households on each street block. Male or female heads of households encountered at home were interviewed, frequently in the local Nahuatl dialect. At the end of a day's work, the total number of houses on each block and the surveyed houses were marked on a map and each interview was examined by myself or Dr. Chevalier in the company of the assistant who conducted the interview. The assistants reported that usually there were no attempts to withhold information and I believe that the survey data are accurate. The most problematic aspect of the survey is the undersampling of the few most wealthy and powerful families in the village. Where appropriate, adjustments based on separate interviews were made to compensate for this undersampling. Interviews with households in this class of villagers were carried out by Dr. Chevalier and myself.

The economic survey data was coded and analyzed using a statistics computer program (SYSTAT) to arrive at a class typology and analysis of each sector of the local economy. Estimates of production figures and population distributions were derived from the survey data multiplied by a factor of 2.5. This is the approximate ratio of the survey sample to the total population inhabiting the communal land of Pajapan including the communities of Pajapan, San Juan Volador, Jicacal and El Mangal as well as several smaller *rancherías*.

In addition to the general economic survey, smaller complementary surveys of peasants, fishers and ranchers were carried out. Each interview was designed to cover in greater detail aspects of the local economy not examined in the general survey. Some 62 interviews were conducted by me and field assistants in 1986 with peasants and ranchers from a population selected on the basis of availability.

Economic Survey of Pajapan (N=592)

Questionnaire

(contact author for Spanish original)

Interviewer name (explain purpose of project)

1. Main House:

location walls roof rooms light water appliances

2. People in Household and Ages:

Male Head Female Head Sons/Daughters Others (relation to head)

3. Land Ha. Soil Location

redistributed area

expropriated area

4. Rented Land: Ha. Use Period Cost Location

to

from

5. Land and cattle ownership prior to the redistribution? Location?

6. Harvest (temporal and tapachole):

Crop Season Area Harvest Salaries Sales Equipment rental

7. Fishing Activities: (family member, frequency, techniques, sales)

8. Cattle and other animals:

Head Milk/Beef Own Pasture Rent Pasture Salaries Sales

9. Own equipment such as ox, tractor, car, truck?

10. Loans and Savings: family, private, bank? \$

11. Wage Labour: (family member; frequency, type, location)

12. Business/Self-employment:

Type Who Days Investment Purchases Salaries Sales

Agricultural Interviews (N=52)

Guideline

(contact author for Spanish original)

Interviewer _____ (explain purpose of project).

1. Address and age of farmer.
2. Household Composition.
3. Land Status: Ha., location. since when, before reform.
4. Rented Land: Ha., location, cost, since when, before reform.
5. Map of parcel currently cultivated (showing sections by use).
6. Description of each section over time:
 - Section I:
 - i) topography, soil, ground cover, water.
 - ii) use during current season (crop, fallow period, problems, labour inputs, salaries, other costs and inputs, harvest, sales, sold to whom, income from pasture or land).
 - iii) use during previous season (same questions).
 - Section II, etc. : same as above.
7. Other activities:
 - i) Wage labour (who, frequency, type, where).
 - ii) Cattle (head, rent pasture, salaries, other costs, sales).
 - iii) Business/self-employment (type, who, frequency, investment, salaries, other costs, sales).
8. Corn consumption (own corn, purchased corn), other household costs (weekly estimate), debts and savings.

Cattle Raising Interview (N=10)

Guideline

(contact author for Spanish original)

1. History of enterprise (origin and rate of capital accumulation)?
2. Description of Cattle?
3. Techniques (milk, castrate, cross-breed, vaccinate, de-parasite)?
4. New calves per year? Animal sicknesses?
5. Purchase of cattle?
6. Monthly pasture requirements (during dry season, rainy season)?
7. Own pasture (type of pasture, grazing period, # animals)?
8. Rental costs?
9. Contracted pasture?
10. Description of parcel(s) where cattle currently.

month	own/rent	cost	lot #	# head	Ha. pasture	type
Parcel# 1; Parcel # 2; etc.						
11. Salaries (peon and ranch hand)?
12. Other costs (breeding, medicine, fencing)?
13. Sales (# head, price/age, buyer, reason for sale)?
14. Other animals? Vehicles?
15. Other activities (details on agriculture, business, wage labour)?
16. Family size and composition?

END

21|09|90

FIN