Fall 12-23-1983

The Process of Adoption of Small Scale Irrigation in Rural Mexico

ELVIA MARTINEZ-DE-BENITEZ
elvmartinez@yahoo.com.mx

Follow this and additional works at: http://repository.upenn.edu/edissertations
Part of the Agricultural and Resource Economics Commons

Recommended Citation
http://repository.upenn.edu/edissertations/466

This paper is posted at ScholarlyCommons. http://repository.upenn.edu/edissertations/466
For more information, please contact libraryrepository@pobox.upenn.edu.
The Process of Adoption of Small Scale Irrigation in Rural Mexico

Abstract

ABSTRACT

THE PROCESS OF ADOPTION OF SMALL SCALE IRRIGATION IN RURAL MEXICO

Case studies about the process of production in agriculture in four Mexican communities with small scale irrigation are presented.

Peasantry is viewed as a sui-generis system of production with a rationality which guides productive decisions for the obtention of a culturally defined subsistence level, which cannot be measured by the common factor of money. Peasant economic units are seen as subordinated parts of a dominant socio-economic system. Relations of domination are explained by the concept of articulation, which is manifested by the asymmetry of exchanges with the larger system in detriment of the peasants. Exchange imply transference of economic surplus of peasants to the rest of society by means of the intervention of agents and institutions, the mechanisms of operation of which tend to increase polarization between peasant producers and between agriculture and other sections of society. The dependent development of national economy tends to reproduce polarization and structural need.

Irrigation was considered as an innovation to be induced in the process of production. The adoption was not only a function of the advantages for more profitable production. The issue of subsistence was a central parameter in the adoption of new agricultural projects. The decision to adopt surpassed the limits of peasant rationality because the articulation of peasant economies with external factors set the limits within which they could manage their resources. Such restrictions were partly offset by the communitarian norms that regulated exchanges between peasant economic units.

A comparative analysis of case studies was made; two main concepts were taken: “managing logic” that lies behind the productive decisions and “control” that contextual factors exert upon peasant production. Field information was structured along those concepts and their intervening variables; then, four types of economies were extracted: infra-subsistence, surplus, appointed and peasant economy of decomposition.

The communities studied evolved to one of the four types. In the process, irrigation was a co-producer; however, it has not played the role expected by the government. In general, surplus generated by irrigated crops has been extracted from the communities, therefore it has not been used for their own development.

Degree Type
Dissertation

Degree Name
Doctor of Philosophy (PhD)

First Advisor
Peter Davis

This dissertation is available at ScholarlyCommons: http://repository.upenn.edu/edissertations/466
Keywords
agriculture-economics, water-resources-management, peasant-rationality, managing-logic, autonomy, polarization, labor-intensification, domination, irrigation, subsistence

Subject Categories
Agricultural and Resource Economics

This dissertation is available at ScholarlyCommons: http://repository.upenn.edu/edissertations/466
THE PROCESS OF ADOPTION OF SMALL SCALE IRRIGATION IN RURAL MEXICO

ELVIA MARTINEZ DE BENITEZ

A DISSERTATION IN

SOCIAL SYSTEMS SCIENCE

PRESENTED TO THE FACULTIES OF THE UNIVERSITY OF PENNSYLVANIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

(1983)

Supervisor of Dissertation

Peter Davis

Graduate Group Chairperson

Hasan Ozbekhan
ABSTRACT

THE PROCESS OF ADOPTION OF SMALL SCALE IRRIGATION IN RURAL MEXICO

ELVIA MARTINEZ DE BENITEZ
SUPERVISOR: PETER DAVIS.

Case studies about the process of production in agriculture of four Mexican Communities with small scale irrigation are presented.

Peasantry is viewed as a sui-generis system of production with a rationality which guides productive decisions for the obtention of a culturally defined subsistence level, which cannot be measured by the common factor of money. Peasant economic units are seen as subordinated parts of a dominant socio-economic system. Relations of domination are explained by the concept of articulation which is manifested by the asymmetry of exchanges with the larger system to the detriment of the peasants. Exchanges imply transfers of economic surplus of peasants to the rest of society by means of the intervention of agents and institutions, the mechanisms of operation of which tend to increase polarization between peasant producers and between agriculture and other sectors of society. The dependent development of national economy tends to reproduce polarization as a structural need.

Irrigation was considered as an innovation to be induced in the process of production. Its adoption was not only a function of its advantages for more profitable production. The issue of subsistence was a central parameter in the
adoption of new agricultural projects. The decision to adopt surpassed the limits of peasant rationality because the articulation of peasant economies with external factors set the limits within which they could manage their resources. Such restrictions were partly offset by the communitarian norms that regulated exchanges between peasant economic units.

A comparative analysis of case studies was made; two main concepts were taken: "managing logic" that lies behind the productive decisions and "control" that contextual factors exert upon peasant production. Field information was structured along these concepts and their intervening variables; then, four types of economies were extracted: infrasubsistence, surplus, appointed and peasant economy of descomposition.

The communities studied envolved to one of the four types. In the process, irrigation was a co producer; however, it has not played the role expected by the government. In general, surplus generated by irrigated crops has been extracted from the communities therefore is has not been used for their own development.
TO GUILLERMO
WITH LOVE
AND RESPECT.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>vi</td>
</tr>
<tr>
<td>PREFACE</td>
<td>vii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1. LITERATURE REVIEW</td>
<td>8</td>
</tr>
<tr>
<td>2. CONCEPTUAL FRAMEWORK</td>
<td>49</td>
</tr>
<tr>
<td>3. THE EAST OF MORELOS</td>
<td>67</td>
</tr>
<tr>
<td>3.1 PRESENTATION OF THE CASE STUDIES IN THE EAST OF MORELOS</td>
<td>71</td>
</tr>
<tr>
<td>3.2 THE TEMPERATE ZONE OF THE AMATZINAC</td>
<td>74</td>
</tr>
<tr>
<td>Description of the case study</td>
<td>74</td>
</tr>
<tr>
<td>Synthesis of the case study</td>
<td>91</td>
</tr>
<tr>
<td>3.3 ATLADEHUADEIRA</td>
<td>98</td>
</tr>
<tr>
<td>Description of the case study</td>
<td>98</td>
</tr>
<tr>
<td>Synthesis of the case study</td>
<td>122</td>
</tr>
<tr>
<td>4. THE COSTA GRANDE OF GUERRERO</td>
<td>131</td>
</tr>
<tr>
<td>4.1 PRESENTATION OF THE CASE STUDIES IN THE COSTA GRANDE OF GUERRERO</td>
<td>140</td>
</tr>
<tr>
<td>Peasant Organization in the Costa Grande of Guerrero.</td>
<td>140</td>
</tr>
<tr>
<td>The Agroindustrialization of the Coconut</td>
<td>141</td>
</tr>
<tr>
<td>4.2 SAN LUIS, SAN PEDRO AND SAN LUIS LA LOMA</td>
<td>162</td>
</tr>
<tr>
<td>Description of the case study</td>
<td>162</td>
</tr>
<tr>
<td>4.3 SAN JERONIMO</td>
<td>181</td>
</tr>
<tr>
<td>Description of the case study</td>
<td>181</td>
</tr>
<tr>
<td>Synthesis of the case studies: LUS LUISIS AND SAN JERONIMO</td>
<td>194</td>
</tr>
</tbody>
</table>
5. THE SCHEME FOR THE COMPARATIVE ANALYSIS OF THE CASE STUDIES. 200

6. CONCLUSIONS 271

BIBLIOGRAPHY 278

INDEX 285
LIST OF TABLES

Table 3.2.1 Land Tenure in the Temperate zone the East of Morelos. 76
Table 3.3.1 Land Tenure in Atlacahualoya 101
Table 3.3.2 The Yield of the Main Irrigated crops in Atlacahualoya 108
Table 4.2.1 Land Tenure in Los Luigés 164
Table 4.2.2 Distribution of Land in the Irrigated Area 168
Table 4.2.3 Production Costs of Copra 172
Table 4.2.5 Cost/Benefit Ratio of the Production of Coconut and Copra 173
Table 4.3.1 Land Tenure in the Ejido of San Jeronimo 184
LIST OF ILLUSTRATIONS

Fig. 2.1 Process of Adoption of Small Scale Irrigation

Map. 3.1 The East of Morelos

Map. 4.1 Hydrography of the Costa Grande of Guerrero

Map. 4.2 Guerrero

Fig. 4.1 Distribution of Arable Land Among Municipalities

Fig. 4.3 Distribution of the Irrigated Area in the Costa Grande of Guerrero and Distribution of the Users of Small Scale Irrigation in the Costa Grande of Guerrero.

Fig. 5.1 Control and its Intervening Variables
PREFACE

Since 1937, the Mexican Federal government has been building small scale irrigation units in rural areas. This represents part of the investment that the public sector has assigned to support production in agriculture. According to official sources, in 1980, from the 272,548 has. included in the plan only 23.5% were irrigated (SARH, 1980). It is precisely the underutilization of the infrastructure which motivated this research.

Research departed from the assumption that a particular form of use of small-scale irrigation is induced by a network of interrelated factors; of which, irrigation program is only a co-producer. Such factors vary between regions or between communities and may stem from the socio-economic and political context or from the communities themselves.

The inquiry was oriented to learn about the system of relationships that lead to a particular process of production based on irrigation. The research was approached with case studies; mainly because this vouchsafed a holistic view and learning about the process of production based on irrigation. The case studies represent an advance in the knowledge of this process.

Although their contribution cannot be extrapolated to explain the use of small scale irrigation throughout rural Mexico, it permits the advancement of some generalizations about the way in which certain factors impinge upon the process under study and upon the distribution of the benefits of irrigation.
The information was obtained from different sources. Before the fieldwork stage, regional statistics of production, population, natural resources, and so on were analysed; also maps of roads, rivers, and political borders were consulted; monographs of the entities in which the case studies are located were read and, in some instances, bibliography on the history or economy of the zone was found and consulted.

The fieldwork started with the licence of some local authority (mainly the Comisarios Ejidales). During this stage of the research, interviews were conducted with peasants, merchants, local leaders, formal and informal; public officials of the regional agencies of credit and commercialization; the engineers in charge of the operation of the infrastructure and, on several occasions the opportunity arose to attend assemblies of the ejido and the associations of irrigation users.

In general, the interviews with the peasants were informal, without a fixed protocol and the taking of notes was avoided. Also, the same person was interviewed several times, because in later talks, the information obtained was more precise. The interviews with public officials were conducted only once and guided by a precise protocol of data and concrete questions, although sometimes information was complemented during informal conversation.

Field information was registered daily in a notebook; from which records were elaborated by themes and organized according to the research questions and the sections of: generalities, production, commercialization, financing, technology, organization and introduction of irrigation.
The research lasted a year and a half; during that period a team participated in the obtention of information and in fieldwork. Without this team, the project could not have been realized. Hence, my special thanks to the persons that work on this research (Anthropol Mónica Maldonado, Susana Ferrucci, José Corostieta and Lionel Carrasco; and to those who co-operated in some stages: Maríana Portal, María Hope, Jesús Ceniceros and Jorge Serra. Also I am deeply grateful to Ma. Eugenia Saldaña and Dermount Byrne for the editing of this long text.

The integration of themes and the synthesis of the information was supported on readings of Mexican and foreing authors whose academic work deals with the analysis and interpretation of the problematique of rural Mexico; research about peasant economies and their economic behavior and the sociology of rural communities. Nevertheless, none of them is responsible for mistaken interpretations of their theories that in this thesis could have been made.

I am also grateful to the firm PICISA for its confidence in giving me the direction of the project; to the DCOHIADR, SARH for the contract that allowed the financing of the investigation and to Antonio Dovalí Ramos for his interest in the project and for his valuable comments.

Finally my deep thanks to doctor Peter Davis for his support and advice.

Elvia Martínez
September 1983
INTRODUCTION

This thesis includes four case studies about the process of production in four communities where small scale irrigation exists. People, peasants or rural entrepreneurs intervene in the process of adoption of an infrastructure that may comprise anything from a set of wells to a small dam. These people use irrigation in the general context of their productive activity. An activity whose implementation needs the combination of many resources: soil, water, light, work and money for the inputs that can only be obtained in the market. An activity that has a goal: for the peasant, attaining a subsistence level, the covering of his consumer needs and the reproduction of his living conditions and for the rural entrepreneur, making profits and the reproduction of his investment. The realization of this activity requires the interaction of the producers and of technology in a physical, economical, political and cultural environment that participates in the way in which the productive activity is organized and that determines the relationships of production that are observed in the case studies.

The exploration of the environment and its dynamics; its interrelation with the peasantry in Mexico and the reactions of peasants to such dynamics and the global socio-economic context was made by means of a process of review and analysis of the literature. This review started before the initiation of the fieldwork in the case studies but was prolonged throughout this stage. In the first chapter of this thesis, the literature review is presented. Its organization obeys two main trends which have prevailed in the study of the problems of agriculture in Mexico. Under the first, "critical continuity", development is seen as a process, the main
pillar of which is industry. Agriculture's development should provide, at least in the medium term, the resources needed for industrial growth. In this trend, problems of agricultural development are viewed in terms of dichotomic thesis which distinguishes two societies: one traditional and the other modern. Development of agriculture has to pave the way of the modernization of the traditional.

In the second, "historic structural", the subordination of agriculture to industry is seen as a major problem of the model of development. This process has generated a process of de-capitalization of agriculture and has given rise to a process of polarization as a manifestation of one single society, which the dependent development tends to re-produce.

Within this second trend, it is possible to distinguish two tendencies. One considers that the process of development of agriculture points in the long run towards the proletarization of peasants and the consequent disappearance of peasantry. In the other, the main tendency is manifested in the reproduction of the traditional sector of peasants as a structural need of the system.

Throughout this research, empirical evidence found in case studies was subjected to a process of confirmation with the different concepts drawn from the theory. This helped the formulation of a conceptual framework which was developed through an iterative process that went from theory to empirical information and went back to the theory. Chapter two presents the conceptual framework which includes concepts of different authors but, integration of which was strongly influenced by campesinist literature. Mainly because it opened a less prejudiced dimension to an understanding of peasant behavior through their own
explanations. Hence, peasantry is seen as a sui-generis system of production. Peasant economic units guide their productive decisions according to a specific rationality, characterized by the attainment of a culturally defined level of subsistence. In this sense, peasant rationality differs from economic market or entrepreneurial rationality which guides productive decisions by the goal of obtaining a profit and reproducing investments. Peasant economic units are family units whose decisions about what and how much to produce are not independent of their decisions about what and how much to consume. Subsistence cannot be reduced to the common factor of money because it deals with the performance of a variety of tasks which do not have economic value in the market. Family labor is the central element for organizing peasant production for the attainment of subsistence. When the needs of consumption of the peasant family increase, work is intensified in order to expand its global subsistence income in which, the categories of salary and profit cannot be distinguished. The members of the family in the peasant unit have to find productive occupation, hence these units would tend to avoid the use of technologies that displace labor, also they would tend to avoid the adoption of productive projects that may endanger subsistence.

Peasant economic units are linked in the community with which they share a common territory and in which framework they relate by means of horizontal relations of production. But peasant economic units and peasant communities are not isolated: they are articulated with the larger socio-economic context. Articulation implies asymmetrical relations of production and results in the extraction of economic surplus. In the conceptual framework, the mechanisms of articulation between agriculture and industry, modern and traditional sectors of producers and agriculture and
intermediary sectors were explored. The existence of moderns and traditional sectors was seen as opposite poles interrelated in such a way that the existence of one depends upon the existence of the other. Poles are not homogeneous; at their inside one may observe a differentiation of producers. They are neither closed, permeability between poles exists, but the main trend points towards the reproduction of the process of polarization.

The conceptual framework enabled us to give an explanatory content to observations and themes in the case studies. Irrigation was considered as an element which at some point of time represented an innovation in the process of production. Its adoption was not only a function of its advantages for more profitable production. The issue of subsistence appeared as a central parameter in adoption of projects of production based on irrigation. But the decision to adopt new projects surpassed the limits of peasant rationality because the articulation of peasant economies with external factors set the limits within which peasants could manage their resources. Such restriction were partly offset by the communitarian norms that regulate exchanges between peasant economic units.

Terms and concepts used throughout the description of case studies found a referent in the particular behavior observed in the field. Chapters three and four contain such description. The case studies are: in the East of Morelos, "The Temperate Zone of the Amatzinac" and "Añácahuatloya" and in the Costa Grande of Guerrero, the ojidos of "Los Luises" and "San Jerónimo". Each chapter is organized in three sections. The first section includes a brief description of the regions in which the case studies are located and serves as prelude to their presentation; in the
second, the case studies are described; and in the last, a synthesis of the case studies is presented.

In chapter five a comparative analysis of the case studies is presented. Comparisons were focused in the changes that emerged in the productive process before and after the introduction of irrigation, which is seen as a co-producer of such changes. The concepts of "managing logic" and control over the process of production of peasants are developed as referees for the comparisons.

By "managing logic" we mean the rationality that lies behind the productive decisions. Control means the exercising of domination over peasant productive resources. The managing logic of peasants is reflected in the nature of the strategies they adopt in their dealings with external agents and institutions which articulate them with the larger socio-economic system. The forces of control that impinge upon peasant production were represented by six main variables: 1) State subsidies and endowments of land and water to the peasant sector; 2) State programs of modernization of agriculture; 3) Actions of bond agents and bond institutions; 4) neolatifundio; 5) Peasant organization and 6) population growth added to constant levels of the material base for producing. From them, only the first and the fifth may lessen the control over the productive process; the others operate in the opposite sense.

The information of each case study was reconstructed along those concepts and four types of "economies" were proposed as the resultant of this exercise.

From the Amatzinac, the "infrasubsistence economy" type was
built to characterize economies whose insertion into the market implies the gradual pauperization of peasant units which remain linked to the land and absorb the population growth. In these units, peasant economic rationality prevails, but the claims of external agents imply an increasing extraction of economic surplus and the consequent deterioration of their level of living.

From Atlacahualoya, the "surplus economy" type was proposed for economies whose insertion in the market is accompanied by a process of peasant organization linked to strategies of collective trade and regulation of local production. External agents control some aspects of the productive process and extract surplus, but their actions are partly counterbalanced by the actions of the peasant organization. This added to a material base of land and water allows the retention of a portion of the economic surplus. Subsistence is guaranteed and the managing logic of peasants guides activities towards the obtention of a better level of living.

From the case studies in the Costa Grande of Guerrero, the type of peasant economy of decomposition "is defined to include peasant units whose productive resources are submitted to the control of a structure of power which extracts the economic surplus from their land, introducing them into a cycle of increasing indebtedness. Peasant production is reduced to the obtention of corn for self-consumption and subsistence mostly depends on salary obtained by the exportation of labor.

From the sector of peasants in "San Jerónimo" emerged the fourth type: "appointed economy" which characterizes the peasants whose productive resources are controlled by an
institution or agent that vertically integrates the production of the peasants' land into their process of agroindustrialization. Peasant become isolated from their productive resources and turn into virtual salaried workers of the controlling part.

Those types are "real" in the sense that they directly emerged from the case studies. Their validity is then, for the moment, restricted to the case studies of this research. But they mean a potential for further research in Mexican communities that have small scale irrigation, because the typology represents a generalization from which research hypothesis can be drawn.

The typology provides a first approximation of a "middle range" theory between general theory and actuality, which points to concrete forms of differentiation of producers in the Mexican traditional sector of peasants.

The typology is not a finished model; the possible conceptual combinations of the variables of control may give rise to other types, to the enrichment of the ones proposed or to their redefinition.

As an instrument, it may also be useful for the institutions in charge of taking to the country small scale infrastructure or other projects of agricultural production.

Finally, the research has a limited value for peasant organizations who could use it as documented experience which may support the design of their strategies.
1. LITERATURE REVIEW

This review of the literature is intended to summarize and to group the main trends and perspectives through which the problematique of agriculture in underdeveloped countries has been approached. The review does not pretend to comprise the totality of the relevant works that are published about this subject due to the complexity and extensiveness of such a task; rather it is intended to comment on the main approaches that for the case of Mexico have dominated in order to appreciate their differences in method and in the practical implications they involve, with the main objective being to provide a conceptual order to the research concerning this thesis.

Hence, the literature review will be organized around two main tendencies and the different variants found at their inside. The classification of both tendencies follows that proposed by Schejtmann (1981); but the review includes a larger body literature that the one proposed in his article. Schejtmann labels the first tendency "Critical continuity" and is concerned with those works the conceptual order of which deals with the structure of land-tenure. Works on the second, the historical-structural stream, deal mainly with the concept of social relationships of production.

1/ Schejtmann points out: "it is continous because it does not question the basic statements of the agrarian model of the post-revolutionary State; and critical because it pin-points the inefficiencies and inequalities of the agrarian structure" (page ).
Critical Continuity.

The main underlying thesis of this tendency is that economic development in poor countries should be induced by means of a process of industrialization, in which agriculture plays the role of: a) supplying the food needed by the population; of b) generating the foreign exchange needed for industrial growth means of exporting agricultural products; and c) supplying the labour force at the rate needed by the growing industries.

But in order to fulfill those functions, agriculture itself needs to be transformed, as the traditional forms of production do not allow on the one hand significant increases in the volume of the product; and on the other, the expansion of the market needed for the growth of industry. Such transformations would take place through land-reforms and strong investments directed to the modernization of agricultural practices (research, irrigation infrastructure, use of chemical inputs, and so on).

Closely linked to this line of thought, we find authors who deal with the transition from "traditional" to "modern" agriculture.

For example, Roger and Svenning (1969) define some personal attributes as the intervening variables in the process of adoption of innovations by Columbian peasants. Among those attributes are the following: fatalism, achievement motivation, empathy, cosmopolitanism, and political knowledge.

For Bailey (1966) it is the way in which peasants think which prevents the specialization required by the division
of labour characteristic of modern society. Hence, those who wanted to build a modern society would need to understand the way peasants think, the way they perceive outsiders and how they legitimate their intervention. In order to modernize, actions should be directed to those sectors least connected with ideological convictions.

Huizer (1969) points to the existence of factors that prevent peasant participation in projects of modernization, for instance roads and sanitary projects. Among these factors are distrust and the conviction that projects would benefit the landlords.

Dobrowolski defines the "traditional" in the Polish context as the cultural contents and values that are orally transmitted. The traditional is destroyed by breaking the isolation of the countryside through the development of capital and the actions of the centralized government (through the infiltration of products that demand technical skill and knowledge, more extensive exchange of goods between town and country, programs of education and health, etc.).

According to Johnston and Mellor (1961), the contribution of agriculture to the economy is specially crucial during the first stage of development. They consider three stages in the transformation of agriculture: the first deals with the development of institutional pre-requisites; the second, with the expansion of production mainly based on the adoption of innovation in productive practices; and the third, with an expansion of production based on intensive use of technology involving high density of capital and low density of manpower. This process would have to be induced through adequate policies. The authors recognize that the
grow of agriculture and industry has to be "balanced". However, in spite of recognizing the difficulty of this task in poor countries, they remark that it is precisely the condition of underdevelopment that accentuates the importance of the demands of agriculture on economic resources needed by the development of industry, and the importance of the contribution of agriculture to economic growth.

One major problem of this scheme of development is population growth. Myrdal's (1972) analysis of this issue for the context of Southern Asia may well be applied in the case of Mexico: "...the entire approach in terms of a "removal" of a labour surplus in agriculture and crafts assumes that supposedly superfluous workers have somewhere to go. This is consonant with the common glib preconception that industrialization, by also giving employment to labour moving out of agriculture and crafts, is the main solution to the development problem in underdeveloped countries, even in the fairly short-run... . The industrialization of Southern Asia, even if it were to proceed more rapidly, would not imply much more demand for labour for decades ahead, and might even imply less employment in manufacturing". "Moreover, the labour-force will increase very rapidly till the end of the century, regardless of any efforts to spread birthcontrol...this increase in the labour-force will have to find its place mainly in agriculture" (pp. 234). He then points out the need to adopt labour-intensive technologies for increasing production, "a fuller utilization of the labour-force and a higher level of agricultural production are not only compatible objectives, but indeed are, two aspects of the same thing" (Myrdal 1972, pps 256).
The works representative of this tendency can be closely linked to the formulations of the CEPAL (Comisión de estudios for Latin America) during the sixties about the expected role of agriculture in economic development and the perception of a dychotomic and heterogeneous agrarian structure (Rodriguez, 1980). The main representatives of this tendency in Mexico can be appreciated in the works produced at the end of the sixties in the Center for Agrarian Research (CDIA 1970) with the participation of authors such as Eikstein, Flores, Restrepo and Reyes. These authors analyzed the problem of Mexican agriculture from a historical perspective since the land-reform (about 1920) and by focusing the problem of production in the factors of land-tenure and land-productivity.

They perceive the agrarian structure as one divided between a modern, dynamic sector and a traditional, backward one; both sectors seen as part of a continuum. Hence, their solutions to the problems of agriculture call for the promotion of policies destined to modernize the traditional sector and to link its production to the market. They remark that the deterioration of public investment in agriculture has had a negative impact on the rural population, and propose solutions based on the strengthening of official programs of support.

The results of research at CDIA were published in 1974 in three volumes with plenty of empirical data about land-tenure and agricultural production. Here, the differences between the attributes of "traditional" and "modern" are explained in quantitative terms and synthesized in five strata of agricultural units defined by the size of the plot, the value of the product, and the utilization of labour. The main differences between these strata are supposed to arise
in units which are not able to absorb the labour-force of their family (infra-subistence and subsistence units); those who are able to absorb it (family units); and those who use paid labour-force in their production (medium- and large-scale multi-family groups). However, the definition of the strata was made by arbitrarily established quantitative demarcations. The differences between strata are analyzed in terms of statistical data of productive efficiency, without consideration of differences in work organization or in the derived social relations of production, and under the assumption that in all the strata, producers were guided by the same economic goals.

Some of the authors of this tendency put more emphasis on the technical problems of production; while others are more concerned with land-tenure, land-endowment and peasant organization. For example, Flores (1970) would remark that land could no longer be endowed to land-less peasant unless legal private property were affected; while Reyes Osorio (1968) would assert that plots could be endowed to 7% of the land-less peasants if the legal size of private property were reduced to 25 has. of irrigated land or their equivalent in seasonal land. Also, an internal debate is found in this tendency about the issue of peasant organization among those who propose individual private property as the basis of the agrarian structure (Fernandez y Fernandez 1974) and those who would support collectivization (Reyes Osorio, 1975).

There is not much literature about the substantive impact of collectivization in Mexico. Some works can be found as evidence of collectivization resulting from the agrarian policies of President Cardenas, in the decade of the thirties; but these do not go deep in their analysis of this
issue (see for example Whetten, 1953 and Senior 1956). The first detailed case-study of collectivization was done by Glantz (1975) but it was Eickstein who made the first attempt to analyze collectivization in Mexico from an economic perspective, arriving at the conclusion that nothing definitive can be stated about the differences in efficiency and use of resources between private property and ejidal forms of land-tenure. (Eickstein S., 1975).

The main solution proposed by the tendency just described may neatly be summarized by Warman in the following points:

1. The is a technical solution to the productive inefficiency of agriculture if investment is sensibly increased.

2. If investment is to be efficiently used, there is no choice but to modernize and to introduce technology into agriculture according to entrepreneurial models.

3. As a result of the agrarian reform, the peasants who work on small plots are the owners of dispersed resources and they are the objects of transformation.

4. The concentration of dispersed resources without the alteration of the agrarian structure calls for the organization of peasants in order to establish productive units the scale of which will permit profitability.

5. The induction of peasant organization is a task of the State. The expected result would be an increase in the income of the peasant with an important economic impact on the expansion of the national market (Warman, 1978). But as Warman also asserts, this model leaves out the landless peasant, the marginal lands, and the least profitable products.
Perhaps the main contribution of research from CDIA is the definition of a typology of rural producers in which an element of substantive differentiation is the use of labour external to family manpower resources; and the first conceptualization of a differentiation of producers at the inside of "the traditional".

Bridges between both Tendencies.

As a bridge between critical continuity and the perspective of historical structuralism, one could place research of authors that describe concrete forms in which traditional societies are connected to global societies through mediators, brokers, gatekeepers, or patrons. An important body of literature on this theme may be found in the writings about patron-client relationships and clientele system.

According to Duncan Powell (1969) patron-client relationships rest heavily on face-to-face contact and involve a reciprocal exchange of non-comparable goods and services between actors of unequal status (rank, wealth, influence). These relationships are private, unwritten, rest on informal agreement, and are highly impersonalistic in content. Important aspects of these relationships are that the needs of the client tend to be critical; and the bargaining power of the patron is by definition greater than that of the client. The clientele system is a patron-client network that extends beyond the community.

Duncan asserts that, as the process of State centralization and market expansion occurs, the patron becomes a broker mediating the impact of larger society on peasant society.
Additional brokers may appear connected to the market or to the political system and a process of competition may be observed between brokers. Such competition does not necessarily mean an increase of the power of the client over the patron or broker, as individual brokers tend to control different resources and not to have differential control over the same resources. For example, competition may be for the number of peasant votes and not for the vote of the same peasant. Each patron controls the resources of the client over whom he has some kind of critical leverage.

Wolf (undated) stresses that in patron-client relationships the client pays back in more intangible assets stimulating channels of loyalty, creating good-will, adding to the name and fame of the patron, giving information about the machinations of other and promising political support.

Friedrich (undated) from a case study of a cacique in a Mexican community concludes that the legitimacy of the patron lies mainly in the fact that he is normally heir to rule by virtue of informal intra-fractional or intra-familial consensus and that he mediates the relationships between the government and the community. There are other factors that point to his clear illegitimacy: namely, his status is not elective, his acts are often illegal, and he may lack charisma.

Another conceptual bridge between the tendency of critical continuity and historical structuralism is found in the writings which, besides analyzing the relationships between traditional societies and the global system, elaborate on the implications of these relationships on peasant societies.
Pearse (1968) in dealing with the problems of small-holding peasant, remarks that their participation in general society has been that of a dependant powerless element. He uses the concept of the "incorporative drive" to explain the incorporation of the peasants into the larger system. The expansion of the core of industrialization and urbanization reaches the peasant in Latin America through the mediation of national and regional capitals which partly are boosters of the impulses adding their own force to the process. The most important driving force is the market process (seeking sellers of raw materials and cheap labour) but this is augmented by the natural expansiveness of bureaucracies competing for the clients. Rural social and economic systems respond to these drives and alterations take place in the agrarian structure and in the values and behavior of country people. But the incorporation into the larger system is partial and does not lead to an evenly-distributed economic development. The majority cannot become modern because they lack the skills and resources. Rural areas are penetrated as a flow from the centre to the periphery of the society making for incorporation; but the reactions to it are varied and result in incorporation under contrasting forms as well as at different speeds.

Wolf (1956) remarks that communities play specialized parts in the larger whole; and special functions pertaining to the whole have become the task of special groups within communities. These are "nation oriented" groups, agents of the national institutions which reach down into the community following ways of life different from "community-oriented" groups. The national institutions are cultural patterns for group-relationships whose complex forms allow groups to relate themselves to each other in the multiple process of conflict and accommodation which must
characterize any complex society. They furnish the forms by which some nation-oriented groups may manipulate other nation-oriented or community-oriented groups. The exercise of power by some people over other comes into all group relationships at all levels of integration. In complex societies, surpluses are produced and power is exercised to transfer part of these surpluses from the producer-communities to people other than the producers. Contracts between the community-oriented and nation-oriented groups are contradictory and conflictive. Community-oriented groups will differentiate into a number of unstable groups will establish ties with the national level and serve as "brokers" between community-and nation-oriented groups. They must serve some of the interests of groups operating on both the community and the national level; and often act as buffers between groups maintaining tensions which provide the dynamic of their actions.

Feder (1968) describes the latifundio as a system of power. Its main aspect is autocracy. For him, the ownership of land implies power: "the greater the amount of land owned, the greater the power of the owner" (p. 83). Power extends beyond farming activities to the private lands of the tenants, and such power is used to keep peasants disorganized. Financiers, industrialists or merchants are closer to the landlord elite than the peasants. In the latifundio, the landlord is absent and leaves to the administrator the day-to-day decisions though he keeps for himself the main decision about the productive process. The administrator is a buffer between peasants and landlord.

Feder concludes that in Latin America the opportunities of employment are less than the rate of growth of the economically-active rural population; hence, improvement in
living conditions for farm-people requires the shift of excess rural population into urban industrial jobs and the acceleration of the colonization of unopened frontier areas.

The literature reviewed in this subsection is considered as a bridge between the streams of critical continuity and historical structural which are the main axes of the review because they use either implicitly or explicitly some notions of the so-called theory of dependence. We refer here to the terms of centre-periphery, control, power, and unequal exchange, etc. Their conceptualization points to the relation between traditional and modern as a process in which modernization tends to re-incorporate and decompose the traditional. This then is evidence of a rupture with the uni-directionality of the process of change characteristic of the dualistic or dichotomic thesis of continuity.

In Mexico, the main precursor of this conceptual rupture is Stavenhagen (1965) who, from a sociological perspective, denies the existence of two societies in underdeveloped countries. For Stavenhagen, "the two poles, traditional and modern, are explained as the result of a unique historical process in which the mutual relations that prevail between the traditional regions and groups and the 'modern' ones represent the functioning of only one global society, of which both poles are integral parts".

In a later study, Stavenhagen (1968) based himself on data of CDIA to distinguish five social strata in rural Mexico: the landless peasant or agrarian proletariat; the minifundist (ejidatario or private owner); the family units which can absorb in full employment two adults but which are not prosperous exploitations; the medium-or large-scale
producers, called for the first time neo-latifundistas who are structurally linked and sometimes merged with the fifth strata, the rural bourgeoisie, which again may be merged with the national bourgeoisie. Stavenhagen analyzes this structure from a historical perspective and in terms of a process of 'internal colonialism' in which relationships between metropoli and colony are reproduced at the inside of the colonies.

Closely linked to the line of thought of Stavenhagen we find the writings of Appendini (1980) who defines the Mexican agrarian structure in terms of different forms of production which co-exist with two pure forms — the capitalist and the peasant. The capitalist form is seen as the one that dominates in the Mexican social system, and the one that subordinates the peasant form. Domination is exercised at two levels: in the process of exchange through the transference of economic surplus in which she observes the co-existence of the different forms; and in the process of production which implies changes in the relations of production leading to either the persistence or the destruction of the peasant form. Appendini considers that the agricultural crisis of Mexico is the result of the model of development adopted in the forties in which the subordination of agricultural production to the process of industrialization generated the polarization of the rural sector. She stresses the role that the State has played in the process and the mechanisms through which agriculture fulfills its function in national development, placing special emphasis on the part played by guaranteed minimum prices. Finally, she calls for the need to 're-functionalize' the role of agriculture in the context of the national economy, a task that would have to performed at the initiative of the State. In this endeavour she sees as a
main obstacle the forces of international capital.

Historical Structural

In this tendency a greater analytical content is given to the contraposition between capitalist agriculture and peasant agriculture. Here will be grouped works of authors whose common conceptual background may be reduced to the following:

1) The presence of categories drawn from historical materialism

2) The recognition of polarization as a single historical process in which the relations between 'traditional' and 'modern' represent the functioning of a single global society of which both poles are integral parts.

3) The implicit or explicit adoption of the thesis of dependency theory, whether partially or totally.

4) The analysis of the heterogeneity of rural structure through the concept of social relations of production, the forms of social relations of production and the rationality of the producers. In this sense, the size and the forms of land-tenure are seen only as variables that impinge upon the characterization of the agrarian structure but not as their main and only variables (Schejtmam, 1981).

The Marxist Variant

Gutleman (1974) in an essay about the Mexican Land Reform offers and attempt to characterize the development of
mexican agriculture in terms of the "penetration of capitalism in agriculture". He uses the social stratification proposed by Stavenhagen (1974) and describes the structural heterogeneity as follows: "Mexican agriculture is far from being entirely capitalist, as production is not essentially based on the division between capitalist and proletariat; it rather rests on the forms of small mercantile economy, in which the small-scale producer is the owner of his means of production. The vast majority of the peasantry, private owners or ejidatarios, can be included in this category. Each of them cultivates his own land with his own instruments, without incurring in salaried jobs". (Gutleman, 1974, pp 206).

However, as Gomez (1977) remarks his work has plenty of quantitative errors and does not provide reliable support for the reasons which lead him to typify the peasant sector as a "small mercantile economy".

With more rigour than Gutleman, Bartra R (1974) approaches the same issue. For him, Mexico is an underdeveloped and dependent country in which two modes of production are articulated: the capitalist and mercantile-simple or non-capitalist; and in which the first dominates the second. This form of accumulation provokes the increasing expansion of the labour market, in the face of an industry that lacks the capacity to absorb the growing labour-force. This results in the constant increment of marginal urban people.

Based on the same data of COLA, Bartra defined three sectors in the agrarian structure. The first is the "developed capitalist" which is typified by the exclusive use of salaried relationships in the process of production. The second is the "typically peasant" or "simple mercantile"
which family labour is used, production is linked to the market, and pursues the obtaining of an income in which salary and profit cannot be distinguished. Here he defines two sub-sectors: the medium peasants, whose trend is towards 'proletarization' and the 'well-off peasants' who gradually become bourgeois or entrepreneurs. The third strata are the 'pauperized peasants' characterized by production for home-consumption, the systematic presence of monetary losses in the process of production and the secondary character of production on the land as a source for generating their global income. At the inside of this sector he also defines two sub-sectors, the 'pauperized peasants as such', whose main income comes from non-salaried activities outside the plot; and the 'semi-proletariat' whose main income is salary.

R. Bartra's main conclusion is that the development of capitalism destroys the peasantry as a structural need of the system; but, at the same time and contradictorily, it must restrain peasant development in order to control proletarization, hence allowing part of the peasantry to remain totally or partially tied to their land. However, he sees as fundamental the trend towards eventual proletarization, even if the process should be slow.

Diaz Polanco (1975) considers that the peasant system has to be focused at two levels: the abstract level, as a mode of production and its historical stages of development; and the concrete, through its linkages with a specific social formation. Hence, in an abstract sense, the basic trend of development of capitalism will be to destroy the peasant system.
At the concrete level, he recognizes the existence of a structural relationships of subordination of the peasant sector to the capitalist, through mechanisms such as the banking systems, direct appropriation of labour force, usurious credit, and market exchanges. The relationships between the capitalist and peasant sectors acquire a specific character in underdeveloped countries because of the tendency to transfer value from the dominated countries to the metropoli.

When the peasant form becomes linked to the capitalist, it tends to convert product, labour and land into merchandise. But the labour-force freed in this process can be absorbed by capital only on a small-scale; hence, faced with the impossibility to control peasant proletarization, the capitalist system reproduces the peasant form, keeping the peasant linked to his land while at the same time permitting some penetration of capital in agriculture.

Luisa Paré (1977) analyzes capitalist penetration in agriculture and the agrarian reform through their relationships with the process of peasant proletarization. She departs from a theoretical view by which the development of capitalism would start from 1) Transformation of land in merchandise; 2) The ownership of land by men willing to develop the productive resources for their own benefit; and 3) The transformation of the majority of the rural population into free workers able to sell their labour force for a salary. However, she observes that the process of peasant proletarization is not limited only by his separation from the land. It may also happen by means of the subordinated incorporation of non-capitalist forms of production to financial or industrial capital. Paré remarks that sometimes it is not convenient nor possible to
massively separate peasants from land. Then commercial and agro-industrial capital expands by means of controlling production of the plots of the peasants. This forms of exploitation may be compared to the one exercised over peace-workers. The main difference from the development of capitalism in England being that this is not a form of transition but a special modality adopted by the capitalist development of agriculture in poor countries.

Vilar P. (1977) without making an explicit reference to Mexican agriculture, recognizes the existence of a 'peasant way of life' and considers it a mistake to call it a 'simple mercantile mode or production'. For him, the general trend of capitalism is the destruction of previous forms of production. Peasant societies are 'systems of transition'. He thinks that in contemporaneous societies, peasants as such seem to be irremediably condemned to disappear with greater or lesser rapidity.

Samir Amin (1975) includes peasant production as one of the forms of simple mercantile modes of production. He stresses that the subordination of agriculture to capital implies essentially the disappearance of the rent of land; as the conditions that allow subordination are, on the one hand the intervention of dominant capital in the productive process of agriculture; and on the other, the political alliance of the dominant classes which expand subordination patterns on a world-scale.

Capital in agriculture can intervene vertically when the peasant is formally maintained as owner of the land and the investment is put in agro-industries or agricultural enterprises. In this instance, capitalism empties the peasant form, keeping only its formal carcass. However,
the main tendency of private capital is to 'escape' from agriculture because the long-term trend of agricultural prices is to equalize the prices of production leaving only a meager profit-margin. "The only capital which would agree to investment under such conditions would be one not seeking evaluation as capital: a non-capitalist capital" (p. 234). This would be a peasant whose objectives were not the accumulation or obtention of profits, but rather an income to reproduce his living conditions. The author concludes that "The capitalist character of agriculture is accentuated by the mechanical relationships between agriculture and the capitalist system as a whole and not by the development of a capitalist mode of production at the inside of agriculture".

Bartra A. (1979) disagrees with the interpretation of the existence of two articulated modes of production, one capitalist and one mercantile simple. Instead, he argues that only one mode exists as the result of history: the capitalist, which is the key to a stage or society and provides the clue to an understanding of class-struggle and social class; both as a result of the production of the capitalist mode. In current capitalism, he goes on, peasantry is not an exogenous element but a constituent part of the system. Forms of domination desintegrate peasantry but reproduce it as a need of the system, as an exploited class. Exploitation happens through the unequal exchange between peasant production and capital; the peasant, as producer and seller, exchanges product in order to fulfill the needs of subsistence of his family and not in order to obtain a profit. The transference of surplus is only one aspect of the exploitative relationship, the basis of which is in the process of production. The clue to exploitation is then found in the combination of these two momentums.
For Szekely (1974) the productive structure of Mexico is determined by the international division of labour and its dependent function in the reproduction of the world’s economy. The general consequence is the unbalanced growth of different branches of the economy and the obstacles for the internal accumulation and long-term financing. Agriculture, mining and energy production are the basis for accumulation and expansion of capital by means of mechanisms such as: operation and profit of non-productive capital (commercial, banking and usurious); supply of cheap raw materials for industry; financing of imports by agricultural exports, etc. Then the main trends in agriculture result from the role it plays in national economy and from socio-economic factors.

For example, the prevalence of minifundios in spite of its anti-economic character, can be explained by its social and political effectiveness as it permits the under-utilization of labour that remains linked to the land in conditions of misery. The main problem for the development of agriculture lies in the difficulty of incorporating surplus into further productive cycles. The immense profits of non-productive sectors represent one of the factors that favour de-capitalization and therefore a main obstacle of development. From an economic perspective, the non-productive sector is a mechanism of transference and represents from a social point of view a wide and solid structure of power whose development happens at the expense of the productive sector. In this sense, the policies of the State collaborate to reinforce polarization in rural areas, as it handles major portions of non-productive capital.

Through this brief review of the Marxist variant of the historical structuralist stream, one may observe (besides
the internal debate about modes of production) two general opposing trends. The first is found in writings of authors who see the disappearance of peasantry through its more or less rapid proletarization (for example R. Bartra, Díaz Polanco, Pare and Vilar). The second stand for the reproduction and persistence of peasantry as a structural need of the system (Bartra A., Szekely and Samir Amin). The latter are, to an extent, more closely linked to the campesinism variant of the historical structural tendency.

Bartra A. describes the discrepancies between both trends in the following terms: "(Proletarians) consider that...the only feasible trend of rural workers is the proletarian struggle. In this perspective current movement of peasant character are qualified as anti-historical and even conservative... The development of capitalism in rural Mexico exploits and partially ruins peasant economies, but it cannot radically substitute it by entrepreneurial agriculture and a massive proletarization of rural workers. Hence the majority of the rural exploited are objectively forced to develop a struggle whose centre is the defense or re-conquest of their peasant condition". (Bartra A., 1979 p 13). One may add that both trends set forth the need for a profound change in current economic structures.

The Campesinist Tendency

From a methodological point of view, the literature classified under this tendency is highly influenced by the works of Chayanov from 1931 and first translated into Spanish in the early seventies. For that reason, in this review a special sub-section will be devoted to an explanation of the main concepts of his theory.
Chayanov: a precursor

Chayanov was the first to consider "peasant economy" as a system of production sui-generis which had to be added to the modes distinguished by Marx, namely: slavery, feudalism, capitalism and socialism. His main contribution was to provide a theory of peasant behaviour at the level of the peasant family, and then to show that the peasant family had to be treated as an economic system per se as opposed to an incipient form of capitalism. (Kerblay 1974). For Chayanov, peasants are producers of commodities but not capitalists. "We consider that peasants produce for the market and therefore they are inserted in an economic system which co-exists with them through credit and the circulation of commodities"...(but)..."if we contrast the family unit of production with the capitalist, we do it at the level of organization and production: domestic exploitation contrasted with exploitation based on salaried work. In this sense, there are two economic machineries, totally different, which react in different ways to the same economic factors". (Chayanov, 1974, pp 225).

Chayanov (1974) asserts that it is possible to talk about a peasant economy in places where peasantry integrally keeps the surplus of the land he works on.

For Chayanov, the goal of peasant production is to satisfy his needs. The objective of his economic operations and transactions is a culturally defined level of subsistence and not the obtention of a profit. From such reasoning he interprets theoretically an empirical and inexplicable finding in Russian agrarian history: the fact that when prices decreased an increase in production followed. Such response was typically non-capitalist because an enterprise
is supposed to reduce production when prices decrease.

The kernel of his theory is the balance existing within the labour-force of the family. Peasants do not tend to surpass a limit fixed by certain needs: if there is a surplus, equilibrium is re-established by means of a reduction in expenditure of energy the following cycle. He tried to find empirically the point at which peasant stop working, because going further would imply the exploitation of his labour to satisfy needs culturally defined as marginal. On one side of the equation are the size of the family and the relationships existing within; that is: the composition of the family and the relationship between working and non-working members. The combination of these resources and the means of production (land and working-tools) is mediated by a subjective dimension typical of peasant economies: the intensity of work or the degree of self-exploitation of the family labour-force. "In domestic agrarian exploitations, the rates of intensity of work are considerably lower than what they would be if total labour-force were used". (1974, p. 76).

Intensity of work is evaluated from the quantity of goods produced by labour and depends mainly on the needs of consumption of the family, the number of consumers, and in no way on the number of working members. (1974, p. 81) Hence, it reflects a balance between labour and consumption (Kerblay 1974). From such considerations emerge what Sahlis (1972) formulated as the law of Chayanov: "The intensity of work in a system of domestic production inversely varies with the relative capacity of work of each unit of production" (page 69). The essential variable, then, is the size of the family which depends on its own development. From its constitution till the death of the
head of the family, it goes through different periods. For
the first years, the ratio "number of consumers: number of
workers" increases till the sons start to work (Kerblay
1974). Variations in the available work determine the size
of the cultivated plot. (On his data, the correlations
between these two variables are indeed high). Hence, the
quantity of land and capital is a function of work and size
of the family. In his writings, Chayanov stresses that
peasant economy has to solve the problem of inelasticity
of labour according to variations in the different cultural
tasks of exploitation. He analyses two mechanisms to this
end: 1) Hiring of labour in periods when family labour is
insufficient (for example, at harvest time) and 2) Selling
of family labour in winter or its application to the
manufacture of handicrafts. The amount of salary obtained
would be considered advantageous or disadvantageous
according to the basic equilibrium between the satisfaction
of needs and the fatigue of work. "If the family has not
achieved equilibrium and its unsatisfied needs increase, it
would be prompt to find new sources for its labour, even if
this implied acceptance of a low level of remuneration".

Another issue dealt with by him concerns conditions under
which new technology is accepted by peasant families.
"Peasants are oriented towards more income with less work,
but only if they manage to obtain a level of intensity of
work which allow them to use their labour resources"
(Chayanov, 1974 p.20). The achievement of such equilibrium
is difficult because in general new technology is designed
to substitute labour (Chapter 4). Also Chayanov remarks
that "by necessity, peasants start activities which at
first glance would not seem profitable (Chayanov 1974 p.92).
And viceversa, if they attain equilibrium only high profits
would stimulate peasants to perform new jobs."
One major polemic issue between Chayanov and the marxist tradition is his theory of demographic differentiation of "peasant" in contrast to the differentiation of social classes (Kerblay, 1974).

Finally, it is worth mentioning the limits that Chayanov sees in his work. "We cannot deal with conditions that determine the level of productivity of work, because they do not depend on internal factors of the unit but rather on general economic factors that affect its existence. Fertility of soil, an advantageous ubicacion of the exploitation in relation to the market, the market situation, the local social relations of production, forms of organization of local market, and the character of the penetration of commercial and financing capital: such are the main factors that determine productivity and remuneration of peasant work. Due to the nature of such factors, they remain beyond the scope of our current research" (Chayanov 1974 p.73). Also, as Kerblay notes, Chayanov did not analyse peasant economies in capitalist environments.

In very broad terms, one could summarize the main concepts used by Chayanov, which greatly influenced the literature of the campesinist tendency, namely:

1. Peasant economy is a sui generis 'mode' or 'system' of production.

2. The economic activities of peasant economies are guided by a particular 'rationality' linked to the attainment of a subsistence, culturally defined.

3. Peasant economic units are units of production and consumption with a particular 'rationality' which guides
decisions about: intensity of work (which is a function of the size of the family, that is, their consumption needs and the number of workers); and hence about adoption of new technology; selection of crops; and in general, their whole economic activity.

From such concepts, authors on this tendency analyse:

1) Inter-relationships of peasant units in the framework of the community.

2) The way in which peasants relate to the larger socio-economic system

3) The implications of such relationships for the peasant economic units.

In the following paragraphs, a brief review of literature on this tendency will be presented, noting the pronouncements and research of authors about the issues listed above.

Peasant economy a sui-generis system of production

"I have had the opportunity of confronting and knowing peasants from different positions:...In any instance I found them prompt to die as a group. They are frankly struggling to be what they are under better conditions. Of course, they are lonelier than any other group in society. The spokesmen and advocates of "modernization" would like to extinguish them, to erase them at any price. Even the critics of the advance of capitalism agree with astonishing frequency that their disappearance is not only inevitable, but rather healthy"..."A long time ago, I do not know when I discovered that the majority of Mexicans were peasants."
It was really a discovery, because there is a true conspiracy to silence about this evident and obvious truth, as great as the country" (Warman, 1980, p.10-11).

In this tendency, peasantry is characterized as a specific sector, qualitatively different from capitalist agricultural producers the historical prevalence of which does not indicate an imminent disappearance. Because of their historical persistence, peasant economies would appear worthy of study in their own right and on their own terms (Thorner 1962, p.202). Hence, authors of this tendency would strongly disagree with the marxist authors whose predictions foresee the disappearance of peasant..." The majority of marxist social-scientists approach the peasants as a fading remnant of pre-capitalist society-as non-existing, historically speaking. Yet, when a major part of the population remains outside the concept of society as a whole, the definition in use does seem to sadly inadequate, even if the consolation of a glimpse into the future is offered in exchange. Unfulfilled predictions would seem to be the inevitable result of working to such a model" (Shanin, 1968,p.252).

Warman (1980) argues that in rural Mexico, the social group that obtains its living from salary alone is very reduced and does not coincide with those people who have no rights over any piece of land; because a major percentage of the latter are members of greater units (families or communities) which are in formal possession or control of some pieces of land and which give the landless access to land by different mechanisms. Hence, it is misleading to define a proletariat sector in the countryside by means of statistical data about formal land-tenure (Warman, 1980).
Peasant rationality and the level of subsistence.

Warman remarks: "I did not find that (peasants) were irrational; neither did I find primitive or atavistic features more acute than mine. I only found that their explanations were different. Most of them did not want to be anything but peasants" (Warman, 1980, p.13). Literature on the campesinist tendency implicitly or explicitly assumes that peasant economic activity follows an internal logic, different from that which guides entrepreneurial market activity. Such logics are respectively linked to the ends of peasant and market activity.

According to Lange (1963) in a natural economy production and distribution are oriented towards the direct satisfaction of needs which are the product of culture. Ends are established by habit and moral; approved by religion; sanctioned by law and transmitted by tradition. Their maintenance is strongly influenced by economic activity and technology in use.

With market production, activities of men are split into two different aspects: activity for profit and domestic economic activity. The former deals with producing, selling and re-selling commodities in order to obtain money. Money is used as a common means to achieve the satisfaction of needs. The end of domestic activity remain linked to extraordinarily diverse needs, the satisfaction of which cannot be reduced to the common factor of money.

When market and money transactions become generalized the whole process of production becomes economically rational, and traditional activities are confined only to peasant economies which even under capitalist systems maintain to a
great extent elements of natural economies.

Closely linked to activities oriented by subsistence, Scott (1976) defines the "subsistence ethic" as the result of the "fear of food shortage", a fear of subsistence crises. This concept is rooted in economic practices and social exchanges and is a moral principle, "a right to subsistence". Subsistence of peasant families is attained by means of agricultural production, and by the performance of 'self-help' activities (handicrafts, breeding of domestic animals, emigration, etc). "Subsistence" is a "danger zone", a threshold below which the qualitative deterioration in subsistence, security, status and family social cohesion is massive and painful" (Chap. 1).

Also from an ethical perspective, Goulet (1977) defines the concept of "existence rationality" as the "process by which a society devises a conscious strategy for obtaining its goals; given its ability to process information and the constraints weighing upon it". (p.188)

All existence rationalities have core values: survival, esteem and freedom. Underdeveloped societies cannot maximize the satisfaction of material goods; their alternatives are reduced to survival, identity, solidarity and esteem.

Subsistence, besides including survival, is defined by the cultural and social relations in which peasants are embedded.

Peasant economic units.

The unit of production of peasants is the family, which is also the unit of consumption. This implies that the main
objective of production is that of supplies for the family itself. This differentiates the peasant family from enterprise where production is directed to a wider market (Wolf 1966). Enterprise micro-economics measures work productivity in terms of person-and over long periods of time. In peasant units, labour increases more than production; hence, productivity of peasants has to be measured as the yield per unit of work invested; that is, peasant productivity increases with the intensity of work (Warman, 1975). From the intensive use of a plot there is an increase in total production and a decrement in labour productivity which implies a lower remuneration; peasants work more in order to attain ever-decreasing increments in production. Facing a decreasing productivity of labour, and a greater demand for production, peasants are obliged to increase the size of their labour force.

At the level of family, peasants have a high level of leverage for mobilizing resources needed for subsistence. Warman describes the complexity of peasant units. In order to attain their objectives they have to plan, co-ordinate, execute and supervise the actions of its members as an organic set. The members of these units are not uniform, neither can they be replaced in the productive process; because division of labour is arranged by a variety of specialized functions, successive in time rather than by a number of fixed, specialized and permanent tasks. Hence, a variety of tasks will be performed by the same person in the course of a cycle of production. The role of each member depends on a number of factors such as: sex, age, physical strength, possibility to participate on the labour market, etc. But the organization of the whole needs a centre. The framework for the control of resources, authority and power is provided by the hierarchical kindred
relationships which also provide the framework that influences the activities and behavior of each member. The strength of peasant families in peasant societies is not a simple reflection of tradition; it is an on-going arrangement, to the extent that no isolated person can initiate a productive process of such complexity. Between peasants, kindred is a relation of production which is projected onto the whole activity of family members.

According to Warman (1978) peasant units paliate the deterioration of the income they obtain from agriculture by channeling labour into secondary economic activities which supplement their global income. Such activities, labelled by Scott as 'self-help', may be related to manufacturing of handicrafts either for self-consumption or for the market; the breeding of domestic animals; or the selling of their labour-force. Of these, the latter seems to be the most frequent in rural Mexico. "It can be asserted that all Mexican peasants receive salaries as part of their money income" (Warman, 1979, p.171) However, subsistence is neither defined nor organized by salary. The belonging to a family and a community and the practice of non-market relations of exchange of goods and services plays a central role for subsistence. Salary intervenes as a vital and sometimes non-replaceable supplement, but is is always subordinated to the net-work of fundamental inter- and intra-family relations. This does not deny that capitalist production is the dominant form in rural Mexico (Warman, 1979).

According to Scott (1976), peasant behaviour is averse to risks. This can be explained by their fear of losing subsistence, which besides endangering survival implies a loss in status or social standing and most probably the
needs to fall into permanent situations of dependence. Peasants who cannot rely on their resources for attaining subsistence have to ask help from those who have the resources, who then acquire the right to claim the peasant's labour and resources.

Scott (1976) argues that the concept of subsistence ethic provides a link between a notion of exploitation and the subjective feeling of the exploited. From the peasant perspective, "the claim that most often exposes the peasant to subsistence crises is perceived as the most exploitative". That is why peasants are more prone to favour relationships and interests which minimize risks to subsistence. Subsistence security is then an active principle of peasant choice and value; it is the manifestation of a moral economy of peasants.

Peasant economic units and the community.

Family units are not isolated: they are linked by mechanisms of co-operation and redistribution in wider systems such as neighbourhoods, ejidos, kinship group, or some form of community which manages collective resources and makes production possible.

According to Scott, peasants can overcome subsistence crises by means of patterns of reciprocity, forced generosity, communal land and work-sharing. He remarks that besides family, there are institutions which work as 'shock-absorbers' during economic crises such as: kinsmen, friends, powerful patrons and the State. With kinsmen, there is a tacit consensus about reciprocity. It is within the village that the subsistence ethic finds social expression, that is,
in the patterns of social control and reciprocity that structures daily conduct. If resources controlled by villagers allow it, all its members will be guaranteed a minimal subsistence. This does not imply total equality among villagers. Some members are wealthier and more powerful than others. What it implies is that all members have the right to subsistence.

Hence, the relations of production of peasants can also be analyzed at the level of the community, in which "relationships of co-operation and re-distribution create the conditions for production by means of the concentration of collective resources that substitute capital" (Warman, 1974, p.114). The community is not a simple aggregate of peasant units; it is an obliged condition for their functioning, and performs functions different from those of its constituent units. Among them, the regulation of access to a common territory; the establishment of a group in which the functions of exchange and re-distribution will take place; the accomplishment of social and religious activities; and the many events in the political arena. One major analytic problem of the community is a lack of its own, uniform and sometimes permanent institutional expression. Case studies show that sometimes a community is institutionally mixed with some formal or national institution, and makes it function differently from what is legally prescribed (v. gr. the ejido). Other times there are parallel institutions to the legal ones, which may function independently but may gain control over legal institution. Very frequently, communities lack institutional expression and remain as informal net-works, which fulfill their functions by means of consensual support of their members (Warman, 1970).
The peasant units that form the community are not homogeneous; they have differences in size, and position; in the resources they control and in the levels of welfare and wealth. Such differences tend to become wider as the community becomes more closely linked to the larger socio-economic system.

Peasants and the larger socio-economic system

According to Wolf (1969) peasants and peasant communities are part of a larger social system. This major society establishes relations of domination of different kinds and of asymmetrical nature. Through such relationships, peasants are left without a productive surplus beyond their level of subsistence. The transference of economic surplus of peasants tends to perpetrate a stationary position for these social groups. Warman (1975) distinguishes two modes of production: the peasants and the agents of capital (landlords, commercial agents or bureaucrats). "Both modes not only co-exist, but they also depend on each other and neither can be conceived nor explained by itself" (p. 15). "One mode dominates the other; the peasant resorts to thousands of ways of defending himself to continue subsisting, to go on being a peasant" (p. 15). The constant extraction of resources from the countryside is re-invested outside agriculture and establishes a boundary around which the development of capital deterrs accumulation in agriculture" (Warman, 1980).

Hence, at this third level of analysis, peasants are submitted to asymmetrical relations of exploitation which extract economic surplus through systems of domination, and which link peasants to a major and more powerful society in
which mechanisms of accumulation prevail.

Such processes have provoked an enormous pressure over the differentiation of resources that peasants used to combine globally. Work, land, capital and technology have to be acquired as commodities and through different channels of commercialization. The process alienated peasants from the process of production. (Wolf, 1969). In dealing with Mexican agriculture, Warman (November 1975) points out that data shows that the volume of production has increased more rapidly than the peasant population because they are obliged from the outside to do so, as the prices of the products they have to buy rise more than the prices of their crops; because they have to pay high interest rates for financial aid, and to ask for increasing amounts of credit due to the presence of agents of intermediation and usurers who keep for themselves substantial part of peasant economic surplus; and because of the meager salaries they earn as day-labourers (p 24-25). Hence, the increase of peasant production is only a consequence of a defensive reaction. "For each unit of value they transfer, their work increases at a greater rate" (p 25). Domination over Mexican peasants may be explained by the phenomenon which Stavenhagen first named 'neolatifundismo', and which appeared in Mexico after World War II, and which Warman analyzed in more detail (1974 and 1975). According to Warman (1971), the Mexican neolatifundismo is an enterprise oriented to industrial development. Its activity pursues profit in financial terms. Its model may be conceptualized in three territorial areas: nuclear, controlled and peripheral. The first is associated with property of large extensions of fertile land. The profits of production in these lands are re-invested in the form of new technologies, tractors, machinery for processing products, irrigation, drainage,
etc., in such a way that distance between nuclear area and minifundio increases day by day. The goods accumulated in these areas have more capacity than the production obtained in it, and become 'service centres' with a wide regional influence. Also, due to its orientation, the neolatifundio has access to the market and therefore financial resources. Thus it becomes a commercial monopoly which also surpasses the limits of its nuclear territory. In general, the nuclear area is surrounded by ejido or small private properties, the extension of which is insufficient to accumulate capital and serves only as a resource for peasant subsistence.

Production in minifundio participates in the market, prices do not allow profits to be won, given the high costs of production. Consequently, peasants relying on very small plots face a process of pauperization.

In order to palliate their vital deficits, peasants face several alternatives: the first is to rent their land to someone that can exploit them with profit, to neolatifundistas who thus extend their territory, and whose large-scale economies enable them to offer payment of a rent higher than the marginal production of peasants. But, when land lacks irrigation or when its quality is poor, the neolatifundist will not be interested in hiring it and peasants will have to find an equilibrium between the production on their land and the selling of their labour to the neolatifundist enterprise, or by means of emigrating to urban centres or to other regions. This situation benefits the neolatifundio which needs to concentrate labour only at certain times of the productive cycle and for short periods, because it represents the possibility of obtaining a cheap and seasonal labour-force which only needs to supplement the subsistence level of the family units. "For
the neolatifundist devoted to the production of labour-intensive crops, the low price of salary compensates the disadvantages of subordination of agriculture" (Warman, 1980 p.195). Hence, the controlled area permits territorial expansion (which, by the way, is illegal according to agrarian law) and the periphery supplies cheap and seasonal labour. The result is that neolatifundio can keep costs low, increase income, and maximize earnings. Warman points out that the nuclear area need not belong to the same owner.

According to Wolf (1969) peasant society is immersed in a complex framework regulated by the State. "In Mexico, the State fulfills general functions such as the establishment, regulation and direction of the economic model. The State, with external limits and internal pressures defines and executes the economic policy that subordinates agricultural production to industrial growth, and which is translated into asymmetrical relationships of fluxes of capital, relative prices and allocation of resources" (Warman, 1980, p.198). Warman goes on, arguing that the State regulates land-tenure; and that, since after land-reform the indexes of concentration of land in Mexico have been accentuated particularly in lands with greater potential for production, land-endowments nowadays respond only to political pressures and are no longer mechanisms for the re-distribution of wealth. In instances such as the production of basic crops, were neolatifundios no longer fulfill their functions, the State directly intervenes in order to overcome or to substitute the productive deficiencies by assuming the functions of neolatifundio. It acts through credit; the official bank takes control over the land and directs or directly carries out production on many small plots. Peasants are alienated from production "receiving in exchange a modality of payment for the rent of their land"
(that is, profit), the difference between the amount invested by the bank and the value of production" (Warman, 1980, p.201). Frequently, this difference is negative, and the level of debt of the peasant increases. He then becomes tied to this forms of rent payed by the State. Public finance in agriculture and direct investment follow the same model. They are mainly devoted to support existing enterprises, or to form new ones. Only a minor portion of it goes to disperse peasant families.

Neolatifundist are then displaced to more profitable branches while the State assumes control of the deterioriated ones to the benefit of other groups in society. "Peasants in their turn are pushed towards riskier and less remunerative tasks" (Warman, 1980, p.201).

Direct investment and credit are the main instruments of agrarian policy (Warman, 1978). Other actions are subordinated to them. For example, guaranteed prices imply remunerative prices for large enterprises and at most subsistence for peasant producers (Appendini,1980).

Selection and creation of technology also supports large producers. For example, the "green revolution" is only possible in flat lands with irrigation, mechanization and large investments in industrial inputs (Hewitt A.C., 1975, Cleaver, ). In order to increase production, policies are established to concentrate productive resources. In so doing, they group the interests of powerful sectors, reinforcing the neolatifundio to the detriment of peasants (Warman, 1978).

Other mechanisms of domination of peasants are performed through the modality of commercialization linked to
financing which gives rise to a "buying, usurious and monopolizing bourgeoisie". The three modalities can be combined in one person or enterprise. They buy peasant production; sell inputs that peasants need to produce and consume; and lend resources and services. Products are bought at sensibly lower prices than rural market ones, and peasants accept them because they lack resources for transportation, packing, and so on. Frequently, peasant production is bound by debts.

Peasants generate an economic surplus which they cannot keep because of mechanisms of exploitation. Subsistence level is both a minimum and a maximum. While it is not attained, peasants will look for strategies to organize and intensify their labour-force. Once this is achieved, it becomes the limit of exploitation (Warman, 1980).

Campesinist literature stresses the concepts of family units of production and consumption and subsistence level as alternatives to enterprise and profit. The volume of production is seen as a variant of the amount and composition of labour-force and not as a variant of capital. Access to land is not the mere acquisition of a commodity with a market price but also the result of belonging to a group that establishes its control over land by means of non-market mechanisms. Un-paid family labour acquires a new dimension as a central element of the economic rationality of peasant production. Technology can be analyzed as a complex relationship between abundant and flexible means and rigid and scarce ones; consequently, efficiency would not be measured by profit, but rather by the use of resources as a function of survival and social reproduction of peasant producers. The larger socio-economic system tends to break the equilibrium of peasant subsistence production.
with the general trend to extract its economic surplus over and above subsistence and to reproduce this as a structural need.

The literature review just presented enables us to obtain a view of 1) different conceptualizations which have prevailed in the interpretation of the problematique of Mexican agriculture and peasantry; 2) The evolution of different concepts; and 3) the main difference among them. In the following chapter, the conceptual framework which served as a referee for guiding the research of this thesis is presented. This framework enabled us to give an explicative content to observations of field-work. The framework uses concepts of different authors, but its integration is strongly influenced by Campesinist literature, mainly because it opens a more complex and less prejudiced dimension to the understanding of peasant behaviour through their own explanations. Irrigation is considered as an element which at some point in time represented an innovation in peasant productive processes; the adoption of which is not only a function of its advantages for a more profitable production. In fact, as will be seen in the course of the case-studies, the issue of subsistence appears as a central parameter in the adoption of projects of production based on irrigation. However, the decision to adopt such projects is not only confined to internal factors of peasant rationality because of the existence of external forces which set the limits within which peasants can manage their resources. Such forces emerge from the ways in which peasant economies are linked to the wider systems through the market of goods, services, labour and finances; they are concretized through the actions of mediating agents and institutions which serve as vehicles in the transference of surplus and in the introduction of modernizing factors in the peasant forms of
production they are off-set by the prevalence of
communitarian norms in the process of production and
distribution.
2. CONCEPTUAL FRAMEWORK

The inter-relation of the Mexican agricultural sector with the rest of the economy and the process of "polarization" observed at the "inside" of this sector is summarized in this thesis under the concept of ARTICULATION.

Broadly, this concept refers to "the system of relationships that inter-link the constituent parts of the agricultural sector, among themselves and with the rest of the economy, to comprise a "whole" (an economical system) with a structure and dynamics that condition and that are conditioned by the structure and dynamics of the parts. These relationships, that take the form of interchanges of goods and services between the constituent sectors of the economy and between the constituent parts of the agricultural sector, are asymmetrical and result in the transference of economic surplus from the agricultural sector to the rest of the economy and from the traditional sector of peasants to the modern sector of agricultural producers. 1/

The agriculture-industry articulation.

In general terms, the process of industrialization in Mexico has been seen as the main generator for the grow of the economy. The manufacture of consumer goods has been the most dynamic branch in this process, whilst industrial branches that manufacture means of production are almost absent (Szekely, 1974). Hence, Mexican industry has developed in a general framework of dependence on other countries, as far

1/ Several authors give a similar sense to the concept of articulation. Among them: Bengoa, 1974; Warmen, 1976 and Scott, 1976.
as establishing industrial plant, replacement of parts and
the use of technology is concerned. Consequently, financing
industry's development has increasingly required foreign
devises that have been obtained by means of: exportation of
raw materials, products with little elaboration and
energetics; direct foreign investments and the contracting
of loans from abroad. The obtention of foreign devises has
led to a spiral process of development and recurring crises
of the economy; due to the deterioration of the conditions
of trading with foreign countries, the increasing deficit of
the balance of payments and the increasing level of the
external debt.

In that framework, the activities of the primary sector have
formed, since the decade of the forties, the basis of the
national economy; because the growth of this sector enabled
the manufacturing industry to obtain the foreign currency so
much required. The agriculture continued to fulfill this
function in spite of the stagnation of its rate of growth
since 1965; as this loss in dynamism is only the reflection
of the deterioration of the relationship between prices of
agricultural products and those of industrial goods.
(Szekely, 1974).

If one considers that the price of an industrial product is
constituted by the costs of production plus the profits of
the entrepreneur; and that the cost of production is
comprised by the cost of replacement and depreciation of
the machines the cost of raw materials and energetics and
the cost of salaries one might see that the agricultural
sector fills the function of financing the development of
industry through the following mechanisms:
1. Exportation of the products of agriculture to obtain foreign currency.

2. Supplying raw materials to domestic industry, at prices that mean transfers of economic surplus, because if they were calculated according to their costs of production in normal conditions, they would be higher (this point will be supported later in this chapter).

3. Supplying consumer goods at those under-valued prices that are co-producers for keeping at low levels the salaries of industrial workers.

However, not all of the economic surplus generated in the agricultural sector is transferred directly to industry. Another aspect of the transfers of surplus is given at the inside of this sector.

The polarization of agricultural producers.

Since 1940, the general trend in the politics of agriculture has been to produce what can be best sold at the international markets and to import what cannot be produced in favourable conditions from these markets. As a consequence government has mainly supported a "modern" agro-exporting sector that has competitive possibilities in the external market. Towards this sector the resources of public investment in infrastructure, financial support and official incentives for production have been channeled (Hewitt, 1975).

Then, one finds an agricultural sector polarized in two groups, both are opposite, but both are inter-related in such a way that the existence of one depends upon the existence of the other. "The two poles are explained as the result of a unique historical process, in which, the mutual relation that prevail between "traditional" regions and
groups and "modern" ones represent the functioning of only one global society, of which both poles are integral parts" (Stavenhagen, 1972).

On the one hand, one finds the modern sector mainly comprised of producers who export their crops. They own the greatest amounts of the means of production: land, machinery and money; count with communication and irrigation infrastructure, advanced technology and financial support from the private and official banks and are able to take advantage of governmental incentives for production. On the other hand, one finds the traditional sector of peasants (small owners and ejidatarios) that have only small holdings of land (minifundios) and lack investment resources. Hence, their conditions for producing and trading are disadvantageous as compared with those of modern producers. This traditional sector has been relatively less favored by irrigation infrastructure. 1/

But both poles are not homogeneous. At their inside one finds a differentiation of producers, the modern sectors comprise producers that rank from medium class entrepreneurs to owners of large extensions of land (Latifundistas). Also, in the peasant sectors one finds producers that, having entered into a more productive process, get high yields from their crops and their economic activities respond to the market and to the incentives of the government. These producers are intrinsically linked to modern sector,

1/ Official data offer some indexes of the polarization of agricultural producers. In 1970, 80% of the producers had 38% of the agricultural land and 3.9% of the irrigated land, while 3.3% had 42% of the agricultural surface and almost 70% of the irrigated land. In the same year, 80% of the peasants had only 7.8% of the value of the machines of agriculture, while 20% had 92.2% of that value (V Censo Agricola Ganadero, Ejidal 1970, INEGI, 1975).
although they produce on a small scale. At the other extreme of the traditional sector one could identify landless peasants that count solely on their labour as their one resource for surviving; this resource they sell to the other agricultural producers, to the industrial sector or they become part of the urban marginal sector. (Bartra, 1974; Feder, 1975; Paré, 1977 and Stavenhagen, 1978).

The role of supplier of basic food and raw materials for the internal market has been played by the traditional sectors, not because of their will, but rather as their only alternative, as more profitable products require investment resources that the peasants lack.

This situation had led to the gradual ruin of the traditional sectors of peasants and to a decline in minifundios production arriving to the market. This has had a negative impact on the internal supply of the products that form the base of the nutrition of the people of Mexico; mainly corn. Hence, the country has lost its self sufficiency in food, a factor that has contributed to deepen the dependency of Mexico on other countries.

The gradual ruin of the traditional sectors of peasants can be explained by their articulation with the modern sectors of producers and with the intermediary sectors that link them with the rest of the economy. In order to explore the articulation between modern and traditional sectors of agricultural producers, the differences that occur at the level of the productive process of both poles will be described first. As has already been mentioned, the two poles are not homogeneous, but as a conceptual tool for analyzing the relationships that occur between them, the concepts of "peasant economic unit" and "entrepreneurial
unit" will be introduced as representatives of an ideal typification of the poles.

The peasant economic unit and the entrepreneurial unit.

In Mexico, the peasantry constitutes a specific sector in which the "managing logic" of the productive resources —i.e. the logic that guides the decisions about what, how and how much to produce and what destination to give to production—qualitatively differs from the "managing logic" of the entrepreneur and gives the peasant a particular rationality, distinct from the rationality that guides the entrepreneurial activity.

The objective of the agricultural entrepreneur is to make a profit and the reproduction of his investment. In contrast, the peasant pursues the obtention of an income sufficient to generate the means for the biological and cultural support of his family and a fund for restituting his means of production and for confronting the contingencies that endanger his existence (Chayanov, 1974; Tepicht, 1973 and Warman, 1980). These elements constitute the level of subsistence of the peasant family unit, the parts of which cannot be reduced to the common factor of money (Pearse, 1975 in ed. Feder, 1975). Consequently, the managing logic of the peasant is regulated by criteria that differ from the mere obtention of money for maximizing profits and replacing investment (Lange 0.j 1963).

The concept of the peasant economy is referred to as a "sui-generis" form of organization of agricultural production which encompasses the sector that produces in family economic units with the objective of ensuring cycle by cycle the reproduction of its conditions of living and working.
There are several characteristics that give specificity to the peasant economy and that distinguish it from agricultural enterprise, these are:

1. The objectives of the peasant economic unit have a family character and only secondarily an economic character. It is a production and consumption unit, therefore the decisions about what, when and how much product to consume are not independent of the decisions of what, how much to produce and sell. In contrast, the entrepreneurial unit is devoted only to production. (Tepicht, 1973).

2. When the needs of consumption of the peasant economic unit increase, work is intensified in order to expand its global income. But if the means of production remain constant, an increase in the amount of work applied per unit of land implies a relative decrease in its yield and consequently, the price of each unit of work suffers a reduction (Law of Chayanov, Chayanov, 1974). In contrast, the entrepreneurial units apply new funds if these imply an increase in marginal profits.

3. The technology of the peasant economic unit is labor intensive. Labor is the central element in the process of production: for that reason, there is a tendency to avoid its substitution by the use of technology. Hence, the buying of inputs and of other means of production are reduced to a minimum level. (Tepicht, 1973). In the composition of the final product of the entrepreneurial units, major portions of inputs bought at the market intervene, as they employ more density of capital per asset.
4. The members of the family in the peasant unit have to find productive occupation (Franklin, 1969). In fact, it almost does not use paid labor and it exports labor only when its subsistence level cannot be attained with the productive activity inside the unit (Stavenhagen, 1978). The entrepreneur regulates the manpower of its productive unit according to its contribution in the profits.

5. The peasant economic unit uses labor force that does not have economic value in other productive contexts -- children, the elderly, some women, etc. -- Also, it uses land, the low productivity of which, would not be attractive for an entrepreneurial exploitation. (Warman 1976).

6. In contrast to what happens in the entrepreneurial units, in the peasant unit it is not possible to differentiate the categories of salary and profit in his income, as the purpose of its activity is the obtention of a family global income -- in money or in product--. This income is obtained as the result of the joint effort of its members (Warman, 1972).

7. The selection of products in the peasant unit is not guided by market considerations but by its role in the family support. Only when external factors intervene in the production process -- credits, laws, etc -- the peasant unit produces according to the market. In contrast, the entrepreneurial unit is devoted to crops with favourable market conditions. This does not imply that the peasant unit is a natural economy because it buys inputs in the market; but it implies that the peasant unit approaches the market as a producer of
8. The agricultural entrepreneur takes risks which are proportional to the increase in his expected rate of profits. The peasant unit, in its economic decisions, avoids taking risks that may endanger the attainment of its subsistence level. (Lipton, 1968 and Jedlicka 1977).

9. The capitalist enterprise is conceived in a competitive market while the peasant unit is conceived in the framework of a group of families that take part in a larger social system and that live in close relationships. Such families are interdependent and hold relationships of permanent neighborhood. These result from a system of arrangements related to the occupation of a territory and the productive use of the physical resources that it contains. From these resources, the peasant units get its means of living.

This major system has been called "the protecting shell" (Tapicht, 1973), "the local collectivity" (Pearse, undated) or the "agrarian community (Warman, 1976) and it is the one that sets forth the conditions for the stability of the family units, because its arrangements represent relationships of interchange of equivalents or of re-distribution of resources among its members.

But the peasant and the entrepreneurial systems are not independent neither are they "...successive and compulsive forms of evolution; one more primitive and the other more advanced" (Warman, 1950). Both poles are contemporary and dynamic developments; both poles are articulated among themselves and with the rest of the society.
The articulation between the traditional sector of peasants and the modern sector of entrepreneurs can be appreciated in the market of products and labor. The explanation of its asymmetrical character lies in the differences that occur at the level of production.

The mass of Mexican peasants that lack the possibility of fulfilling their subsistence needs with the product obtained with the resources of their economic unit, assign labor force to the agricultural enterprises of the modern sector. The salary that these peasant obtain is less than the marginal cost of their labor and it can be kept at low level because the subsistence of the peasant who sells his work does not depend on the amount of his salary, but on his link with his family units. It is in this sense that the salary is complementary to the family income. Also, these peasants are employed only during the periods when the productive cycle of the entrepreneurial units requires extra labor force for certain tasks.

The peasant sectors represent a supply of cheap and seasonal labor far larger than the existing demand for manpower in rural Mexico. In employing these peasants, the modern sectors of entrepreneurs can diminish their production costs.

Because of the scale and the technical level of modern agricultural enterprises, the costs of production of these sectors are lower than the ones of the peasant sectors. But market prices are based on the costs of production in the worst conditions; otherwise the productive cycle of the peasant unit could not be reproduced and the global supply would be unbalanced. Hence, the profits obtained by the
modern producers are not only a function of their productivity but also a function of the low productivity of the peasant sector. (Szekely, 1974).

The abundance of manpower of the peasant units and their low productivity are the basis of the mutual dependence among both poles with detriment to the peasant sector. To a great extent, the modernization process depends upon the back-wardness.

Frequently, the agricultural entrepreneurs expand their enterprises by the mechanisms that imply the control of the means of production of the peasant sectors. This phenomenon has been named "neo-latifundismo" and most often is accomplished through the rent of the land. (Warman, 1975). This mechanism takes different forms: the "direct rent" in which the peasant receives a fixed amount of money for the lease of his plot; the "association", when the lessee places the investment resources needed for the productive cycle and the lessor peasant contributes to the enterprise with his land and his work and different forms of "financial support" that impose fixed norms for the production process and that are intrinsically linked to the selling of the harvest. All of them have as a common factor the separation of the peasant from his means of production and the resulting control of the "neo-latifundista" over peasant production. Its more salient impact is the concentration of the more productive and irrigated lands that offer an attractive potential for profitable production processes.

Next to the productive sectors, in the Mexican rural areas one can find a sector operative in intermediary activities. This sector, without adding value to the product, withholds a substantial part of the economical surplus generated by the
productive sectors and serves as a vehicle for the transfers of the whole economy.

The articulation agriculture-intermediary sectors.

The resources of the unproductive sectors of the rural areas are linked to the process of production in agriculture via financing and commercialization and through institutions and agents that take several forms. These forms range from free market trading to commercial monopoly and from financing at preferential rates or legally authorized interest rates to usury. Very often, many of them are merged in the same agent or institution or the coordination of different agents and institutions gives rise to a combination of these forms. Also, it is not rare that the same agent or institutions adopts diverse forms in dealing with different groups of producers. Among those "bond" agents or institutions one can find traders that intervene in the chain of commercialization of a product, commission agents of agroindustrial enterprises, the CONASUPO (Official agency in charge of the commercialization of crops and basic foods), local monopolizers of product, brokers, the private and the official banks, usurers, etc.

The main source of profits of these unproductive sectors originates in control of the resources of the productive sectors. The intensity of this control varies with the capability of the different producers in managing the mechanisms of the unproductive sectors. In an abstract sense, the absolute control of the productive process would be attained through a combination of the following concrete mechanisms.
1. Monopoly of the acquisition of the product, which can be attained by:
   a) Giving credits only if the product is sold through a settled channel.
   b) Monopoly of access to the market (transportation means, storing capacity, refrigeration or packing facilities, etc).

2. The monopoly of the access to the productive inputs, which implies control of the decisions about how to produce.
   This can be attained by:
   a) Credit in product (seeds, fertilizers, fungicides, etc).
   b) The monopoly of the market of inputs.

The intensity to which these mechanisms are operative varies, but for the sector of traditional peasants, the wide variety of bond agents and institutions constitute economical, political and social structures, the power of which can be explained by the polarization of the agricultural producers.

The productive process of the peasant sectors takes place in small plots (minifundios), based on labor intensive technologies, and its productivity per unit of land does not yield profits for an entrepreneurial exploitation. Hence investment resources are not directed to production but rather are attracted to the commercialization of the product. (Szekely, 1974). Therefore, the peasant can get credits only if he accepts the commitment of selling crops through definite channels. But when for the banking system the peasant is not a subject of credit due to the scarcity of his resources, his only feasible source of financial aid is the usurer.
Credits given by private banks require the guarantee that the productive activity would be profitable in the market; such cannot be guaranteed by the peasant productive activity.

Almost all the credits given by the official bank are based on preferential rates of interest, but also, almost all of them impose the utilization of industrial inputs and mechanization in the productive process; with the resulting increase in the costs of production. This increase is not necessarily, relative to the increase in productivity. Hence the amount of money that the peasant obtains when he sells his product, very often is not enough to reconstitute the credit and to cover his subsistence needs.

On top of that, it is not rare for the peasants to use part of their credit to cover their more immediate needs of consumption.

The usurious credit finances the production and the consumption needs of the peasant. It does not require guarantees, but the usurer gradually takes possession of the resources of the peasant: his land, his means of production, the product that he will obtain in years to come, etc. The peasant is then introduced into a cycle in which his level of debt grows gradually (Paré, 1975).

However, in some instances the official bank consistently finances the production of peasants that are not able to reconstitute the loan. These subsidies to the producers enable them to increase their managing capacity, but they also permit prices of products demanded by urban consumers or by industry to be maintained at low levels. (CEPAL, 1980).
The economical power exercised by the intermediary sectors or by the modern sectors of producers over the peasant sectors can be extended to the political and social arena. Very often, the usurers or the local monopolizers occupy positions of political representation (Szekely, 1974) -- Presidencies of the Municipalities, Presidencies of the Water Assemblies, Directives of the Users Associations, Comisariados Ejidales, etc--. Also very often, the functions that these agents fulfill in the peasant communities give them legitimacy as members of the social system with a high status and preferential influence (Paré 1975).

The bond agent that has hegemony over a group of peasants is in general an individual who "...rides between two modes of production; manages both languages, two types of societies and two economic rationalities and transfers capital to the dominant mode (Warman, 1980).

This conceptual framework has already explored:
1. The specific characteristics of the system of production of the peasant sector.
2. The articulation between the sector of peasants and the modern sector of producers.
3. The articulation between the productive sector in agriculture and the intermediary sectors.

That set of concepts will be used in the case studies included in this research as a reference for analysing the process of adoption and distribution of the benefits of small scale irrigation.

This process is conceptualized as a process of adoption of innovations, in which the innovation initially concerns
small-scale irrigation units. This infrastructure may be compared to technology appropriate to the socioeconomical context into which it is introduced; and this because water, as a factor of production, is not alien to the culture of the peasant. In fact, irrigation is a scarce resource for the Mexican peasant who fights to make it his with much the same fervour as he fights for land.

But the adoption of irrigation in agriculture is not an isolated act, but rather a process which involves with the use of infrastructure and implies changes in the traditional forms of production of the group of adopters.

Water is a catalyst for a productive project supported on the use of new factors. That is, during the process of adoption, the technology changes; improved seeds, chemical fertilizers and other industrial inputs are used; some tasks are mechanized; new crops are introduced; etc.

The agricultural practices that are adopted during the process are not new. In fact, they may be antiquated in relation to the state of world or regional technological advances. But these practices may mean radical changes in the equilibrium of the economical activity of the group of adopters, who become articulated with their environment through relationships that for them are new. This implies a change in the relationships of production of the group of adopters that can be observed in the adaptation strategy of the economic activities of the peasants that adopt irrigation.

The interdependence of the socioeconomic environment limits the possibilities of adopting a wide range of productive projects, the implementation of which would be
technologically feasible. That is, there is a boundary that emerges from the way in which the economic activity of the group of adopters is articulated to other sectors and to the rest of the society. This boundary limits the alternative paths that the process of adoption may follow, but also stimulates and even imposes, through different agents and mechanisms, the adoption of specific projects of irrigated agriculture.

But besides the fact that the environment limits a space of opportunities and sets the restrictions for the adoption of irrigation, the shaping of this process is also affected by the way in which the adopters perceive their situation, their available means of production and the objectives and goals that guide their productive activity.

It is worth remarking that for the purpose of this research, the adopter or the potential adopter is recognized among the sector of traditional peasants; because the case studies deal with the adoption of small-scale irrigation units installed in the land of "minifundistas" or "ejidatarios". Some members of the modern sectors produce in a portion of the land irrigated by these units; however as will be seen in the description of the case studies, this results from the way in which the peasant economies become articulated with the modern sector of producers through the adoption of irrigation.

To sum up, the process of adoption of irrigation can be analysed through the changes that emerged in the productive process of the adopters as a result of the introduction of small-scale irrigation infrastructure. In these changes technological and economic factors are operative; as well as the rationality of the group of adopters and their
articulation with other sectors and with the rest of society through different agents and institutions of the intermediary sector (figure 1).

FIGURE 1. THE SPACE FOR THE PROCESS OF ADOPTION OF IRRIGATION.
3. THE EAST OF MORELOS.

The East of Morelos is hounded to the north, by the Popocatépetl volcano; to the south, by the Sierra of Huautla; to the west, by the Barranca de los Archos and la Cuera and to the east, by the political border that separates the states of Morelos and Puebla (map 2.1).

The hydrography of the zone comprises running water that flows through the high cliffs from north to south. The main stream of the region is the Amatzinac river formed by the melting snows of the Popocatépetl. This river is born to the north in Hueyapan and runs downhill increasing its volume along the cliff that takes its name. On its banks twelve villages are settled: Hueyapan, Tlacotepec, Zacualpan, Temoac, Popotlán, Huazulco, Amilcingo, Amayuca, Jante-tecol, Jonacatepec, Chalcatzingo and Tenango (map 3.1).

Access to the East of Morelos is by a paved road that runs from Cuautla to Izúcar de Matamoros in the state of Puebla (map 3.1). Internally, communications within the zone are by means of a paved road that connects the villages of Jonacatepec and Axochiapan and that continues towards Atencingo Pue. There are also unpaved municipal roads, along many of which cars cannot transit during the rain station. These roads connect the main villages of the region with the rest of its ejidos and communities.

The East of Morelos can be typified as an agricultural region. Since pre-Columbian times, cultures influenced by the Olmecas existed in the region, which practiced an agriculture of irrigation. At their arrival, in the fifteenth century, the Spanish found a sophisticated system
of irrigation comprising aqueducts, canals and avenues that represent, up to modern times, the main structure of irrigation based on running water of the region. There are many interrelated factors that condition the production practiced in the East of Morelos. Among them, one can find the natural resources that allow for the reproduction of the vital cycle of the crops: soil, climate and water. These resources are not homogeneously distributed throughout the region and their characteristics give rise to three natural subregions (Warman, 1976).

The first of them, the so-called "cold land", starts at the bottom of the Popocatépetl and descends at about 2,500 meters of altitude. It is a wooded area in which rain falls almost all the year; its climate is cold and zero temperatures are frequent. The soil is broken and mountainous. In order to cultivate this land, its inhabitants have adapted the soils by building terraces and have adopted crops that resist the weather conditions. Irrigation helps to protect the crops from frost. Here, the scarcest natural resource is heath.

The second subregion, the "temperate zone" is encompassed by the municipalities of Temoac and Zacualpan and its lands are plains with a moderate slope. The natural vegetation is characterized by low bushes and pasture. The rains fall from the months of June to September; hence, winter crops are produced only on irrigated lands. These are relatively scarce because the volume of the stream of the Amatzinac diminishes notoriously during the dry seasons. Its inhabitants practice an agriculture based on a variety of high yielding crops, but as this region is the most highly populated of the East of Morelos, land as well as water become scarce resources.
Finally, from Jantetelco to Axochiapan, we find the "hot zone" in which the land is practically flat and the landscape is barren. In this area the rainy season starts at the end of June and finishes at the end of September; the rest of the year, the high temperatures represent a continuous risk of losing the harvest by drought. Here the scarcest natural resource is water. The deviations of the waters of the Amatzinac that are made in the zone of moderate climate, diminish the volume of the river to the point that the villages down-stream lack the possibility of using this resource. Hence, in the hot land, the hydraulic resources are mainly obtained by well-water and by means of high investments in the building of irrigation infrastructure.

The East of Morelos is a rural area in which almost all the population is dedicated to agricultural tasks, only in the hot land the commercial and touristic activities represent limited sources of employment. In general, the population is very much linked to the land although the number of ejidatarios (peasant with rights over a piece of land) is less than the number of peasants without rights over the land and that work in the area for a salary. The latter numbered about 30 thousand people in 1973 (Astorga, 1978). In the region there are no industrial areas or urban centers. The city of Cuernavaca, capital of Morelos, has a political influence over the villages of the zone, but this influence is not relevant in the areas of trade or services. For these, the inhabitants of the East of Morelos rely on Cuautla where public offices, hospitals and an active commerce are settled.

Also they use the restricted services of the regional heads of the municipalities.
The products of local agriculture include a wide variety of fruits and vegetables (onion, tomatoes, cucumbers, courgette, chili, walnut, avocado, quince, plum, coffee, tamarind, amaranth, cantaloupe, watermelon, guava, custard apple, etc.) as well as peanuts, sorghum, corn, rice and beans. The production of vegetables is destined for the urban national markets and in large volumes for export. The fruits are sold through a complex network of intermediation in the national urban markets. The sorghum is destined for industries that manufacture balanced food for cattle through the intermediation of the official bank (BANRURAL). The corn, beans and some vegetables such as the courgette and chili are used for selfconsumption or are sold in the small regional markets. The trading between the East of Morelos and the urban centers is realized by a series of intermediaries that take the local products to the supply centers of México City, Cuautla and Puebla; the three urban centers located near the region.
3.1 PRESENTATION OF THE CASE STUDIES IN THE EAST OF MORELOS.

In this section, two case studies are presented. The first of them is related to the use of the stream of the Amatzinac in the agriculture of the temperate zone of the East of Morelos. The water of this river is used by means of a network of channels that were reconstructed following the basic structure of the irrigation system built in pre-Columbian times. The reconstruction was done by the peasants after the Revolution of 1910 and with the intervention of the Ministry of Hydraulic Resources that installed some control valves and built some channels. Geographically, the case study comprises the six villages of the zone that are settled on both banks of the river. As in this zone, the irrigation is a resource that has traditionally been used in agriculture, the case study is focussed on the process that leads to the current way in which irrigation is used. An understanding of this process has been sought through the system of relationships of production of the local peasants and through the intervention of contextual factors in their structure and dynamics.

Nowadays, the waters of the Amatzinac support a high-yield of vegetables, fruits and some grains commercial agriculture. In this agriculture, modern production techniques are employed, as far as the use of industrial inputs fertilizers, pesticides etc.- and machinery is concerned. But these practices occur in a general framework of abundance of manpower and scarcity of land and water, which result in an accentuated "minifundismo" (division of the land in very small pieces that in this zone range from 0.4 to 1 hectare.

1 hectárea (ha.) = 2.4678 acres.
In analysing the use that the peasants of the Amatzinac give to irrigation one finds an example of how, throughout history, the peasant economies of the inhabitants of the East of Morelos have adapted to the influence of systems of domination that, broadly speaking, have tended to control, by different mechanisms, the use of the main local resources for production. In facing these systems, the main objective of the peasant has been to subsist and to perpetuate his linkages with the land. But this adaptation has implied an increasing need to multiply the strategies of organization of his work and of redistributing the resources that he is able to keep under his control. As these resources are even more scarce his subordination to the dominant system increases and so does the deterioration of his conditions of life.

In the same region of the East of Morelos, in the hot land, public investment in hydraulic infrastructure during the decade of the seventies has been the main resource in the consolidation of small groups of agricultural producers of highly diversified and high-yield crops. It has also been a main factor for incorporating these peasants into relationships of trade linked with the export of food and its supply to the main urban center of the country.

In this zone of hot land the second case study of this thesis is located (chapter 2.3) in the ejido of Atlacahuacoyoa, municipality of Axochiapan. Here during the period 1970-1976, twelve deep wells were built. This ejido is a case in which the use of irrigation, besides consolidating agriculture linked to the dominant system, has constituted a factor for consolidating the peasant organization for production. Even if this does not remove the peasant from the relations of subordination to the dominant system, it has allowed him to gain some degree of freedom to manipulate, with more
autonomy, his main productive resources. Now, the exercise of this autonomy is not gratuitous. The ejidatario of Atlocahualoya is fragile in the face of the dominat system and he has to face a series of obstacles and problematic situations from which he does not always come out successfully. But in this process, some traditional mechanisms of re-distribution of wealth in the ejido have been strengthened; and although this does not eliminate class differences within the ejido, it allows the ejidatarios to attain a standard of living better than the generality of peasants of the East of Morelos.
3.2 THE TEMPERATE ZONE OF THE AMATZINAC.

Description of the case.

This zone comprises the municipalities of Zacualpan and Temoac, the main settlements of which constitute an organized set around the Amatzinac river. (map 3.1). These are the villages of Tlacotepec, Zacualpan, Temoac, Popotlán, Huiszulco and Amilcingo. In the región live nearly 2,700 families that are approximately equivalent to 15 thousand inhabitants. Most of them are peasant families that are devoted to agriculture, although not all of them have legal rights over the land. Most of them are ejidatarios, although there are also small owners. The average size of the agricultural plot, according to the official statistics is approximately 2.7 has. (table 3.2.1). However, the pressure that the increasing population exerts over the land has contributed to the fragmentation of the agricultural plot and to the fact that, in the zone, agriculture is practised in a framework of minifundismo.

As in the East of Morelos took place the revolutionary movement of 1910-1918, led by Zapata, when the time came for the distribution of land, the government gave priority to this zone. Hence, once zapatistas were pacified the distribution started and by 1923, 115 villages had preliminary endowments and by 1929 the agrarian distribution was concluded (Warman, 1976). Since then, some extensions to the ejidos have been given, affecting to that end large land holdings; however, these have been notoriously less than the population growth.
MAP 3.1 THE EAST OF MORELOS

SOURCE: Warman (1976, pag. 19)
Table 3.2.1 Land Tenure in the Temperate zone of East of Morelos.

<table>
<thead>
<tr>
<th></th>
<th>EJIDO</th>
<th>PRIVATE PROPERTY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 5 has.</td>
<td>More than 5 has.</td>
</tr>
<tr>
<td>Agricultural Surface</td>
<td>5,190.6</td>
<td>118.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Number of units 6 ejidos*</td>
<td>1,800</td>
<td>133</td>
<td>1</td>
</tr>
<tr>
<td>Average size of the plot</td>
<td>2.8</td>
<td>0.89</td>
<td>6.6</td>
</tr>
</tbody>
</table>

* This number is an approximation and was obtained from interviews with the Comisarios Ejidales.
** During the fieldwork a private property of 4 million square meters, which is not registered in the Census, was detected.


As has already been mentioned, the main activity of the zone is agriculture. In small flat orchards surrounded by walls built out of river rocks and located next to the houses, a great variety of fruits -- walnut, plum, guava, tamarind, avocado, etc.-- is produced and in the land of the ejido located on the outskirts of the villages, peanuts, sorghum, corn, beans, rice and vegetables such as tomato, onion, courgette and chili are grown.

Most of the agricultural surface is cultivated in the rainy season (seasonal surface). Irrigated land represents only 11% of the total land worked. In the seasonal land peanut, sorghum and corn are grown while the water of the Amatzinac is used to produce the wide variety of products already mentioned, to which the irrigation is frequently applied.
only as a support to the rain and on a very reduced scale. The vegetables are cultivated in great extensions of land by the entrepreneurs of the ex-hacienda of Tenango and in very small plots that range from 0.1 to 0.2 has. by the local peasants. The production cost of the vegetables is high and requires the buying of industrial inputs: seeds, fertilizers, pesticides, etc. Despite the speculative nature of the vegetable market, involving a highly risky enterprise for the producer, peasants are able to grow this crop because manpower is the item that contributes most to the cost of production.

In general terms, the yield of crops in the zone, in both seasonal and irrigated lands, is high in comparison to the national averages. Besides, due to its altitude a variety of crops that complement the variety produced in the Valley of Mexico are cultivated. The two regions represent important sources of supply to the Metropolitan Area of Mexico City as well as to other urban centers such as Puebla and Cuautla.

The endowment of water of the Amatzinac.

The water of the Amatzinac river, to irrigate the lands of the zone of moderate climate of the East of Morelos, was endowed in 1926. This endowment of 680 lt per second, irrigates 506.9 has. of ejidal land, 92.7 has. of authentic small properties and 420 has. of private property from the hacienda of Tenango. This last extension is not registered in the statistics of land tenure of the official census. However, it has a legal endowment of water of 200 lt. per second.
There are about 1500 users legally registered; that is nearly 55\% of the total number of families of the zone 1/. However, many more persons gain access to this resource the scarcity of which is obvious given the importance in the local economy of irrigated crops. 2/

The distribution of the water of the Amatzinac, as well as that of the agricultural land, was made, from the start in unequitative terms and without respecting the distribution made beforehand by the followers of Zapata; this distribution was more adjusted to the communal decisions and to the pre-Columbian rights of the villages. The agrarian distribution was made according to the norms and procedures imposed by the State, and according to its own project for the agricultural sector, whose forms of land tenure, the ejido and small property, differ from the traditional form of communal tenure in the East of Morelos. According to Warman (1976), negotiations to official bureaucracy that the implementation of the agrarian distribution required, offered a space of action to the wealthy persons of the villages. This space they used to widen their power base; as they were the ones that had the capability for negotiating with the bureaucrats, as well as the status and concrete influence among the peasants to represent them before the official agencies. These persons, in promoting agrarian distribution, kept for themselves the best lands, the plots with greatest extensions and the greatest endowments of water. They could also attain political control of the

1/ Source: Junta de Aguas de la Barranca del Amatzinac (zona baja)
2/ The amount of water needed to irrigate 10 000 m\(^2\) varies with the crop, but the general rule followed by the agriculture extensionists of Distritos and Unidades of Riego, is one litre per second for one hectarea.
population when they were legitimated by the government as the representatives of the ejidatarios and as the only persons with legal rights for carrying out the agrarian affairs. Also, they were the representatives to the water assembly that was constituted in 1926 in order to manage the endowment of water of the Amatzinac. All that, allowed those people to widen their economical and political power and in time, to become the "caciques" of the zone; that is, the agents that articulated the peasant economies with the external environment, through the practices of concentrating local products and taking them to the market. For the peasant, they represent his only possibility of obtaining financial support and for carrying out all the affairs related to the ejido for the different governmental agencies.

But the unequity in the distribution of land and water, at the first stage did not represent a source of conflict between the producers; mainly because, with the destruction of the hacienda, the peasants could restore their selfconsumption economy by having access to land for producing corn. Although irrigation was used by the producers for their small orchards and by some caciques that started to cultivate wheat as an attempt to imitate the practices of the owners of the land that remained from the hacienda, the water was not used totally. Partly, because its use was not linked to the satisfaction of a primary need and partly, because the reconstruction of the irrigation system was left to the responsibility of the users. In fact, as the endowment was enough to cover the prevailing needs of production, the communities informally conveyed part of the endowment to the producers of the cold land that used the water for their fruit orchards.
Hence, the water resource in the first post-revolutionary stage did not have an important part to play in the economy of the peasants of the temperate zone for three reasons:

1. Because it was given in a moment when, for the local peasant, the access to land stopped being a problem.

2. Because it was given in a moment when peasant manpower was a scarce resource.

3. Because it was given in a moment when the organization of the local economy for producing sugar cane (the only irrigated crop for almost sixty years) had been destroyed and when the region was left practically isolated from the markets of the rest of the country.

1. The access to land that was won by the local peasants after the Revolution of 1910 was the result of the dissolution as productive units of the haciendas of Tenango and Santa Clara, whose one owner possessed practically the whole East of Morelos 1/. Although the government left to the owner of the haciendas a considerable area of the best lands, the lands, that had belonged to the villages since colonial times, were liberated from the control of the hacienda and were distributed, as small properties, amongst the local natives. Also some land was expropriated from the hacienda and distributed as ejidos between its day-laborers or between the neighbours of the villages that lacked rights over communal land.

---

1/ The haciendas of Tenango and Santa Clara contained in their territory twelve villages (Tlacotepec, Zacualpan, Temoac, Jantetelco, Atotonilco, Huazulco, Amayuca, Amacuitlapico, Chalcatsingo, Jonacatepec, Tetelilla y Telixtac) and almost surrounded three more villages (Atla cahualoya, Axochiapán and Tepalcingo) (Womack, 1969).
2. The Revolution resulted also in a scarcity of manpower, as the population was annihilated in such a way that when peace was re-established, the peasants faced difficulties for re-organizing their process of production that was mainly supported on the organization of the family labor.

3. Before the Revolution of 1910, the water was used to irrigate the sugar cane plantations of the hacienda, which provided the basic input for their sugar mills. That is, the irrigated agriculture of the zone was linked with an industrial process that was also destroyed. With the monopoly of the land, the relations of production of the peasants were ruled almost totally, by the hacienda and by a series of complex mechanisms that organized around the sugar enterprise and for the benefit of one family, practically all the productive resources of the region 1/.

Throughout the territory, production was managed from the sugar mills of Santa Clara and Tenango. Of the 68 thousand ha. of the hacienda, 3.4% were allotted to sugar cane and over this area was cultivated with grass to feed draft cattle; 42% was cultivated with corn and the rest were woods the exploitation of which was left to wealthy "comuneros" who rented this land.

1/ In his writings about the power of the haciendas of Morelos, Womack makes the following remark "Gradually the haciendas took the character of the only legitimate and progressive institutions. It was as if all the human beings of Morelos had to submit their personal destinies, superior and inferior, and to become simple elements of the cosmopolitan enterprise of the hacendados "..." By 1890 it was already evident that, in the middle of this novelty, some important villages, surrounded by haciendas, had almost stopped their growth" (Womack, 1969, pp.43).
Sugar cane was produced by the hacienda with permanent workers and temporary day-laborers who came from nearby villages looking for jobs. Corn and grass were cultivated in lands of the hacienda by peasants from the villages that rented the land under the system of "aparcería". That is, the hacienda rented the land and received 10% of the harvest and six days of labor without payment. The aparcería was managed by local cattle dealers who hired the yoke of draft animals with the land, at a price twice as much as the price of the rent of land. As the price of the rent could not in general be paid in advance, it was given as a credit that was paid double at harvest time (i.e. at 100% interest).

The aparcería fulfilled an important role in the functioning of the hacienda: it guaranteed the supply of corn of its workers; it provided manpower that did not require retribution (between 10 and 20 thousand working days in one year); and above all gave root to the peasant population, which, at no cost to the hacienda, represented a source of cheap and seasonal manpower and which, when the hacienda did not require it, got its subsistence from their production of corn (Warman, 1976).

When the hacienda was destroyed, its mechanisms for extracting the peasant economic surplus also disappeared. The peasants found themselves with land but without resources for production and with their families reduced. They reorganized productive units to cultivate corn; for that they obtained resources from the local "caciques" who started to lend seeds at the "double" rate and to hire the scarce yokes of draft for a fixed quantity of grain that had to be paid at harvest-time. To some extent the practices of the managers of the "aparcería" were re-established.
For the first fifteen years after the agrarian distribution, the local economy was based on the production of corn. The peasant could satisfy his subsistence needs by means of his autonomous production of this grain. Nevertheless, an increasing part of his economic surplus was retained by the local caciques who accumulated the grain and who sold it in the regional markets at higher prices than the ones they paid locally. (Warman, 1976). The caciques became the agents that articulated the local peasant economies with the national markets and who, through the mechanisms of the usure and the rent of the cattle draft, kept for themselves a substantial part of the economic surplus generated by the peasant.

By 1935, the peasant could no longer subsist from his production of corn, because the population growth exerted more pressure over the land and because the peasant lacked the resources for covering the high costs of the usurer. A stage of monetarization of the productive process of the region started with the insertion of the local peasant economies into the urban markets. (Warman, 1976).

The diffusion of modern forms of production.

Around 1935, in the temperate zone of the East of Morelos the diffusion of commercial crops started, finding as a main obstacle the scarcity of water for irrigation. The endowment of water of 1926 was enough to support seasonal crops, but it was not enough to consolidate an agriculture of highly yielding commercial products. The peasant that had irrigation started to cultivate wheat or rice in the scarce half hectare that he could water and with the objective of obtaining some money for the consumption needs
of his family or of supporting the production of corn. That is to pay some day-laborers, buy seeds and even to avoid the contracting of debts that required grain as payment. Then, irrigated agriculture was practised as a secondary economic activity for supporting the production of corn, which was intrinsically linked to the peasant subsistence. The peasant who lacked water started to produce peanut or beans, the financing for which was obtained from local monopolizers, just at the moment when the supply of corn of the family had been exhausted. This money allowed him to re-start the productive cycle of corn, without having to submit to the control of the cacique the harvest of this product, although he had to give almost the whole production of peanut to the other cacique for the repayment of his debt. The objective of this strategy was to guarantee the supply of corn for his family consumption, although the commercial value of the peanut was superior than that of the grain for self-consumption.

Hence, the peasants distributed their labor force in diverse economic activities that had as a central goal the attainment of subsistence level of their families. However as the number of members of the families grew and the debts multiplied, it was more difficult for them to find a strategy to maintain the equilibrium of their economic units, therefore, when they could, part of the labor force of their families was assigned to work for a salary in the land of the ex-hacienda.

During the decades from 1940 to 1960 the process of change in the social relationships of production started to take the form that has prevailed to the present.
With a population that between 1940 and 1960 grew around 40 and 60% and with an increasing cost of intermediation, peasants were obliged to use the totality of their land. Traditionally, peasants used to leave a piece of land fallow after a productive cycle. By the end of the forties, this traditional practice had been abandoned. On the short term, this allowed them to absorb the increasing demand for work, but on the long term this had a negative impact on the productivity of the soil and necessitated the adoption of fertilizers to maintain productivity. Fertilizers had been introduced in the zone in 1940 by the entrepreneurs of the ex-hacienda, and became an extra requirement for money for the peasant, who had to buy them at the high prices settled by the local traders (Warman, 1976).

Also, when the whole agricultural surface became cultivated, cattle were displaced and the scarcity of draft animals led to the adoption of mechanical means. The use of tractors required money to pay the rent while before the hiring of draft cattle was payed in product at the moment of the harvest (Warman, 1976).

The traditional strategy of the peasant for re-producing his productive cycle, that consisted in getting credits that would be payed with the harvest, cracked, because of the increasing need of money to that effect. Money had to be obtained from the crops that could be taken to market. Therefore, gradually, the demand over the scarce resources of the Amatzinac increased.
The conflict over the use of water.

By the end of the forties, the villages of the temperate zone no longer wanted to convey part of their water endowment to the villages of the cold zone. The latter started proceedings before the Ministry of Hydraulic Resources in order to obtain their own legal endowment.

In 1951, Alpanocan, Tetela del Volcán and Huayapan, three villages of the cold zone, got an endowment of 145 litres per second and organized a Water Committee independent of the Committee of the villages of the temperate zone but as an organization for managing the use of the same water resource. Before this, negotiations for distributing the water between the villages of both zones had been informal and were founded on the "word" of the representatives by means of a process of conciliation and consensus.

However, since the Ministry of Hydraulic Resources recognized both Committees as structures with rights over the Amatzinac the distribution of water between both zones took a legal character and the decision process met more obstacles. A process of conflict for the use of the stream of the Amatzinac started and currently still continues.

The conflict has been openly manifested in violent situations and stealing of water since the middle of the sixties when the Ministry of Agriculture started a program of specialized orchards in the cold zone that required an intensive use of irrigation. By the date, in the zone of moderate climate the production of vegetables was widely diffused.
Gradually the caciques (usurers and monopolizers of corn) had been losing power. In the sixties, the official posts of Comisarios Ejidales were under the control of the persons that dealt with commercial crops, the ones that lent money for the buying of industrial inputs, the ones that rented tractors and the ones that had the linkages with the market. Traders from the supply centers of Mexico City, Puebla or Cuautla went to the region interested in buying its products as also commision agents of industries that manufactured food or brokers looking for products to export. But the resource of the Amatzinac was not enough to support these changes in the productive structure which were accompanied neither by new infrastructure of irrigation, nor by the emergence of alternative sources of employment. The population continued to grow and the whole weight of modernization rested upon the backs of the peasants.

Competition for such a vital resource as is water has given rise, since the sixties, to a series of quarrels: water is stolen, channels are obstructed, valves are destroyed, etc. Litigation against individuals or against entire villages are increasingly, more frequent in spite that the official agencies have been unable to resolve them. The Ministry of Agriculture and Hydraulic Resources has tried to solve the conflict by promoting the merging of both Committees, but the villagers of the cold zone are hostile to this solution as their interests would be seriously damaged. But the establishment of one Committee would not resolve the conflict because it extends also the villages of the zone of moderate climate and even to the inhabitants of each village.

The peasants of each village are organized in order to watch the channels day and night; brigades are organized to avoid peasants of other villages diverting the water or to respond
to the aggressions of the peasants that want to steal water. Nevertheless, the users understand that the motivations of the people that steal water is rooted in their need to survive.

In spite of vigilance, the villages located upstream use a greater volume of water than their legal endowment allows, while the villages downstream are left without water during the dry season.

But side by side with the process of competition for water one can observe a process of solidarity in its use. That is, not only the legal users have irrigation. These provide access to the water resource for their sons, friends, "compañeros", neighbours, etc; through a series of mechanisms that operate to redistribute the resources among the members of the community and that are directly linked to the mechanisms of access to the land.

Around half of the men of the East of Morelos do not have legal rights over a piece of land; however, they live from their work on it. Fathers subdivide their plots and lend them to their sons when they get married; brothers do as well. Sometimes to return a favor to a friend pieces of land are lent for one productive cycle or seasonal land is lent as an interchange for water or grain. Also agreements of "mediación" are frequent; in those, one individual supplies the land and the other the tractor and the seed, both work and the product of the harvest is distributed among the two. These agreements are based on mutual confidence of the interested partners and are regulated by family relationships or friendship and in the general framework of communitarian relationships that have prevailed in the zone since pre-Columbian times.
Although the different forms of land distribution have permitted the attainment of a subsistence level for the local peasants by means of their work on agriculture, they have also contributed to the fragmentation of the plots to a degree that the subsistence can only be attained through a process of increasing the contracting of debts and with the consequent deterioration of the general standard of living.

The production of thousands of diminue plots of land cultivated with vegetables is financed by "the wealthy of the villages", those who produce in great extensions of irrigated land and who have contacts with the external market. The peasants cultivate 0.1 or 0.2 has of vegetables and they assume the risk of a high cost of production and an uncertain income, given the speculative character of the market of these products. When harvests are good, they are able to obtain the money they need for producing corn. But the area in which this crop is grown has been reduced to the minimum required by the self-consumption needs of the peasant family.

The area that during the rainy season was occupied with corn, slowly started to be occupied with sorghum, the production of which is promoted by the official bank by means of credits in money and product-fertilizers, herbicides, etc. This credit is in part diverted to cover the expenses of the production of corn or to cover the needs of consumption of the family which day by day are more linked to industrial goods that can be obtained in the local or regional markets. Some of these industrial goods substituted products that in other times were produced by the family unit and some of them generated new needs of consumption for the peasant families.
But a great number of peasants of the region have not been able to repay their debts to the official bank, therefore they are not anymore subjects of credit and cannot produce sorghum. They produce peanuts and get from the local monopolizers of this product the seed and money in credit. As has been happening since the middle of the thirties the monopolizers get practically the whole harvest of peanuts and the peasants enjoy as the only benefit of this productive enterprise the possibility of guarding their autonomy in the production of corn.

In order to survive, the peasant has to combine a series of strategies that each day are more complex. He has to get financing from diverse sources, each one with different requirements; he has to acquire a great variety of inputs for producing, that he cannot obtain with cost advantages because of the small scale of his production; he has to know and manage a variety of agricultural techniques of production associated with the crops he produces; he has to face different market mechanisms and he has to negotiate with the agents of the official bank, with monopolizers, usurers, traders or with missionaries from food industries. All these have an impact on the organization of the work or the peasant family which implies to need to increase its work in order to only cover its most relevant needs of subsistence.

Although the production of corn has been reduced to its minimum expression it still represents the only insurance for peasant subsistence. For that reason, the peasant becomes involved in entire productive enterprises having as the only benefit the possibility of guarding the autonomy of his production of corn.
Synthesis of the case study: The temperate zone of the Amatzinac.

This case study deals with the adoption of an irrigation infrastructure that dates from pre-Columbian times. Its main outline has prevailed almost intact, although it has been subjected to several reconstructions. The use of irrigation in the temperate zone of the East of Morelos has been part of the history of the region, although the adoption of the agricultural practices associated with irrigation has been a process in which many factors of the context of the productive activity of these peasants have been operative 1/.

1/ During the periods preceding the ones comprised in the description of the case study, the use of irrigation was also subordinated to interests of the dominant systems. During the pre-Columbian stage, irrigation was used in the fruit orchards and for corn, but on a greater scale for cotton that the inhabitants of the zone of moderate climate of the East of Morelos payed as tribute to the Aztec empire. During the Spanish Colony irrigation was used to produce wheat for the "encomenderos" of the zone and for Hernán Cortés whose Marquesado del Valle was comprised by part of this region. The wheat was exported to Spain. Later, irrigation was employed in the plantations of sugar cane, a product that gradually absorbed all the water resources during the Independent times and during the Liberal stage when an entrepreneurial agriculture was consolidated in the lands confiscated from the church and from the agrarian communities. Finally, under the structure of the Hacienda, sugar cane had the monopoly of the irrigation in the zone. (Warman A., 1976).
The peasants of the East of Morelos throughout their history have struggled to remain in their peasant condition. Although this has been manifested through their agrarian movements 1/ it is rooted in the daily productive activity and in the adaptation mechanisms that, in the framework of the community represent the search for alternatives to be able to continue producing in an autonomous way.

The economic activity of these peasants is not environment-free, it is articulated with the dominant mode of production that throughout history has gradually broken the equilibrium of the peasant economies of the zone.

In the social relationships of production of the peasant of the temperate zone, one can distinguish on the one hand those that can be observed around cash crops, mainly vegetables, that is products that are irrigated. In the utilization of the resources for producing these crops there dominates a rationality that tends to increase the productivity of the agricultural surface in the short term; for that the productive process is based on practices that make it dependent upon the use of industrial inputs and

1/ It is worth mentioning that in the history of the East of Morelos the struggle for the land can be traced back to the queries that the villages presented before the Spanish Crown in order to free the communal lands from the power of the "encomenderos". Since then the limits of the "fundo legal" that is, the lands over which the communities had autonomous rights, were defined. The documents that settle these rights have been preserved in many villages of the zone, up to the present times. In 1910, although the movement of Zapata was merged with the whole revolutionary movement of the country, it had its own project, based on the rights over the land of the communities an their rights of having their own political representation. This project, was not adopted by the State after the revolution, but it is perhaps the only one that gave an ideological content to the struggle of 1910.
mechanization. In these social relations of production, the common factor is money. Financing is in money, inputs are obtained with money; work is payed with money and for the selling of the product one gets money.

One the other hand it is possible to observe the social relationships of production given around the self-consumption of the peasant family. In these relations, the resources are used for producing corn. But this economic activity that traditionally was organized around the work available in the family unit has been broken due to the necessity of obtaining the productive resources with money (fertilizers and pesticides at the least).

The productive activities for the market and for self-consumption, in which almost all the Mexican peasants are involved, have a distinctive characteristic in this case in the way in which both are interrelated.

The production for the market represents for the peasant of this zone the possibility of getting the money that he needs for his subsistence which is composed mainly of the self-consumption of corn. But the productive cycle of corn can only be reproduced with the use of industrial inputs for which acquisition the peasant needs money. The peasant hence, diversifies his economic activity in order to obtain this resource. In doing this, he has to face very complex situations and to accept to run the risks involved in the speculative markets of the vegetables. He has been able to take this risk because the item that implies the highest cost in the production of vegetables is labor the only resource that the peasant has in abundance. When the price of vegetables is unfavorable, the peasant can at least repay part of the credit and when it is favorable he even gets an
income that allows him to repay old debts. For the peasant, the production of vegetables represents in fact a sort of lottery.

Modern forms of production have been adopted under a strategy of continuance of the peasant character hence, the use of irrigation has been subordinated to this strategy. The benefits derived from the irrigated production are realized in the market, but the peasants enter in the market on very unfavourable terms.

Firstly, because they produce on a very reduced scale and their cost of production is more than the average cost of the global production that arrives at the market. Secondly, because the price at which the peasant sells is less that the price of the market in which production is finally realized, as the peasant has to face a long chain of intermediation that without adding value to the product takes it to its final destiny and keeps for itself a substantial part of the economic surplus generated by the peasant. Thirdly, because the products he buys with the income of his sales, are bought at market prices. Hence the relationships of peasants with the market are assymetrical and unfavourable.

The production of irrigated crops by the peasant of the temperate zone of the East of Morelos articulates him with a market economy. This articulation is effected through a series of intermediaries and monopolizers that link the local production of vegetables with the supply centers of the Metropolitan Area of Mexico City or Puebla or through commissioners or brokers that take the product abroad.
The benefits derived from irrigation that can be translated into an economic surplus are transferred to the urban consumers who get the benefits of the low prices of the agricultural products. In this process of transference, the intermediation system keeps for itself a very substantial part of these benefits.

But there are other benefits of the production supported with irrigation that cannot be measured in monetary terms and that are related to the rooting of the peasant population in their region. In fact, there is yet no emigration of the people from the East of Morelos. The weight of the demographic increase has been absorbed by the local peasants up to the point in which the communitarian mechanisms of redistribution of the productive resources have prevailed.

The peasants also get benefits from irrigation, those that have allowed them to remain rooted to their land, to redistribute their scarce resource, to remain as peasants, to survive; but those benefits have not been enough to improve their standard of living as a consequence of the increase in their productivity.

Certainly, some persons in the region have established entrepreneurial exploitations based on irrigation: the owners of the ex-hacienda and some local natives that obtained larger pieces of irrigated land. They function as the agents that articulate the peasant economy with the dominant mode through the mechanisms already described, but as users of irrigation and in general terms, their productive activity is limited to the land they own. The rooting of the local peasants to the land has acted against the generalization of the mechanisms of monopolization of the land.
Most of the users are peasants that count on small pieces of land (minifundistas) and they get access to irrigation, either because they are legal users or because they are members of one of the agrarian communities of the region. But this access is ever more difficult and limited, because of the increasing relative scarcity of the water resource and of the gradual weakening of the communal norms in the social relationships of production. In this process weakening at least two factors have been operative.

The first of them is related to forms of land tenure. In almost all the villages of the region, the ejido has substituted the agrarian community in the taking of decisions related to the production process. The traditional systems of communal representation, the "mayordomias" have reduced their space of action to the religious festivities; while the Comisarios Ejidales are the ones that deal with the official agencies that intervene in the production process (for example, the ones in charge of channeling credits to the rural areas, of solving questions related to land tenure, etc.).

The second factor is related to the increasing importance of money for the reproduction of the productive cycle, which makes it more difficult to interchange equivalents in product or work among the members of the community and that introduces the peasants into the social relations of production of a market economy in which land and work are manipulated as merchandises.

Although users use irrigation efficiently, the volume of water is not enough to achieve an equitative distribution. The scarcity of the resource is a co-producer of the process of conflict in which the water is used. This
conflict that results from the competition for the use of water among villages and persons, has been solved at the inside of some communities but it is worth remarking that this conflict did not emerge as a consequence of a lack of organizational capacity in the communities. The vigil system that function in the towns up-stream are a proof of their organizational capacity. Official attempts to govern endowments have failed. The Users Committees only represent forums for denouncing irregularities in the use of the resource. It is the geography of the zone that decides who can benefit more from the water. This has had an impact on the differentiation of areas in the zone according to the greater or lesser access to the stream of the different villages.
3.3 ATLACAHUALOYA

Description of the case.

The ejido of Atlacahualoya belongs to the municipality of Axochiapan, both are located in the zone known as "hot land" in the East of Morelos; that is the plains that start near the towns of Jantetelco and Amayuca and finish in the south of the state at the border with Puebla.

The villages of the ejido comprises houses distributed in an irregular pattern. Some of them are built with bricks and cement. It lacks telephone and telegraph services and its main communication means with the outside is a municipal unpaved road of about 5 kilometers that crosses the road that runs from Jonacatepec to Atencingo near the municipal head of Axochiapan. The latter is a small town of around 20 thousand inhabitants that enjoys an active trade. But in spite of its proximity Axochiapan does not exert an economic influence over the ejido of Atlacahualoya. The trading activity of Axochiapan is realized mainly with the people of Atlacahualoya, Axochiapan is a center that occasionally offers services of health and education.

In the village of the ejido, around 1,600 habitants are settled. They comprise nearly 280 families whose support is mainly based on their agricultural activity. In the town one can observe a commercial activity on a small scale, organized around the trade of processed food, corn prepared for making tortillas, liquors, etc; but these traders also cultivate the land.
The form of land tenure in Atlacahualova are the ejido and small property. But these forms do not make any distinction between the local peasants as practically all the small owners are members of the ejido who have land under both forms of tenure. From the whole agricultural area 1294 has., 1056 are ejido and 238 are small properties. The differences in the size of the plots of land do not result from the fact that some peasants have plots in the ejido and in small property. However in Atlacahualoya there is a small group of producers who, whithout surpassing the legal limits, have relatively greater extensions of land. This group widened its economic base when they were able to cultivate high yielding crops based on irrigation. They acquired tractors and established small commercial bussinesses. They are the ones that lives in the brick and cement houses, some of them two floors. They are the ones that have credit lines with private bank and they produce on their land by way of hiring payed labor force. The rest of the local peasants produce on plots of land smaller that the size stipulated in their legal rights, because they give access to the land to the peasants that lack these rights.

There are 173 ejidatarios and 91 small owners and, according to the estimate of the local informants, the landless peasants represent around 100 heads of families (35% of the total families). These get access to the land through the following mechanisms:

1. The borrowing of a piece of land from their father or from some member of their family.
2. Hiring pieces of land from widowers that lack sons old enough to produce them.
3. The "mediería" in the irrigated plots of land.
Under these mechanisms the person entitled to work a particular piece of land covers part of the production cost and contributes with his work. The landless peasant sees to the other part of the production costs and also contributes with work. Both "medieros" share the monetary income that they get from the sale of the product in proportions previously established.

Only five producers have around 10 and 15 has. while the average size of the agricultural plot runs from 4 to 5 has.

The rainfall of the area (700 mm.) would be, in theory, enough to support a seasonal production, but the harvest is frequently endangered by droughts as the rains concentrate from the months of June to September and are very irregular during the rest of the year. Besides, the hot temperature contributes to the evaporation of the humidity. In spite of these risks in the ejido, the whole of the seasonal area is cultivated with sorghum and corn during the cycle of spring-summer.

Now, 70% of the agricultural surface is irrigated (table 2.3.1). The size of the irrigated plots of land is between 3 and 3.5 has. and only five producers have more that 10 irrigated has. A great variety of crops is produced in the irrigated area: peanut, beans, corn, onions, tomatoes, courgette, cucumber, chili, cantaloupe, banana, "guaje" and tamarind.
Table 3.3.1 LAND TENURE IN ATLACAHALOYA

<table>
<thead>
<tr>
<th></th>
<th>EJIDO</th>
<th>SMALL PROPERTY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Producers</td>
<td>173</td>
<td>91</td>
<td>190*</td>
</tr>
<tr>
<td>Total Area (has.)</td>
<td>1056</td>
<td>238</td>
<td>1294</td>
</tr>
<tr>
<td>Arable Area (has.)</td>
<td>805</td>
<td>238</td>
<td>1043</td>
</tr>
<tr>
<td>Irrigated Area (has.)</td>
<td>500</td>
<td>238</td>
<td>738</td>
</tr>
<tr>
<td>Seasonal Area (has.)</td>
<td>305</td>
<td>---</td>
<td>305</td>
</tr>
</tbody>
</table>

* Approximately

Source: Direct Information from the ejido of Atlacahualoya.
Although the plots are not very large, they are flat, fertile and have irrigation; therefore they offer a potential for productive agriculture and had contributed to the peasant's adoption of forms of production supported on modern techniques that result in a yield higher that the national averages.

The adoption of irrigation in Atlacahualoya.

Since 1955, the natives of Atlacahualoya enjoyed a basin that was used to support the seasonal crops when the rains were scarce and that could be used in its surrounding lands after the rainy season if the precipitation had been abundant. The few users of this basin got harvests with remarkably higher yields than the ones obtained by the rest of the peasants. This motivated the organization of various groups of ejidatarios to carry out before the Ministry of Hydraulic Resources the installation of deep wells. After five years of formalities, in 1960 a well started to operate in the field of "El Potrero" to water 59 has. The formalities did not stop because this infrastructure was not at all enough for covering the need of water in the ejido. A new application for the installation of three more wells was submitted to the Ministry. But this application fortunately coincided with the governmental policy of consolidating productive areas in places that could offer a great potential for increasing the productivity of the land but that, because of their geographical situation could not be irrigated by big dams. Hence, by 1970, the Ministry of Agriculture and Hydraulic Resources had a project for building twelve deep wells in Atlacahualoya. This infrastructure was to be chained in such a way that when a well broke down the others could irrigate its surrounding lands.
Since then, a Water Committee was organized in the ejido in order to help the Comisario Ejidal with the formalities and decisions related to irrigation. They had to draw up lists of users, to establish irrigation programmes and to settle agreements about what to produce in the irrigated zones and about the way in which the water should be distributed. All that involved a process of decision making in assemblies, in which almost all the ejidatarios participated and which took the four years that the building of the infrastructure lasted. In 1974 the first four wells started to operate and a year later, the Ministry of Agriculture and Hydraulic Resources asked the peasants to organize a Users Association among the users of each well. Each association would have to have a President, a treasurer and a Secretary who would be the ones in touch with the official extensionists.

However, the peasants decided to establish a single Association that would deal with the whole irrigated area, with only one management that would have the three members proposed by the government but representing all of the wells. Also this Association included a representative for each well. This modification in the structure of the Association was made in order to maintain cohesion among the users and included the other eight wells that started to operate in 1976.

In Atlacahualoya the members of the Management of the Users Association are elected in assemblies that take place one month before these members take charge. They last one year in their positions and cannot be re-elected in two consecutive periods. The management performs the following functions.

It coordinates the tasks related to the cleaning of the channels; gives the receipts of the water quotas; calls
assemblies and reports financial statements each month and is authorized to solve urgent problems without consulting the assembly if it informs the users of the decision taken, afterwards.

The representatives of each well have to observe that the rest of the users do their tasks in the use and maintenance of the infrastructure (that is give a proper use to the water, keep the channels clean, use the valves and the other facilities carefully, etc).

The users control the proper performance of the representatives, report his faults to the President and if necessary remove them from their position.

There is an operator of each well that has an assigned salary. The income of the Users Association comes from the payments for the use of water and the penalties that the users that incur in transgressions of the regulations proposed and approved in the assemblies have to pay.

The irrigated areas of the wells constitute a single productive unit that is exploited by the ejidatarios according to a democratic and participative organization structured according to their own rules and in which all the users control the adequate implementation of the decisions. They have attained an efficient management of the infrastructure and have enough money resources for the maintenance and renewal of parts of the facilities. The programmes of irrigation are in general respected as well as the extensions of land that the different crops have to cover in order for the water to be used by all the producers and in order that an increasing number of peasants can participate from the benefits of the favourable opportunities of the market.
The Users Association represents an organization that complements and that works in parallel with the Comisariado Ejidal. Both structures support each other mainly as far as their dealing with the official agencies is concerned. Up to some degree, this is possible because all the users of the irrigation are also ejidatarios.

The influence of the governmental institutions in the peasant organization of Atlacahualoya is merely formal; the National Confederation of Peasants, the FANRURAL, the SARH, etc., have not been able to impose vertically their diverse programs.

The way in which Atlacahualoya was integrated to the Union of Ejidos Emiliano Zapata shows it. This Union comprised fourteen ejidos of the region of hot land and was formed in 1975 by a governmental order and with the objective of jointly selling production of the associated ejidos. A machine for selecting and packing onions was sold to the union and had to be payed by all the ejidatarios and it was expected that all of them would take their harvest of onion for its processing on the machine. The attempt was a failure and by 1980 only three ejidos remained in the union. It was then, as we shall see later, that the peasant organization of Atlacahualoya started to participate in the union but with its own project; in which the union was to be used as means for attaining its particular goals.

Irrigation.

In Atlacahualoya irrigation is used to support a production based on modern forms of production that resulted from the adoption of a diversified pattern of high yielding crops.
Before the introduction of wells in Atlacahualoya, a small group of peasants used the water of the basin for producing rice and just as the rest of the local peasants, corn and beans. Soon the cultivation of rice stopped because the water of the basin was not enough to support this crop. When the well of the Potrero was installed, its 59 users started to produce vegetables and peanuts; they also watered part of their production of beans and corn.

When the twelve new wells started to operate a diversified pattern of crops was diffused throughout the irrigated area. This situation was neatly manifested after 1976 when the whole infrastructure was finished.

Small-scale irrigation allows the users to adopt two agricultural cycles over the year in the irrigated area. During the spring-summer cycle, that runs from the months of March till July or August, peanuts are produced in about half of the irrigated zone; the rest of it is occupied with corn, beans and onions. During the autumn-winter cycle, that starts in September or October and that finishes in January, vegetables and fruits are produced. Onions and tomatoes occupy nearly 50% of the irrigated area; the rest is sown with chili, zucchini, cucumber and some fruits. In around 5% of the irrigated zone perennial crops or crops with an annual cycle are produced; such as papaya, guaje, banana, tamarind and cantaloupe. In the seasonal lands corn and sorghum are produced during the spring-summer cycle and also some night-dew water-melon during the autumn-winter cycle.

The diversification of crops in Atlacahualoya came with a change in the means of production. The use of chemical inputs, such as fertilizers, pesticides and herbicides has
notoriously increased production, particularly in the case of vegetables. These inputs are acquired in the commercial businesses of Axochiapan and Cuautla. The inputs for corn, beans and sorghum are given as credits from the DANEURAL. Also, the use of mechanical traction has substituted the use of animal draft. Currently in the village there are around 25 tractors, five of which belong to the ejido and the rest are owned by individuals that hire them.

The use of industrial inputs has been totally assimilated by the producers of Atlacahualoya, who know the techniques for their administration, the quantities that are required, etc., and who also know how and where to buy them at the best price. There had been instances in which the ejidatarios directly imported seeds of onion and tomato from the United States, from suppliers that are not linked with the contracts that are settled with foreign industries for the buying of vegetables. However in the ejido inputs are not bought collectively; so each peasant has to pay for them retail. Sometimes groups of families buy jointly achieving in this way some economies of scale.

As a result of the adoption of these innovations, including the well water, the productivity of the land has had a notorious increase in Atlacahualoya, which also is the manifestation of the adoption of two agricultural cycles during the year. The elimination of the risk of loosing the harvest through droughts and the adoption of a pattern of crops that permits the optimum use of the soil.

The yield in Atlacahualoya are the highest of the region, although they have been decreasing during the last few years (table 3.3.2). According to the opinion of the extensionists of Jonacatepec, this phenomenon is due to a premature
depletion of the soil caused by the intensity of its use.

Table 3.3.2 THE YIELD OF THE MAIN IRRIGATED CROPS IN ATLACAHUALOYA. (TONS. PER HA.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Onion</td>
<td>21.9</td>
<td>21.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Peanut</td>
<td>2.4</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Tomatoe</td>
<td>21.0</td>
<td>12.7</td>
<td>15.0</td>
</tr>
<tr>
<td>Beans</td>
<td>1.5</td>
<td>1.4</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Source: Based on the data annually prepared for the BID by the Residence of URDERAL, Jonacatepec, Morelos (1981)

In terms of the use of the physical resources, in Atlacahualoya a productive success is observed. This productive success departs from the existence of good quality land in which capital was applied in the form of irrigation infrastructure and at a moment when the agriculture of the zone was passing through a process that attracted commercial capital to the use of productive resources in crops related to speculative markets. In this productive success a series of co-producing factors from the environment are operative. These factors intervene in the local productive process by injecting energy through different agents and mechanisms, by dictating the norms of the local productive process and by exerting control over some parts of the productive process. As such they also intervene in the transference of the economic surplus generated in the ejido to its outside.
As will be described in the following paragraphs, the peasant of Atlacahualoya has started to adapt the organization of his production to a strategy of gaining control over some important aspects of his process of production. For him, this has implied a long road in which he has to surpass obstacles as far as the global process of organization is concerned and also in relation to the attempts of different agents and institutions to control the production process and to keep for themselves the economic surplus generated by the peasant's work. But along the way, the peasant has started to learn how to manage the environmental factors and how to design strategies to retain part of his economic surplus.

This peasant strategy can be observed in the analysis of the process that followed the adoption of the irrigated crops that currently are produced in Atlacahualoya, the moments in which the peasants have lost or gained control over the process and the way in which this has happened.

Onions and other vegetables.

The cycle of the winter onion started with ploughing small nurseries, in July or August, after thirty or forty days the planting started. This task requires an intensive use of labor as a plant has to be planted every ten centimeters. For this task part of the labor force comes from the family members but, in general, it is necessary to hire salaried day laborers.

Once the planting is over, the watering starts every seven or eight days. During this stage the fertilizers, herbicides and pesticides are applied. The harvest is collected
between December and January and also requires day laborers that are paid peace-work. One ha. of onions yields around 20 to 25 tons and in optimal conditions when it is well cared for and the seed was imported, it can yield up to 35 tons. In 1980 the cost of production of one hectare of onion varied from 50 to 60 thousand pesos. From this cost, the highest item is labor (almost 60% of the total cost) that in the ejido is hired from peasants that come for the ploughing and the harvest, from Calmecac and Coayuca, in Puebla and from Telixtac and Axochiapan, in Morelos.

During the spring-summer of 1974, when the first four wells of the ejido started to operate, PRONASE (National Promotion Agency of Seeds) implemented a program of production of improved seeds of corn with one of its hybrid kinds. This agency promoted the crop, gave technical assistance and obtained financial aid from BANRURAL. The peasants had to give the harvest to PRONASE. The experiment was a total failure and the peasants could not get an income that cycle nor could they repay the loan to the official bank. It was then that the irrigation infrastructure started to operate and when the production of onion was diffused.

In the winter a person from Mexico City arrived in the village and rented the land. Although in the ejido the land is not usually rented to strangers, the lack of resources for the re-initiation of the productive cycle forced some peasants to lease their lands. This man ("coyote") produced onion in 85 of the 250 has. that by that time could be watered. For the enterprise he hired day labourers among the local peasants and brought three foremen that directed the production. He sold the product abroad and was lucky to benefit from a good market price.
The next cycle, 1975-76, many peasants got an income from their harvest of peanuts; this income they were prompt to use for the production of some vegetable, not because of the extensionists, but because they knew that throughout the region, the people involved with these crops did well when they were lucky with the market price. The "coyote" that the previous winter hired land could only get a very reduced area; but he was able to control a greater area by giving credits, in seed and money to the ones that wanted to produce onion if they agreed to sell him the product. A group of 35 ejidatarios, that still had credit lines with the official bank was left outside this agreement and joined the commercialization program of the union of ejidos Emiliano Zapata. Although the amount of credit given by BANRURAL was not enough to cover the costs of production, the cycle could be completed with the use of the money obtained by the sale of peanut during the summer.

For the winter of 1976 the union of ejidos Emiliano Zapata, through the Ministry of Agricultural Development of Morelos, got a contract for the sale of onions. Atlacahualova was to participate with the production of 280 has. The contract was established with an agent of american companies. With this contract BANRURAL re-opened the lines of credit and almost all the peasants were able to produce onion. Although the amount of the financing was still insufficient, the selling of peanut in the summer allowed the peasants some saving to complete the production costs.

According to the contract, the product would be sold at the price of the American market at the moment of the operation; the peasants had to select and pack the product, pay the expenses of the transportation of the product to the border and pay a commision to the agent. To sum up, the total
risk of the enterprise had to be run by the peasants. Although the operation reported some profits, the payment for the product took several weeks to arrive and was made in deferred amounts as the agent was selling the product. Hence for the following cycle, the ejidatarios of Atlacahua loya did not renew the contract.

In 1977, the Ministry of Agricultural Development drew up a new contract for the union of ejidos, but with more favourable terms. This time a minimum price for the onions was established. This price would ensure the recuperation of the amount of the credit. But the peasants still had to risk the part of the cost of production that they covered with their resources. Although the terms of the contract were better, the outcome was a failure: the price of onion collapsed and the agent did not respect the minimum price he payed at market prices and with a check that bounced. Although the peasants took legal action against him, he was soon freed from jail. The ejidatarios were again destitute of money and with a bank balance in the red. Since then BANRURAL closed its credit lines for vegetables in the ejido.

In 1978, the area cultivated with onion decreased significantly. In its statistics, URDERAL reports only 9 has cultivated with onion; but the peasants ensure that the wealthiest persons of the village produced in 20 has. And agreed to sell the product to an intermediary of the supply center of Mexico City, who shared with them the production costs. However the price collapsed again and the agent did not go for the product, which became rotten as the cost of gathering, selecting and packing amounted to more money than what could be obtained from its sale.
In 1979, a repetition of the history of the contract with a fixed minimum price happened, although this time all the peasants were involved with 380 has.

In spite of this chain of failures and of debts contracted with the bank, most of the peasants were still willing to produce onions. Through the three years that they have been using irrigation, they have been luckier with tomato and cucumber than with onion. Both those products were sold at the plot to intermediaries from the supply center of Mexico City. Also they had done well with courgette and chili that they sold in Cuautla. They were already conscious of the speculative character of the vegetable market and were confident that they would obtain a good profit in later cycles.

In the summer of 1980, the peasants got an extraordinary income from peanut and cultivated again 380 has. with onion, mostly produced in plots of less than 2 has. Some completed the production costs by contracting new debts with moneylenders at monthly interest rates that varied from 7 to 10%. The poorest sold the production in the middle of the cycle to buyers of the supply center of Mexico City. Under this arrangement, the vegetables grown are sold at a global price and the buyer has to undertake the costs of the harvest, selection, packaging and transportation of the product. When the peasant sells in this way, he avoids part of the production costs and gets an income at the moment that his supply of corn has been exhausted. On average, this income represents around four times the production costs that have already been covered; but also on average it is five times less than the value of the sale of the final product. (Astorga, 1978, pp.50).
In the winter of 1980, the Ministry of Agricultural Development of Morelos drew up another contract for the Union of ejidos, which after the series of frauds and bad experiences only comprised three of the fourteen ejidos initially associated. This time the contract was directly signed with an American company from Texas. Atlacahualoya participated in the contract with 50 hectares of onion that were cultivated by the eleven wealthiest ejidatarios. Each of them produced in plots of land greater than four has. and had the financing of the American company and the private bank which gave equal amounts of credit. The contract was a success and was renewed for the following winter with the same 50 has.

Throughout the spring and the summer of 1981, the ejidatarios met in several assemblies of the ejido and of the Users Association. In these assemblies the main recurrent theme was the contract with the Texan company. It was argued that if the ejido as a whole belonged to the Union and that if the totality of its members payed for the selecting and packing machine, the benefits of the contract should be best distributed among the ejidatarios. After a process of discussions, by June of 1981 they arrived at two agreements:

1. To increase the number of participants in the contract from 11 to 30 producers. This new participants would be selected by chance.

2. A head of family could not produce more than two hectares of onions.

Clearly these decisions of re-distributive character were not taken by consensus since they damaged the interests of the eleven peasants that were included initially in the
contract. However the decisions of the majority are respected by all the ejidatarios as a result of their internal cohesion and their wide participation in the decisions process.

The organization of the ejido was strengthened by this contract while its members avoided a small group of producers getting all the benefits of an agreement that in theory should be distributed among all the members of the union of ejidos. The Comisario Ejidal and the President of the Users Association with the representation of their base could interfere in the direct agreements between the Ministry of Agricultural Development and the eleven persons included formerly in the contract and could change the terms of the contract according to the decision of the assemblies.

They could also obtain extra financial aid from the Texan company and from a governmental agency (FADEM) with which they could cover 75% of the cost of production. With this credit they could pay the cost of the inputs and part of the payments for the daylaborers. The other 25% was covered with income obtained from the selling of peanuts and with using their family labor.

The harvest of 1981 was a success and the contract was fulfilled. The ones that were not included in the contract were able to benefit from an unexpected rise in the price of onions in the national market. The ones that sold their vegetables at their plot before the productive cycle finished obtained, at least an income when they most needed it and the intermediaries benefited from the rise in the price.

For the cycles to come, the peasants have plans of jointly selling the whole production of onions of the ejido, in such a way that the amount of the sales would be divided according
to the volume of product that each peasant would produce, without taking into account if the product of a particular producer was sold at the internal or external market, the selling price or the size of the onions. They think that if they can establish contracts at fixed prices for part of the production they may be able to balance the loss if the market price collapses and therefore would avoid a general break. Also they expect these plans to be extended for the trading of the other vegetables. As far as the financing is concerned they do not wish to get credits from the official bank and plan to release from the control of this institution the production of the seasonal lands.

This year in the ejido there is an atmosphere of optimism and among its members there are high expectations of attaining more autonomy. One of their goals that they treat as a joke is to throw out the "coyote" who monopolizes the peanut production which has been under the control of local usurers since its adoption.

The peanut.

The production of peanuts was introduced in the East of Morelos in the middle of the thirties, by local monopolizers that lent money to the peasants at the beginning of March, when they had run out of their corn supply. The credit was given if the product was sold at a price settled by the money-lender who discounted from the amount of the sale, the credit and the interests.

Once the wells were built, the peasants watered partially the fields cultivated with peanut, in order to reinforce the effects of the rain. During the cycle of spring-summer
this crop is produced in most of the irrigated land. The productive cycle of the peanut starts with the sowing on March and ends with the harvest in July or August. For its production, the peasants need little money to pay water cost, rent of tractors for the preparation of the soil, rent of draft animals when they lack them and for paying some day laborers for the harvest. They keep the seed of the previous cycle and the manpower needed for the cultivation tasks is supplied by the family. Contrary to the advice of the extensionists, the peasant do not administer fertilizers to the crop, nor pesticides although diverse pests attack it. Irrigation has allowed the stabilization of the peanut yield to amounts similar to those obtained with optimum conditions of precipitation (2.5 tons per ha.). When rainfall is normal, they water the peanut three or four times during the productive cycle and when it is scarce they may water it seven or eight times. The production costs of peanut are higher than those of corn, but with its product the peasants obtain more income in money and above all, they get the credit from the local monopolizers of the product.

In Atlacahualoya, the peanut is bought and financed by a monopolizer from Axochiapan and sometimes by two usurers from Yautpeco. These persons control the production of peanut of several ejidos in the region and lend money at the "double" (i.e. at an interest rate of 100% that is payed at harvest time). This credit is given only if the peasant sells the entire production to the monopolizers, the restitution of the credit is done in kind, and if the volume of peanut is more that the amount needed to repay the loan, the monopolizer buys it at a price that he himself settles. This price is in general less than the market price although it is not entirely arbitrary as the different monopolizers compete among themselves for the obtention of
The peasants that ask for usurious credits are those whose income from their productive activity throughout the winter is not enough to cover their needs of subsistence and production throughout the spring and the summer. But even those that do not need this credit have their production under the control of the monopolizers as they lack the link with the market.

Hence the poorest peasants are compelled to ask for more credit to the usurer and to surrender to him practically all their production of peanut, with resource for re-initiating their productive cycle in the autumn. The main benefit they get from the credit is the obtention of money for producing corn, and some beans which in itself allows them at least to get the basic food they need for the survival of their families the rest of the year. Other peasants achieve a little more money from their peanut production which they use for producing small plots of vegetables and chili for self consumption and for buying some consumer goods in the market.

This does not mean that the peasants are passive in the face of this situation and that they accept the monopolizers as a "benefactor" for solving their money problems. In fact the peasants of Atlacahualoya have made several attempts to find other commercialization channels. For example, in 1977 in an autonomous way they established a contract to sell the harvest of peanut to a Cooperative of Tenango Morélos that manufactured candies with peanuts. That year the cooperative bought about 50 tons, which represent only 7% of the local production of this crop. However this meant a first step for opening independent means of trading; and
so was understood by the monopolizer who hurried to offer a lower price to the cooperative than the one it was paying to the peasants: a price that did not even cover the small production costs of the crop. The cost of this strategy for the monopolizer was very low, he sold only a small percentage of the product he held without any profit, but he did not loose the absolute control that he held over the local production.

Another attempt was made in 1979 when the Union of ejidos Producers of Coffee from Mizantla Veracruz contracted the buying of 150 tons of peanut at 1800 pesos. This time the ejido broke the contract when the monopolizer raised his price from 1200 to 2600 pesos and most of the peasants hurried to sell him their product.

The urgent need to get money for producing vegetables was the main cause of the breaking of the contract as the obtention of a larger income had more priority than the longer term possibility of displacing the monopolizers of peanut. This experience had an impact in the weakening of the organization of the ejido and its leaders learned the importance of observing the agreements they had established, although these meant giving up some income in the short term.

During the summer of 1980 a small number of peasants produced improved peanut seed for PROMASE and with the financial support of BANRURAL. The production was bought by PROMASE at a price 15% higher than the market price (almost 100% higher than the price of the monopolizer). The enterprise was successful and PROMASE contracted for the summer of 1982, 10% of the local production with about 30 peasants. However the peasants are reluctant about this program because of the bad experiences they have had before in their dealings
with these agencies.

Other watered crops.

Fruits are financed with family resources; almost never comes under the control of moneylenders and their production is performed in small plots in widely diversified orchards. Part of the production is consumed by the family but the majority is sold by the women in regional markets. Although their production constitutes a secondary economical activity it yields an income for the family.

About a hundred watered has. are occupied with beans. The peasants try to reduce the production cost of this crop to a minimum level; therefore chemical inputs are not administered to the fields sown with beans and their productivity has been declining to be self-sufficient in this food that is basic in his diet. Sixty percent of its production is used for the family consumption and for the seed needed for the following cycle, while the rest is sold by retail inside the ejido when the family unit requires money to cover other consumer needs.

The seasonal crops. Corn and Sorghum.

Sorghum was introduced in Atlatlahualoya at the beginning of the seventies as the result of the promotion of official programs of agricultural extension but, above all as a result of the credit policies of the official bank. According to the ejidatarios, BANRURAL was financing the production of seasonal corn; all of a sudden this institution closed its credit lines for corn and opened credit lines for
the production of sorghum. 1/

Consequently the area cultivated with corn decreased and the ejido stopped selling this product in regional markets and produced it only for the family consumption. It is worth remarking that in order to cover the production costs of the corn, the peasant uses part of the credit that BANRURAL gives for sorghum.

Sorghum is sold to traders that come to the ejido and that take the product to industries that manufacture balanced food for cattle rearing, settled in Tehuacán, Puebla. The sorghum has an official guaranteed price; but the problems for selling the product to CONASUPO are many and the peasants choose to agree on global prices with the intermediaries. The bank sees to the harvest and channelizes the product to the buyers.

The production of corn in Atlacahualoya is practically isolated from the market. However, occasionally corn is sold among the members of the ejido; but this selling is done as an interchange of equivalents; a small bag that will be returned later is lent, a favour is payed with grain, etc.

The local production of beans and corn permit the peasant subsistence in spite of his failures in the production of vegetables. Also they mean the possibility of accepting the risks associated with the speculative market of vegetables and the possibility of using a significant part of the money resources that they get from diverse sources for covering the production costs of the vegetables.

1/ In 1976, 78.1% of the official credit from the branch of Jocatepec was for sorghum and in 1977, 82.5% (source: manager of BANRURAL, branch Jocatepec).
Synthesis of the case study: Atlacahualoya.

Almost all of the heads of family of Atlacahualoya use irrigation and live from their productive activity in agriculture. Although not all of them have legal rights over a plot of land, all of them have family linkages with peasants that hold this right. People from other villages do not come to settle in Atlacahualoya therefore its villagers are recognized as members of the same agrarian community, with the traditional right of obtaining access to the local resources.

There are several factors that contribute to the redistribution of the local resources. Among them the quantity and quality of the local productive resources provide a wide enough material base for the subsistence of the natives. The quality of the land and the characteristics of the climate favor the obtention of high yields in the crops. Also, the water resources are abundant and with the infrastructure three quarters fourths of the arable land can be irrigated. Although the average size of the plots of land is not in itself enough for constituting entrepreneurial units that give rise to substantial profits; the pattern of crops that was adopted gives productive employment to all the heads of family of the ejido; the kind of employment that allows the organization of economic units in which the peasant controls the organization of the family work and remains tied to the land as a producer.

One could add that population growth in the ejido does not yet mean excessive pressure over the land; young people almost always remain in the ejido and work the land without having to work for a salary. When a peasant of
Atlacahualoya works on the plots of another peasant, his labor is seen as an interchange of equivalents although he would get payed for it. Today he will receive a salary from a peasant that tomorrow will receive a similar salary. The strict salary relation is realized only with a people from other villages that come to Atlacahualoya during sowing time of harvest time.

Related to this process of redistribution of resources at the inside of the community one finds the historical background of the peasants of the region that points to their lasting roots in the land and to their intrinsically assumed condition of agricultural producers organized in the framework of the agrarian community. In Atlacahualoya as in the rest of the East of Morelos the agrarian community as a form of organization comes from pre-Columbian stages. With time, this form of organization has been modified and broken by the process of the socioeconomic system that has impinged upon the local productive process, articulating the economic activity of the local economic units of peasants to the dominant system of production. As an example one could recall the almost absolute control of the hacienda over the activities of the Regional natives. Currently, as will be later described, the production process of the peasants of Atlacahualoya is not performed in the framework of a self-sufficient community; this process is articulated through a complex network of relationships with the dominant system of production. However the communal norms of organization have not entirely been destroyed. Some norms that deal with the re-distribution of the local resources still prevail and have become strong in spite of the modernization of the forms of production that have been adopted in the ejido. These norms are the ones that have
guided the peasant of Atlacahualoya in his searchings for new strategies of organization which will allow the adaptation of redistributive mechanisms to the process of adoption of innovations.

In Atlacahualoya small-scale irrigation infrastructure is used efficiently through a participative and democratic organization in which most of the users are watchful of the activities of the leaders and support the decisions of the majorities.

The organization for the use of the water is interrelated to the organization of the ejido. Both function side by side and become complementary when this is needed. Neither the Comisario Ejidal, nor the President of the Users Association exercise power over the peasantry; they are in fact part of it that in the diverse formalities represent the decisions of the majorities. They perform the process of implementation of policies, but the whole community sanctions their activities and supports the decisions taken in the assemblies.

The Comisariado Ejidal and Users Association are, to an extent forms of organization vertically imposed by the State. But in Atlacahualoya they are living organizations that have been adapted to the framework of the community.

The peasant organization of Atlacahualoya has been trying to become linked to the Union of Ejidos Emiliano Zapata with its own projects, for this organization the Union is a means to settle buying contracts, the terms of which are part of a global project of action.

In that sense, the peasant organization has been able to use the instruments of various official programs in order to
manage the contextual factors in a project for regaining or keeping control over the different elements of the productive process.

But the peasant organization of Atlacahualoya has still to overcome serious problems; a very important one related to the capability of its members of fulfilling commitments in contracts although this would mean a sacrifice in the short run. The peasant organization has more cohesion for day-to-day or the short term troubles. But its coordination becomes difficult in projects of longer term.

But this organization project is not observed in a community with purely horizontal relationships and consensus. When the mechanism of re-distribution of resources was mentioned, it was not implied that this re-distribution is entirely equitative. Atlacahualoya is a stratified community articulated with a dominant system of production that tends to reproduce and to increase the social stratification. In the ejido there is a small group of people that has greater economic power. However this power has not been expanded to control the productive use of the local resources. Its one element of control over this process consists in the rent of tractors, but has not been extended towards monopoly of land or product or towards usury. Currently, this group is subjected to the norms of the community. It lacks control over the peasant organization and regulates its productive activities according to the decisions of the majority. Certainly, in the assemblies they represent the opposition, but not the dominant position. They are respected members of the community who, in the words of the peasants, "were luckier" but have no decision power over the others.

In spite of their organization, the peasants of Atlacahualoya-
ya for the reproduction of their productive cycle, depend upon a series of factors that articulate their economy with the whole economical context.

In the region of hot land, the introduction of small-scale irrigation was the detonating factor for the total and almost sudden adoption of forms of production supported on the intensive use of mechanization and chemical inputs. With irrigation, a highly diversified pattern of crops was adopted. This adoption responded almost automatically to the introduction of irrigation and was soon diffused among the local producers. In fact, they already knew the crops; they had seen them in the temperate zone and also in the plots that had been watered with the basin since the fifties. But the main factor that intervened in adoption was perhaps the commercial capital that was interested in taking the local products to the urban markets or abroad.

Since the wells started to operate people came to the region interested in hiring land for the production of vegetables. Others are linked to the intermediation chain of the supply center of Mexico City or other urban centers and that are interested in buying the production before the cycle concludes with the hope of getting a profit from the price. Still others are not interested in mere speculation and want to guarantee the supply of raw materials for industrial enterprises.

In Atcacahualoya, irrigation agriculture is practised under a process of production ruled by two opposite forces. On the one hand, it is practised in a dependent framework, as far as the obtention of the resources of production, and the selling of the products is concerned. On the other hand, it is practised in a framework of increasing autonomy in which
the peasant tries to manage the environmental factors and to regain control over his process of production. The peasant becomes incorporated to modern production without stopping being a peasant; he is not entirely absorbed by the dominant system of production he is inserted into this system with his own model of organization. For that he has to pay the cost of an asymmetrical relationships.

Although the peasants that used to produce corn for their subsistence are the same ones that went on producing with irrigation, the adoption process put them into a complex market situation. The peasant of this small village are affected by the collapses of the international price of onions and other vegetables and when the urban consumer gets vegetables at ridiculous prices, his benefits imply the disaster of thousands of peasant families.

The insertion into the market of the economic activities of these peasants is not direct but the result of the action of a series of agents who, by means of different mechanisms, link the local production with the intermediation chain that takes the product to the consumer. The transference of the economic surplus generated by the peasants flows along this chain in a variable intensity. In relation to the irrigated crops of Atlaçahualoya, four mechanisms can be listed:

1. Purchase of the orchard product before the productive cycle concludes. This mechanism operates over the poorest peasants and is the one that extracts the largest economic surplus. The peasant that sells under this modality becomes separated from his means of production for half of the productive cycle while the land and the infrastructure for irrigation are controlled
by the buyer. He does not need to tie down his capital in the betterment of the land, in irrigation infrastructure, etc., and he benefits from the production and transfers the economic surplus of the peasants to the urban consumer or abroad.

2. Purchase of the harvest at the plot. In Atlacahualoya this is a very generalized mechanism. The buyer selects and transports the product which may be taken to the urban national markets or abroad. The peasant pays the cost of a large intermediary chain in which value is not added to the product, and each part of which keeps a portion of the economic surplus generated by the peasant's work. The producer sometimes achieves a profit from the production of one crop and loses from the production of another and assumes the whole risk of the productive enterprise.

3. The buying of the product after it has been selected and packed. Under this mechanism the peasants add a step to the production which helps in the reduction of the difference between the market and the rural prices and consequently of the intermediation cost.

4. The buying by means of a contract. Here, a minimum buying price is guaranteed, which helps to reduce the risk of the speculative character of the market. This price functions as an insurance for the recuperation of part of the production costs. Under this mechanism, the buyer is more interested in guaranteeing his supply of product than in gaining from the speculation. The contract means the vertical integration of the buyer's industrial production with production of raw material; a kind of integration that does not need to tie up capital in
investments for long periods of time but that only needs resources for reproducing the agricultural cycle, which do not even cover the total production cost. Without being aware of it the peasant becomes a worker of the industry, a seasonal worker who lacks the legal rights of other workers.

However it is under this buying mechanism that the peasants can expect a more stable income and that the risks of the productive activity are the least.

All those mechanisms represent for the peasant, an asymmetrical and unfavourable relationship as it is through them that the economic surplus that the peasant cannot keep to capitalize regionally flows. But in Atlaçahualoya, since the introduction of irrigation, part of this surplus has been retained locally and has contributed to the improvement of the general levels of income of the local peasants. Some have improved more than others, but even the ones that sell their production before the conclusion of the cycle, have been able to benefit from the increased value of their pieces of land that is the direct result of the introduction of irrigation.

Besides economic benefits, irrigation has also contributed to the generation of social benefits, as it has been a factor operative in the reinforcement of the peasant organization that has helped in the development of a learning process linked to the resolution of problem situation and to the designing of strategies for using the opportunities emerging from their environment. This has been done with the main objective of recuperating or maintaining control over the different aspects of their economic activity. Also it has contributed to the reinforcement of the
communitarian mechanisms of redistribution of the local productive resources which, to an extent, help to prevent groups with more economic power from being the only beneficiaries of the contextual opportunities.
4. THE COSTA GRANDE OF GUERRERO.

The Costa Grande of Guerrero is a narrow band of plains and rocky mounds with frequent steeps. It has a general slope from north to south and its natural borders are at the watershed of the Southern Sierra Madre and the mouth of the Balsas river and at its south, the port of Acapulco. (map 4.1)

The average rainfall in the region is 1,300 mm. annually which are concentrated during the months of June, July and September. It has an important hydrologic network that is mainly constituted by branches of the Balsas river and that flows into the Pacific Ocean through the coast band. Among the most important rivers of the region are: La Unión, Ixtapa or Salitrera, San Jeronimito, Petatlán, Coyuquilla, San Luis or Grande de San Luis, Nuxco, Tecpan, Atoyac, Coyuca and La Sabana. (map 4.1).

The area of flat lands is smaller than the one with mounds and is found between the left margin of the Balsas and the San Luis river (at the municipality of Tecpan). The plain lands have fertile soils and abundant water; the waving structure of the land promotes on the one hand, the existence of well drained soils and on the other, the existence of pieces of land covered by estuaries, swamps and mounds in which constant humid conditions are observed throughout the year. These soils cannot be used in agriculture. The plain lands do not in general have rocks, neither do they salts which are only present in the lower parts and the area surrounding the estuaries.
However the saline concentration is not high and these soils can be used for the cultivation of grass. Now, since their content of organic elements is very poor and permeability is high, the rainfall quickly runs down vertically to the lower strata forming the freatic level. It is for that reason that a great part of the lands of the Costa are occupied by plantations of coconut trees, as these characteristics favour this crop.

The climate of the region is warm without a well-defined cold season. The annual temperature varies between 18 and 32 degrees centigrad.

The natural characteristics allow the development of a tropical agriculture throughout the year. The agricultural land is used for the production of fruits such as coconuts, citrus, banana and papaya; for corn, beans, rice, coffee and sesame and on a minor scale for grasses that are used in the region for feeding cattle.

The Costa Grande comprehends eight municipalities: La Unión, José Azueta, Petatlán, Tecpan de Galeana, Atoyac de Alvarez, Benito Juárez, Coyuca de Benítez and Acapulco. The region’s communications are along the main road that joins the touristic poles of Acapulco and Zihuatanejo and that crosses these municipalities at their lowest part. But within the region the system of public roads is scarce, unpaved and the transit of vehicles is difficult especially during the rainy season.

The services of health, transportation, education, drinking water facilities, drainage, etc., are mainly concentrated in the heads of the municipalities and in spite of the fact that the Costa Grande has better services than those of the other
regions of Guerrero, the living conditions of its inhabitants are precarious. In the region a low nutritional level can be observed as well as a great frequency of gastro-intestinal and pulmonary complaints and a great mobility of the population towards urban centers and towards the United States.

In the Costa Grande, agricultural production is subordinated to the process of industrialization of the country; mainly by supplying raw materials at low prices to the oil and cosmetics industries; by generating foreign currency coffee exports; and by supplying raw materials for the process of agro-industrialization that has emerged since the second half of the decade of the seventies.

In 1970, The Costa Grande had nearly 180 thousand has devoted to agriculture. (Figure 4.1) the most important annual crops are sesame, corn, and beans and to a lesser extent rice. As far as perennial crops are concerned, the most important product is coconut, followed by coffee that is obtained in the middle part of the region (mainly in Atoyac), in the lands near the sierra. Near the coast fruits and citrics are cultivated, a common practice being that between them, annual crops are intercalated. (Figure 4.2)
FIGURE 4.1 Distribution of arable land among the municipalities.

FIGURE 4.2 Cultivated area in the Costa Grande of Guerrero.

Until the end of the seventies, only 1.3% of the agricultural surface was irrigated. The crops watered were annual. Since then, small-scale irrigation infrastructure has been built, mainly as deviation from the rivers. These resources have increased the irrigated area some 12 thousand has. that benefit 2 697 users and that are employed mainly for watering the coconut trees and the annual crops that are intercalated in the plantations. (Figure 4.3).

The coconut tree is the second most important crop in the region. In the decade of the seventies the area cultivated showed a notorious increase which did not keep a direct proportion with the increase in the volume of production as the yieldings per hectarea have been decreasing. It is also worth remarking that the average rural prices of the coconut in constant terms of 1970, decreased during the same decade.

**FIGURE 4.3** Distribution of the irrigated area in the costa -- Grande of Guerrero.

**Distribution of the users of small scale irrigation in la Costa Grande of Guerrero.**

![Diagram of irrigated area distribution](image1)

![Diagram of users distribution](image2)

The coconut tree can be used almost entirely. However the importance of the commercialization of its fruit makes the use of the roots, stem and leaves less important. From the degree of ripeness of the fruit, a variety of competing alternatives for its use emerge. For example, for the extraction of fiber from its nut or coir, the fruit should be green; for the obtention of oil or fibers of a low quality, the fruit should be entirely ripe.

The shell of the fruit is separated during the process of drying out the pulp or flesh and can be used without extra processing as fuel or industrialized for the obtention of active coal, gas and tar.

But commercially, the flesh is the most important product. From the processed flesh copra and shredded coconut is obtained. Both products are of great importance on the international market. Hence, the production of coconut trees is almost entirely devoted to the extraction of copra and its derivates.

From copra, oil and coconut grease is obtained and as a subproduct, coconut paste. The oil is used in the manufacturing of soaps, synthetic detergents, shampoos and other pharmaceutical products. Margarines are produced from the grease and due to its high contents of proteins, copra paste is used for feeding cattle. From coconut water vinagers and liquors could be obtained but it is generally disposed of during the industrialization process.

In the Costa Grande, the coconut tree is used almost only for the extraction of copra and to a minor degree for the elaboration of refreshment beverages or food for cattle; while the other parts are disposed of without using their
productive potential.

The production of coconut as well as that of sesame and coffee give a very notable commercial character to the agriculture of the Costa Grande of Guerrero. The IMECAFE (National Institute of Coffee) is the official agency that links the local production of coffee with the international market. Sesame on the other hand, cover 11% of the agricultural surface of the region and is a product linked to the oil market through and intermediation chain in which several agents intervene: official agencies, national industries, international industries, etc.
4.1 PRESENTATION OF THE CASE STUDIES IN THE COSTA GRANDE OF GUERRERO.

Two case studies are described in this section: the ejidos of "Los Luises" (San Luis San Pedro and San Luis La Loma) in the municipality of Tecpan and the ejido "San Jerónimo" in the municipality of Benito Juárez.

Both case studies were approached, just as the rest of the cases in this thesis, through field work that started after a first stage of regional statistical and bibliographic analysis. The work in the field was guided by the research questions about the process of use and distribution of the benefits of small-scale irrigation infrastructure. But during the first stage in the field, a recurring set of clues pointed to the existence of two factors in the regional context intrinsically linked to the object of the research.

Firstly, there was identified the existence of a regional structure of power that controls the production of great extensions of land and the existence of a peasant organization that goes beyond the limits of the ejidos and that has been historically, structured around the production of coconut, grouping the producers of copra of the Costa of Guerrero.

Secondly, a process of agro-industrialization of copra promoted by the government in the Costa of Guerrero was identified. This process is a main factor that directly or indirectly impinges upon the process of production of this crop, not only in the ejidos which are object of this research, but throughout the copra production of the region.

Hence, the geographic limits of the research were opened to
give place to the detailed analysis of these factors. It was decided that the description of the analysis of these factors would give the reader the framework needed to understand the conclusions about the process of use and distribution of the benefits of irrigation described in the case studies.

In a first subsection, the historical reconstruction about the process of organization of the producers of copra in the region will be described. In a second subsection, the evolution of the process of agroindustrialization of copra in the Costa of Guerrero will be presented; and the next two subsections will contain the description of the case studies.

Peasant Organization in the Costa Grande of Guerrero.

In the Costa of Guerrero instances of organization of producers of coffee, sesame and coconut can be found. At different moments, these organizations have gotten together and presented a common front. Although a complete study of the peasant organization of the region should analyse the history and relationships between these organizations, since in the case studies of this research the main product is coconut, this section will only focus on the analysis of the development of the organization of the producers of copra, the objectives that this organization has pursued at different historical moments the sectors that established this organization, their relationships and agreements with different power groups and the factors linked to its weakening at different periods.
By the beginning of the fifties the market of copra was already linked to the industries that manufactured oil, cosmetics and detergents; almost all of which were settled in the metropolitan area of Mexico City. Among them, the most important were foreign firms that were established as the result of a general process of transnationalization of some foreign firms, that saw in the underdeveloped countries a potential for widening their markets. Such industries, supported by the Mexican State, started to introduce in the market luxury goods that were previously imported to Mexico and that have a relevant impact in the transformation of the national economy. In many instances, the raw materials needed by these industries were obtained from local agricultural products, which were substituted for imported products when this implied a reduction in the production costs of the firms.

The production strategies of these firms introduced fluctuations in the market of local raw materials and, several occasions led to the ruin of great masses of small agricultural producers. Also, they helped to strengthen the local structures of economic power with which the firms established their contracts of buying.

Around 1950, in the Costa of Guerrero the oil and cosmetics manufacturing firms had already established contracts with different intermediaries, local monopolizers and large-scale producers of the region; which could extend their control over the production process of the small-scale producers of copra.

They were producers that since the distribution of land got
plots with greater extensions 1/ In time, these production units extended their control beyond the limits of their legal property and started to monopolize the harvest of the small producers, becoming the intermediaries with the market and very frequently, arbitrarily misshaping the structure of prices of the local products by means of monopolizing the local production of copra. They could do this mainly through financing the peasant production, as the lack of resources of the peasants and the lack of official credit, obliged them to ask money from local usurers that required as payment the product of the harvest. Gradually, the peasants were losing control over their plots of land for several years in advance. The monopolizers were controlling wider extensions of land separating the peasant from his main of production.

All this contributed to the deterioration of the already precarious situation of the peasants that produced copra, the attempts of whose liberation from the local "caciques" faced the repression of their body guards.

In this environment of violence and fighting for the control of the land, an event that would unify the interests of all the copra producers, small and big, dominated and dominant emerged. In 1951, in the official newspaper of the State of Guerrero a decree was published, in which a tax for the land cultivated with coconut trees was fixed. The large-scale producers of copra started a campaign for opposing this tax and achieved the adhesion of almost all the ejidatarios that produced copra. The campaign was spread along the Costa and culminated with a regional meeting in 1951. The participants

1/ According to official statistics, the average size of the 27 093 ejidatarios is 7.3 has., while the 395 small owners have an average of 27.5 has.
of this meeting decided to organize a Regional Union of Producers of Copra of the State of Guerrero (RUPC).

Although this movement was started and organized by the large-scale producers of copra (mainly those of Petatlán), the Management of the RUPC was comprised of ejidatarios as they were the majority in the meeting. However, the RUPC emerged as an organism with a mission congruent with the interests of the large-scale producers; that is the mission of fighting against taxes and the arbitrary actions of government officials.

The first activity of the Management of the RUPC dealt with the derogation of the tax, which according to the governor would be used for the building of small-scale irrigation infrastructure in the region. They achieved the derogation of the tax, but negotiated to give to the government of the state of Guerrero one cent for each kilogram of copra produced. This money should be used for the installation of irrigation infrastructure and for the financing of social programs and the assignment of these resources would be controlled by the RUPC.

This agreement more than constituting an achievement of the peasants, was the manifestation of the agreement established since the beginning between the RUPC and the State as it meant in fact a disguised tax, with the difference that not only the official functionaries would be involved in the assignment of the resources, but also the members of the RUPC.

The RUPC designed a wide program of activities that included different aspects of the process of production of copra and its industrialization: the building of infrastructure in the
region and the formalities for rising the prices at which the industries bought the copra. However, the RUPEC did not design a strategy, either for joint commercialization of the copra, or for direct trade of the product with the industries, because in the organization different groups participated with opposing interests. The dominant interests were those of the large-scale producers who were also the money-lenders and the local monopolizers of the product. Hence, the RUPEC did not try to oppose the interests of these power groups in spite of which the organization got a wide participation of the ejidatarios for the firsts months of its operation.

Before the RUPEC had completed a year some industrial firms imported fat as a substitute for copra. This had an impact on the demand for the product and contributed to the collapse of the price of copra in the Costa of Guerrero.

Unsuccessfully, the RUPEC tried to make the government suppress the permits for imports of fat which was only a manifestation of the support that the State gave to the development of these transnational firms.

At that period, the large-scale industries of the developed countries started a process to capture markets in poor countries. They were installing branches of their plants in these countries and were significantly influencing the structuring of their economies and the organization of their internal markets. In the concrete case of the producers of copra of Guerrero this policy endangered the interest of the large-scale producers as well as the subsistence of thousands of peasant families devoted to the production of coconut. Again there appeared a factor that unified the interests of
the different sectors of producers of copra of the Costa of Guerrero.

This time the struggle against the State and the firms that imported fat took the form of a strike of copra producers which mobilized wide sectors of peasants. Some intermediaries and monopolizers tried to break the strike by violent means; which gave rise to the intervention of army brigades. The violent situation forced the government to accept some of the demands posed by the peasants. President Miguel Aleman gave them an audience and promised to stop the permits for importing fat and to give financial aid for restoring part of the losses they had suffered.

The agreement in the RUPEC between the ejidatarios and the large-scale producers who controlled the production process of the peasants occurred at a moment in which both opposing groups shared a common goal: the derogation of the tax and the interruption of permits for importing fat. However the struggle of this organization did not focus on the resolution of the main conflict between the relations of production between both social classes. Neither did it consider the situation of the landless daylabourers who remained outside the organization. The latter continued to struggle to get land. The ejidatarios became the sector that balanced the interests of the large-scale producers and those of the landless peasants but the direction that followed the RUPEC mainly obeyed the interests of the minority sectors with economic power.

The agreement between the government and the RUPEC influenced the activities of this organism the goals of which were reduced to the space left by the State; and its method for struggling was circumscribed to the diligences before
agents of official institutions to obtain reforms, the benefit of which were mostly canalized towards sectors with economic power, while the local co-relation of forces was left intact.

However at its inside, the organization of the RUPE started to break once the shared goals were attained. Around 1955, the ejidatarios sectors tried to center the organization around a strategy of commercialization as a means to free themselves from the local monopolizers. This strategy endangered the local structures of power and was resisted by the large-scale producers who started a campaign for recuperating the control of the Directive of the RUPE; this they achieved in 1956. Since then, the links between the RUPE and the local government have become stronger. 1/

The Trade Union of copra producers.

Once the sector of ejidatarios was left outside the management of the RUPE, it started a project of organization for the joint commercialization of copra. In 1957, the Trade Union of Producers of Copra (TUPC) was instituted under the direction of the members removed from the management of the RUPE.

Although this new organization of ejidatarios emerged with a concrete program of commercialization, it did not take off autonomously. It emerged linked to the RUPE as it accepted

1/ In 1959, the RUPE got deputies from the official party and by that date it had the political control of the region through the municipal Presidencies of Coyuca, Atoyac, Benito Juárez, Tecpan and Petatlán.
in its Management the intervention of large-scale producers as a means to lessen the opposition of the RUPC. Also, it set agreements with the State through its affiliation to the establishment of a new tax over the production of copra which meant the main factor of control from the State and from the RUPC over the trade union. This tax amounted to three cents for each kilogram of copra produced and would be payed to the local government who would canalize the money to the TUPC through the RUPC.

In a few months, the TUPC established storing facilities in different villages: Coyuca, Atayac, Los Arenales de Gómez, Cacahuatlá, Tecpan, San Luis San Pedro and Tres Palos in the Costa Chica.

One of the first activities of the TUPC was to contact the industries of the metropolitan area of Mexico City that bought the copra (Reta and Co., Palmolive, La Luz, La Polar and Hidrogenadora Nacional). They could, for the first time, sell the product of many ejidatarios of the region jointly, not without first overcoming great obstacles created by the local monopolizers. The peasants that sold through the TUPC got an income greater than the one they would have got from the intermediation chain and in the transaction, the TUPC obtained a profit.

The first profits of the TUPC were used to give credits for the repayment of the debt of some peasants to the moneylenders. These loans were given without interest with the aim of widening the membership of the union and of finishing with the local "cacicazgo".

After this first success an open opposition between the RUPC and the TUPC started, in this struggle the TUPC was weaker.
because its opponents had the resources it lacked: wide lines of credits, control of great extensions of land, agreements with local governmental officers, etc.

The strength of the monopolizers of copra soon was felt. In 1959 and suddenly, the industrial firms stopped their contracts with the TUPC and drew up contracts with the monopolizers of Acapulco at a price 20% lower.

This fact endangered the existence of the TUPC but also opened a space for its consolidation. With many troubles and after a process of diligencies before the federal government the TUPC achieved a permit for exporting three thousand tons of copra through a broker that got a contract from the Pacific Vegetable Oil Co.

While the negotiations with the federal government were taking place, the prices of copra in the Costa of Guerrero had collapsed, as the monopolizers thought that the ejidatarios would have no other alternative than theirs for selling their product. However, the storing facilities of the TUPC continued receiving the product at higher prices. When the monopolizer realized that, they started a campaign of sabotage. The Direction of Hacienda and Economy of Guerrero stopped the canalization of the special tax to the TUPC which soon ran out of resources for buying the product 1/

The trading union applied for credits for the export enterprise to the official and to private banks. The credits were denied. Finally, the money was given by the American firm. The acts longshoremen who denied their cooperation to

1/ Along this process several manifestations of solidarity took place. Many copra producers left their products in the storing facilities of the TUPC without receiving any money in exchange.
the TUPC. However the obstacles were overcome and the trading union exported the copra.

This second success was mainly achieved because the TUPC got an ally stronger than the local monopolizers: foreign capital.

After these exports, the industrial firms of the metropolitan areas of Mexico City renewed their contracts with the TUPC. But once this trade union gained stability, it started to decline as an organization that responded to the interests of the small-scale producers of copra.

Initially the TUPC emerged as an alternative for the small-scale producers of copra to free themselves from the control of their more immediate exploiters, the local "caciques". The few harvests they were able to sell jointly enabled its members to obtain higher incomes, and some of them, to rescue their coconut tree plantations from the control of the monopolizers. However these achievements were not permanent as the organization suffered a process of corruption that led the peasants to lose their credibility in it as it became a new instrument for extracting the economic surplus generated by the peasant producers.

Firstly, the TUPC set an open alliance with the State and joined the group of the governor of Guerrero (Caballero Aburto), also it started to intervene in the political affairs of the old agrarian guard, the National Agrarian Council, etc.

The peasants that had seen in the TUPC an alternative for freeing themselves from the control of the local monopolizers, started to realize the gradual corruption of their leaders
and to identify the union as an ally of the local government. In fact, as the leaders of the TUPC try to legitimate themselves with the State they lost contact with their base and stopped being its true representatives.

By the end of the fifties, a series of groups had been organized to oppose the TUPC. Amongst those groups one named "Authentic Copra producers" was strongly opposing the organization from San Jerónimo, Atoya, Corral Falso and Petatlán. Its main demand was the derogation of the special tax.

The peasantry opposition to the TUPC was manifested in a framework of generalized conflict in the State of Guerrero. The conflict was manifested openly as a campaign against the governor Caballero in which almost all the social organization of Guerrero participated; including the students of the State College (today the Autonomous University of Guerrero), the producers of coffee, sesame, copra and palm. All of them joined the "Civic Association of Guerrero" (organization that Genaro Vázquez commanded). The balance of the movement reported dozens of deaths at meeting in Chilpancingo of the 16 of October, the destitution of the governor the 5th of January 1961 and the dissolution of the TUPC.

The day that followed the governor's destitution a group of "civilians" took the building of the TUPC and expelled its leaders who, for almost a decade, continued their diligencies before the government to be acknowledged as legitimate representatives of the union. These diligencies were unsuccessful.
During the movement, the Ministry of Hacienda and Economy of Guerrero stopped the canalization of the special tax to the TUPC. This money would never return to the ejidatarios.

Throughout the movement, in which a class struggle as well as a series of disagreements between different groups were manifested, a new opening for the agreement between the peasant producers of copra and the leaders of the RUPC emerged. Again, both had a common enemy, the TUPC and both wanted to eliminate it although for opposing reasons.

Once the TUPC disappeared from the scene, the contradiction between small producers and monopolizers re-emerged and the peasants started to fight against the RUPC, this struggle was prolonged for five years.

In 1967 the price of copra collapsed again. This fact made the economic situation of the peasants still desperate. They tried to call an assembly in the building of the RUPC and were slaughtered by the white guards of the caciques.

After this violent event the RUPC was also dissolved and the army took the region.

Since then and till 1974, the army intervention in the region increased as since 1968 the guerrilla movement of Genaro Vázquez and Lució Cabañas attained its peak.

The State mobilized all the resources at hand. In 1968 one third of the army were in the region trying to exterminate the guerrilla. But besides the military force, the State started to canalize investment resources to the Costa of Guerrero, as an attempt to ameliorate the precarious
situation of the natives and to avoid general discontent leading to the road of violence.

In 1970 official programs of investment were started in the region: health campaigns, CONASUPO stores, agricultural extensionism, roads, cultural missions, etc. Also a branch of the National Institute of Coffee was established in Atoyac. The National Confederation of Peasants started to give "political classes" to the Comisarios Ejidales as an attempt to regain control over the ejidos; sympathizers with the guerrilla were removed from their charges and some of them were imprisoned.

The organizational void left by the dissolution of the TUFC left the producers of copra from the Costa of Guerrero in the control of local power groups. These were able to maintain the price of the copra constant for almost eight years. This organizational void prevailed for more than one decade and generated great discontent among the peasants that the State tried to ameliorate by the creation of the National Union of Producers of Copra (NUFC). In 1979, the National Confederacion of Peasants summoned the producers of copra to form regional unions in the producing states. The regional organizations would be integrated in the National Union of Producers of Copra. The president of the regional union of Guerrero is also the president of the whole union as well as a federal deputy for the Costa of Guerrero.

The NUFC is a superstructural organism the organization model of which is a pyramid with the Comisarios Ejidales as the base. As such, it does not respond to the needs of the producers because the problematic of the ejido is wider than that of the copra producers but mainly because many ejidos of the region are unorganized or submitted to a local
“cacique”. Hence the organization of the NUPC gives the peasant no alternative for solving the main problems faced in the production and commercialization processes.

However, the NUPC has been operative in negotiations with the government for the increase in the guaranteed price of copra which was stable for so many years; but these negotiations benefited the NUPC as the peasants that sell to CONASUPO at the official price of guarantee have to pay ten cents for each kilogram of copra sold. This money is used for the support of the NUPC.

But before its intervention in the peasant organization, the State had promoted, since 1970, the decided development of an agro-industrialization process. As far as coffee is concerned, buying centers of the IMECAFE were established as well as dryers, toasters and mixers. As for coconut, a plant for manufacturing cream of coconut, Calahua, was installed and the Impulsora Guerrerense of Coconut started its operations in the region through the establishment of two plants for extracting coconut-oil and several dryers of copra.

The Agroindustrialization of the coconut.

The industrial plants for processing copra in the state of Guerrero have been established by private or by governmental capital. Currently, such industries are represented by four factories of coconut soap, the most important of which is located in Acapulco; a factory of cream of coconut in San Jerónimo and four plants for the extraction of coconut oil in the municipalities of Acapulco, Benito Juárez, Coyuca and
San Marcos. These factories consumed in 1979, 46,319 tons of copra that represented 55.6% of the production of coconut in the region 1/.

The Impulsaora Guerrerense of the Coconut Tree (IGC) was founded in 1975 with an initial investment of 300 million pesos invested by the federal and the local government. The goal of this enterprise has been the vertical integration of the agricultural production of the coconut with the manufacturing of some derivatives of copra.

Currently the IGC has three plants for extracting oil in Coyuca, San Jerónimo and San Marcos. The available data of the plants capacity is not reliable 2/. However in qualitative terms, it is possible to say that about 70% of the installed capacity of the IGC is underused. This percentage constrains with the number of its employees (700).

The reason for the underutilization of the industrial plant are not merely restricted to the inefficiency or in-capability of the firm. In fact, one of the factors that has more impact in the underutilization of the plant is the competitive process for the acquisition of copra that can be observed in the Costa Grande among the several industries that consume this product. (national, transnational and governmental).

1/ Source: Agroindustrias, S.A.R.H.

2/ According to the interview with the employees of IGC, its plant capacity is sufficient to process 52,800 tons of copra. With such a capacity, practically all the production of the Costa could be processed for the extraction of about 31,680 tons of oil and 15,840 tons of paste of copra. However its production in 1980 amounted to only 9,316 tons. that is 29.4% of its capacity.
From the total production of copra obtained in Guerrero in 1979, 55.5% was sold outside the state in Mexico City or the state of Mexico; the rest was consumed within Guerrero \(^1\). Among the most important firms that consumed this product one finds: Colgate Palmolive, Anderson Clayton, La Polar and La Luz within the state copra was consumed by private or governmental firms.

The producers of coconut are linked to industries by means of an intermediation chain. Some intermediaries buy the harvest in advance; usually they are also regional traders; the commission agents of the industries that may be their employees or large-scale local producers that monopolize the production of small producers. Some of these agents sell the product to the IGC but most of them sell to other industries because they offer better payment conditions.

All those agents compete for the obtention of the product. In this process, the IGC has played a role of regulator of the market as it has set prices that in spite of being lower than the international market prices, are higher than the prices of the commission agents or the local monopolizers; this has had an impact on the monopoly character of the traditional sectors of intermediation which have been obliged to increase their prices; but only to an extent. The IGC offers a better price, but its system of payments consisting of receipts that can be cashable a fortnight after the product is sold is not convenient for the peasants that have an immediate need of money. Also, this theoretical period of fifteen days may be extended to months and become a real obstacle for the peasants that otherwise

\(^1\) IGC. Information of Agroindustrias recollected by S.A.R.H.
would sell their product to this enterprise. Then, when IGC pays regularly, the other buyers offer to buy at guaranteed level. However when the IGC delays payments the other buyers lower their prices, the CONASUPO is another institution that deals with the buying of copra, but its norms of quality and the arbitrariness with which the norms are applied discourage the peasants from selling the product to this institution. The CONASUPO favours the transnational firms as it sells them the product at guaranteed prices. This makes this official institution a vehicle for transferring local economic surplus more effectively than the intermediation chain.

In its attempts to capture greater volumes of copra the IGC installed 22 plants for drying copra in 1969. They were placed in several ejidos of the Costa and with the manifest objective of enabling peasants to add value to their local production. The drying plants were installed with financial aid given to the ejidatarios by an official agency (FIRA). The ejidatarios appear as partners of the enterprise. According to the promotions of the IGC, the ejidatarios were organized in "agricultural producing units" These units would be in charge of the administration of the enterprise once this attained stability, and when they repayed the credit they would be the owners of the facilities. However the project was a total failure: the credits have not been repayed, the ejidatarios are indebted and there have been instances of frauds in the managing of the resources with which operations were to start; some drying plants are already dismantled, others have closed and most of them operate only during the rainy season. Although theoretically the plants should be managed by the ejido and although the IGC's employees ensure that they have been already given to the ejidatarios, they are in fact managed by employees of
the IGC or by grantees that are payed according to the volume of copra they can capture.

The dryers can dry three tons of coconut meat each time. The charge for using the dryer is 1,000 pesos if the copra is to be sold to the IGC and 1,100 pesos otherwise. From three tons of coconut meat, 1.8 tons of copra are obtained. In general, the monopolizers are the ones that use the dryers, they buy the coconut fruit from the small producers who cannot use this facility because they lack resources for paying the transportation of the product and the drying cost. The peasants that do not sell the coconut "as a ball" dry it with the sun and sell the copra at punished prices due to the stains or the inadequate humidity of the product.

For each coconut sold, an ejidatario gets around three pesos -- or less if his need for money is great and sells the fruit in advance when it is still on the tree. If this peasant sold the copra at the guaranteed price, he would get around 4.4 pesos for each coconut he produces. However, there are several factors that impinge upon the fact that most peasants sell the coconut instead of the copra:

1. The lack of resources for paying the tasks of harvest, transportation and the extraction of copra.

2. The scarcity of manpower for harvesting. At least for bringing down the fruit from the tree, and separating the meat from the shell, specialized manpower is needed. There is a great demand for this manpower in the region and it is mainly contracted by the monopolizers.

3. During the rainy season, the peasants that dry the product in the sun have a great risk of losing the copra if
the humidity cannot be controlled.

4. The lack of control over the harvest when plantation is seized or when the product has been sold in advance.

Hence, the dryers that responded to scheme of rural industries with the participation of local producers have only resulted in infrastructure that supports the interests of the intermediaries and monopolizers linked to the industry and an instrument of the IGC for capturing greater volumes of copra dried according the needed norms of production of oil. The successful operation of the dryers would allow the vertical integration of the oil extraction of the IGC, as it would be able to control one more step of the production process. For the ejidatarios the dryers are only a source of debt for a facility of which they are only nominally partners.

The production of crude oil of coconut of the IGC is sold on a small scale to soap manufacturers and to the oil refinery owned by the same IGC but mostly it is sold to private firms. The IGC has managed to add value to the agricultural product before this is transferred outside the region; that is the industries that consume copra have lost part of the market of this raw material and have to acquire it as processed oil. Hence the State's firm has been rationalizing the transference of economic surplus that before was only realized through the intermediary sectors. But the IGC keeps for itself part of this economic surplus and uses it to finance the operation of an inefficient plant or the implementation of other programmes isolated from the local problematique which do not reap any benefits for the peasants.
The Calahua is another governmental industry related to the coconut production, although the scale of its operations is more restricted than that of the IGC. This firm was established in 1976 as an investment of the official agency FIRA, which is the main owner, although 40 ejidatarios from San Jerónimo are its partners. The plant processes 200 grosses of coconut weekly. It works at its full capacity of one shift and manufactures coconut cream that mixes with sugar, pineapple and strawberry.

Although Calahua does not have a significant impact on the entire production of coconut of the Costa, its impact is centered in San Jerónimo and surrounding ejidos in which its intervention over the productive process is definite.

It buys the coconut fruit by means of buyers that select the plantations they would buy.

Hence Calahua, without having to tie capital in the buying of land and the constitution of plantations, controls the production of about 700 has; the owners of which become separated from their main production means. They only perform the tasks of conservation of the palm tree and cleaning of the plantation. The value added to the production of coconut in the plant does not benefit in any way the associated ejidatarios.

The industrial plant built by the State in the Costa Grande of Guerrero would be enough to process the copra that is produced in the region. However the firm that represents the greatest capacity for processing copra has not been able to integrate its actions with the needs of the small producer of copra.
The State's agroindustry has set loose a competitive process for the acquisition of copra and the traditional sectors of intermediation have been obliged to modify some of their traditional buying practices; mainly that related to the settling of the price. But this has not meant the displacement of the local groups with economic power; these groups have adapted to the situation and some of them have become the agents of the IGC. But in this process the peasant producer of copra has gained little. The increases in prices, in spite of being more accelerated than the increases in prices, in spite of being more accelerated than the increases observed before the establishment of the IGC, has not implied a betterment in the living conditions of the peasants, because in constant terms of 1970, prices have decreased. But above all the State's agroindustrialization efforts have not helped the peasant to enter the market as a free producer. As shall be seen in the description of the case studies, the peasant continues to sell the coconut fruit on the tree, mainly because he lacks the resources for paying the costs of producing copra or because his debts do not permit him to control the production of his plantation.
4.2 SAN LUIS SAN PEDRO AND SAN LUIS LA LOMA.

Description of the case study.

The ejidos of San Luis San Pedro and San Luis La Loma are located on the Costa Grande of Guerrero in the municipality of Tecpan, 148 km from the port of Acapulco and 92 km from Zihuatanejo. They occupy an area of 23 676 has. and their villages are settled on both sides of the San Luis river. The main stream of this river runs along 55 km, with a catchment area of 1 097 square kilometers and an average annual dripping of 724 million cubic meters.

San Luis San Pedro borders, to the north, with the ejido of Santa Lucía, to the south, with the Pacific Ocean, to the east, with the ejido of Nuxco and to the west, with San Luis La Loma. The latter borders to the north with private property and the ejidos of Camarón and Papayo and to the west with the ejido of Papanoa.

The main road that runs from Acapulco to Zihuatanejo crosses both ejidos, which are also connected to other "rancherías" and ejidos by means of municipal unpaved roads. For their transportation the inhabitants use two bus lines that regularly run through the Costa and some taxis. The villages have electricity and public lighting along the main road and both completely lack services of drainage.

The most representative annual crops are corn, beans and sesame which occupy about 10% of the 7 480 has of arable land.
The fruit plantations are settled in nearly 90% of the cultivated area. These are mainly coconut tree, banana and papaya.

Los Luises were instituted as ejidos in 1935 by means of a Presidential decree dictated by Lázaro Cárdenas. As far as the population is concerned in San Luis San Pedro there are 16,800 inhabitants, from which it can be estimated that there are 2,400 families. From them, only 708 are ejidatarios; which means that about 60% of the heads of family lack land. San Luis La Loma has a smaller population, 10,500 persons, from which 750 are ejidatarios; hence, about 50% of the heads of family are landless. Due to the fact that 78% of the population is more than 15 years old, and appreciation of the pressure that the population exerts over the land can be obtained.

The landless peasants work sometimes as day laborers in the ejidos and, sometimes migrate to national urban centers or to the United States. On some occasions they may borrow plots of land cultivated with coconut trees and produce corn or beans intercalated between the palms. In return for the loan they take care of the plantation.

The original endowment of land of San Luis San Pedro was extended in 1957 by 122 has. The total area of the ejido is 9,256 has. of which 3,851.5 can be cultivated (Table 4.2.1).

The ejidatarios live in eight small settlements: Guayabillo, Navarrete, Palo de Arco, Poza de Bache, Los Tarros, Chicahuite, Huamalito and San Luis San Pedro.

In San Luis La Loma, the original land endowment has been increased twice. Nowadays it has 14,298 has. from which 3,629 can be used in agriculture (Table 4.2.1).
<table>
<thead>
<tr>
<th></th>
<th>SAN LUIS</th>
<th>SAN LUIS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SAN PEDRO</td>
<td>LA LOMA</td>
<td></td>
</tr>
<tr>
<td>Number of Producers %</td>
<td>708</td>
<td>750</td>
<td>1,458</td>
</tr>
<tr>
<td>%</td>
<td>48.5%</td>
<td>51.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Area %</td>
<td>9,378</td>
<td>14,298</td>
<td>23,676</td>
</tr>
<tr>
<td>%</td>
<td>39.6%</td>
<td>60.3%</td>
<td>100%</td>
</tr>
<tr>
<td>Arable Area %</td>
<td>3,851.5</td>
<td>3,629</td>
<td>7,480.5</td>
</tr>
<tr>
<td>%</td>
<td>51.4%</td>
<td>48.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Area of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation:</td>
<td>3,578.5</td>
<td>3,199.5</td>
<td>6,778</td>
</tr>
<tr>
<td></td>
<td>273.5</td>
<td>429.5</td>
<td>703</td>
</tr>
<tr>
<td>Arable Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area</td>
<td>41%</td>
<td>25.3%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Seasonal Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arable Area</td>
<td>92.9%</td>
<td>88.1%</td>
<td>90.6%</td>
</tr>
</tbody>
</table>

Source: URDERAL (Atoyac, Gro).
The average size of the plot of land of each ejidatario in both ejidos is 5 hectares; although there are instances in which one person can legally cultivate 60 has. while others have only 1 ha.

The formal land tenure gives an indication of the unequal distribution of this resource, but in Los Luises the large-scale producers and the local traders concentrate major portions of land. For example one person could be detected who has 100 has. in San Luis La Loma - most of them irrigated - and many instances of plots seized by moneylenders that were sold in time with the intervention of the Comisariados Ejidales.

It is worth remarking that the relative scarcity of land faced with a continuously growing population gives rise to the increasing sub-division of the plots of land that provide for the subsistence of the owner and of their sons and relatives that lack this resource for the support of their families.

Within the ejidos great economic inequalities can be observed linked to a structure of economic power that concentrates the productive resources, land and local production and that plays the role of intermediation with the market of copra. Through its trading activity, this sector keeps for itself a relevant part of the economic surplus generated by the peasants. This surplus is in part locally re-invested to increase their productive activity by means of the buying or hiring of pieces of land, by means of the efficient use of chemical inputs and machinery and by means of increasing their transport and storing facilities.
Although the general characteristics of Los Luises are similar, both ejidos have specific problematic situations that differentiate them. Traditionally the village of La Loma has been the local market centre which supplies with basic goods both ejidos and some other nearby villages. Hence next to the agricultural producers there is a group of traders that directly influence the productive structure of this ejido either through financing mechanisms, through the monopolization of the product or through the commercialization of the local production. The peasants that have no access to other sources of financial aid or other markets are submitted to this group of traders that constitutes a network of economic and political power which the peasant finds very difficult to overcome.

In San Luis San Pedro, the direct accumulation of local wealth is realized by direct agricultural producers who also have links with the trading and transporting activities.

Production.

The use of the local resources of production is a main co-producer of the concrete difference between a traditional sector of peasants and a modern sector of producers and intermediaries observed in Los Luises. The first of these resources is irrigation.

Los Luises have had irrigation infrastructure since 1951. This are derivations from the river San Luis and include unpaved channels and direct takes. In time the infrastructure deteriorated and the channels became obstructed, hence people stopped watering. The ejidatarios applied for the rehabilitation
of the facilities with which the irrigated area will be increased from 900 to 1,500 ha. in La Loma and from 2,000 to 2,080 in San Pedro. The rehabilitation works started three years ago. The lack of resources and the several changes of building firms have delayed its completion.

The delays in the works added to the serious droughts of the region over the last few years led the producers, who use the water, to put pressure on the SARH and they were allowed to use the water although the works have not concluded. Hence irrigation is used for a fortnight, and for the next fifteen days, the works continue.

In February 1982 the infrastructure started to operate and 540 hectares of San Luis San Pedro and 370 of San Luis La Loma were watered. But this important productive resource benefits only 7.1% of the 3,851.5 agricultural area of San Luis San Pedro and 11.6% of the 3,629 has. that can be cultivated in San Luis La Loma.

The irrigated area corresponds to 74 of the 750 ejidatarios of San Pedro and to 66 of the 708 of La Loma. This means that less than 1% of the legal ejidatarios benefit from irrigation.

But within the groups that use irrigation, great differences in the sizes of the plots of land can be observed. 10.8% of the users of San Luis La Loma have more than 10 irrigated has. The corresponding percentage for San Pedro is 7.5% (table 4.2.2.).

In the greater part of the irrigated land, papaya and mango intercalated with coconut trees are produced. This is done by the large-scale producers, in their plots or in the
plots of others. That is those who also concentrate the local production of coconut.

The users Association established in 1973 in both ejidos are only formal organizations since those who decide how to distribute the water resources throughout the irrigated area are the large-scale producers. Hence, in the productive arena, having irrigation implies the possibility of getting better yields in coconut and in other products and the possibility of diversifying production by intercalating other crops with the coconut trees.

**TABLE 4.2.2. DISTRIBUTION OF LAND IN THE IRRIGATED AREA.**

**EJIDO SAN LUIS LA LOMA**

<table>
<thead>
<tr>
<th>(HAS.)</th>
<th>NUMBER OF USERS</th>
<th>IRRIGATED AREA (HAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1 - 5</td>
<td>45</td>
<td>159.2</td>
</tr>
<tr>
<td>5 - 10</td>
<td>19</td>
<td>144.0</td>
</tr>
<tr>
<td>More than 10</td>
<td>8</td>
<td>124.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>74</td>
<td>429.5</td>
</tr>
</tbody>
</table>

**EJIDO SAN LUIS SAN PEDRO**

<table>
<thead>
<tr>
<th>(HAS)</th>
<th>NUMBER OF USERS</th>
<th>IRRIGATED AREA (HAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 1</td>
<td>3</td>
<td>2.75</td>
</tr>
<tr>
<td>1 - 5</td>
<td>51</td>
<td>149.75</td>
</tr>
<tr>
<td>5 - 10</td>
<td>7</td>
<td>52.5</td>
</tr>
<tr>
<td>More than 10</td>
<td>5</td>
<td>68.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66</td>
<td>273.5</td>
</tr>
</tbody>
</table>

The most important irrigated product is coconut followed by grass and intercalated corn. However, the area cultivated with papaya has had a tremendous increase in the last few years.

The annual yields of coconut when it is watered increase from 0.6 ton. per ha. to 1.5 tons per ha. The difference in yields for seasonal and irrigated corn are minimal because irrigated corn is generally intercalated in the plantations and receives less light than that received by corn cultivated alone. An hectarea of corn yields an average of 0.7 to 1 tons. But the water is mainly used for fruits as these crops are more profitable than corn. The coconut plantations are also generalized in the lands that lack irrigation, some of which are also cultivated with corn, beans, chili and sesame which lately is being substituted by water melon.

The use of chemical inputs for production makes the differences observed between peasants that have access to irrigation and those that do not even greater. Such inputs are administered only when there is a certainty that the droughts will not ruin the harvest; such a guarantee is offered by irrigation. For that reason in Los Luises it can be observed that peasants do not tend to fertilize the lands.

By keeping the costs of production low, the peasants can diminish loses due to droughts. For example, one hectarea of corn cultivated in land that lacks irrigation with bettered seeds and fertilizers in Los Luises has a production cost of 7,783 pesos and if fertilizers are not applied and the seed is not bettered, the cost decreases to 4,362 pesos 1/. The

1/ These costs do not include the costs of the labor of the producer and his family.
use of tractors is more generalized. In the area cultivated with coconut trees the tractor is used only for the tasks of dray, hillong and crossing. The fallow is not very much practiced because if the tools are introduced deeper the roots of the trees can be damaged. The number of tractors is small; from Tecpan to Papanoa there are only 55; most of them are privately owned and others belong to the ejidos. In both instances they are hired.

In Los Luises the ejido has two tractors that were bought with credit from BANRURAL and are managed by the Comisarios Ejidales. Although credit is payed for by all the members of the ejido, in San Luis San Pedro they are used only by the Comisario while in La Loma it is used by most of the ejidatarios.

The productive infrastructure influences the use of labor. The minoritarian groups that have access to irrigation widely use chemical inputs and get far better yields. This situation favours their possibility for functioning as monopolizers of products and as bonds between the peasant producers and the industrial buyers. They are the ones that have enough resources to invest and to hire manpower to perform the tasks of harvest and extraction of copra. The obtention of copra requires the following tasks: dray for cleaning the orchard, separation of the dray leaves of the palm tree, tumbling the coconut, separation from the bunch, drying in the sun or the dryer, splitting of the coconut and transport to the buying centre. The cost of these tasks per ha. is 3 660 pesos in irrigated and 3 219 pesos in seasonal lands. (Table 4.2.3.) The production cost of the peasants that sell the whole coconut in their orchard is only 1 750 in irrigation and 1 548 otherwise as they only need to pay the first three tasks. (Table 4.2.4).
The ejidatarios and their families perform some of these tasks but for many of them it is necessary to hire additional labor force. This labor is hired locally but it is considered "specialized" as it requires special skills. As most of the producers lack credits from BANRURAL the harvest of coconut and the extraction of copra are important economic problems, for the solution of which, the peasant needs money. This opens the space for the monopolizers to buy the orchards as in this way the peasants do not need to pay part of the production costs.

According to the information of the peasant producers, if they sold the copra, they would obtain a large income than the one they get by selling the coconut. However the data they themselves gave indicates that in the seasonal lands the selling of coconut gives more income than the selling of copra (table 4.2.5) because the cost of manpower for extracting copra outweighs the benefits. In the land with irrigation, as the yields are better, the use of labor is more efficient and the costs of manpower can be incurred without a drop in the net income (table 4.2.5).

These calculations were made without considering the cost of the labour of the family unit, and including only those that have to be directly paid in money be the producer. Also the calculations do not consider the many instances in which the product is sold in advance.

The producers or traders that concentrate larger extensions of land lower costs because they have economies of scale. As they have crews for prolonged periods and harvest greater volumes of product hence the unitary costs of drying, transportation, etc. are lower.
### TABLE 4.2.3. PRODUCTION COSTS OF COPRA PER HA. (INCLUDES ONLY THE COST THAT ARE PAYED IN MONEY) (PESOS)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>IRRIGATED AREA</th>
<th>SEASONAL AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dry for cleaning the orchard.</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>2. Separation of dry leaves</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>3. Tumbling the coconut</td>
<td>400</td>
<td>234</td>
</tr>
<tr>
<td>4. Separation from the bunch</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>5. Drying</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>6. Splitting</td>
<td>660</td>
<td>385</td>
</tr>
<tr>
<td>7. Transport</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td><strong>3,600</strong></td>
<td><strong>3,219</strong></td>
</tr>
</tbody>
</table>

### TABLE 4.2.4. PRODUCTION COSTS OF COCONUT FRUIT SOLD AT THE PLOT. PER HA. (INCLUDES ONLY THE COSTS THAT ARE PAYED IN MONEY) (PESOS).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>IRRIGATED AREA</th>
<th>SEASONAL AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dry for cleaning the orchard</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>2. Separation of dry leaves</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>3. Tumbling</td>
<td>400</td>
<td>234</td>
</tr>
<tr>
<td></td>
<td><strong>1,750</strong></td>
<td><strong>1,584</strong></td>
</tr>
</tbody>
</table>

Source: Producers of Copra and Comisario Ejidal of San Luis La Loma.
### Table 4.2.5 Cost/Benefit Ratio of the Production of Coconut and Copra per ha. per Cut

<table>
<thead>
<tr>
<th>Item</th>
<th>Irrigated Area</th>
<th>Seasonal Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average yield per cut (groses/ha)</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Minimum price per gross (pesos)</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Cost of the harvest (pesos per ha.)</td>
<td>1750</td>
<td>1584</td>
</tr>
<tr>
<td>Income (pesos per ha.)</td>
<td>5400</td>
<td>3150</td>
</tr>
<tr>
<td>Income (pesos per ha.)</td>
<td>3650</td>
<td>1566</td>
</tr>
</tbody>
</table>

### Copra

<table>
<thead>
<tr>
<th>Item</th>
<th>Irrigated Area</th>
<th>Seasonal Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average yield per cut (kg/ha.)</td>
<td>345.6</td>
<td>201.6</td>
</tr>
<tr>
<td>Guaranteed price (pesos per kg)</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Production cost (pesos per ha.)</td>
<td>3660</td>
<td>3219</td>
</tr>
<tr>
<td>Income (pesos per ha.)</td>
<td>7603.2</td>
<td>4435</td>
</tr>
<tr>
<td>Net Income (pesos per ha.)</td>
<td>3943</td>
<td>1216</td>
</tr>
</tbody>
</table>

Source: Producers of Copra
Also those monopolizers have the possibility of getting a profit from the commercialization of the product; a profit that emerges not by the rural price, but by their links with the industrial firms that buy the copra where the price of the product is not subjected to the rural mechanisms of control but result of supply and demand.

In the process of transferring surplus from the agricultural to the industrial sector part of the surplus is retained by the intermediaries. This gives them the degree of freedom for perpetuating the relations of domination they exert upon the peasant producers. The part of the economic surplus that is transferred to industry is realized in the profits of the buying firms.

In this situation and due to the physical characteristics of the palm plantations, the peasant producers complement their income by means of the production of corn of beans, the cultivation of secondary plantations of fruits or the rearing of bovine cattle. But the possibility of performing these secondary economic activities depends upon the financial aid and the access to the productive resources that each producer has. In Los Luises the producers that have resources tend to cultivate high yield crops such as banana, papaya, mango, grass for their cattle, etc. The rest of the peasants can only produce corn, beans, water melon and chili. The latter use only family labor, while the former hire daylabourers among the local peasants or people that come from the sierra looking for jobs.

As a summary one can say that the most immediate problem for the agriculture of the ejidos is access to the productive resources. Hence the importance of understanding the way in which these resources are obtained and the way in which this
contributes to the reproduction of the existing structure of political and economic domination.

Financing.

One of the most important factors that intervene in the production process in agriculture is the capital required for cultivating the land; without this resource, it becomes very difficult for the peasant to farm his land and use it as a means for attaining his subsistence level.

In the Costa Grande of Guerrero and in particular in the ejidos of Los Luises financing is the cornerstone that supports the relationships of power. The high costs of production implicit in a market product such as copra and the reduced level of the income that the peasants can obtain through the sale of the product at average rural prices set the conditions that sustain the phenomena of monopolization of land and product performed by the sectors of power.

In Los Luises the credits are given by the official bank and by private moneylenders generally linked to trading activities.

The banking credit is operated by means of the branch of BANRURAL located in Tecpan. This agency assists 23 ejidos in the region. However the scope of its financial policy can be appreciated in Los Luises where 90% of the ejidatarios are indebted to the bank and therefore, are not subject of credit. The decrease in the yields of the palm-tree, the lack or irrigation, the frequent droughts, the low rural prices and the gradual subdivision of the peasant plots have
meant that the incomes obtained from the sale of the peasant's production are not enough to repay the debts contracted with the bank.

In its attempts to recuperate its capital, BANRURAL supports the producers that are linked with the market and that can guarantee the repayment of the loan with their yields. In this way, BANRURAL helps the consolidation of the local power structure.

90% of the ejidatarios that do not receive credit have but one alternative; to get it from the moneylender. This person has a privileged place in the commercialization of the copra; hence he is interested in buying the orchards of the ejidatarios that cannot take their product to the market as they lack the resources for doing so. What the moneylender does in fact is to pay the product in advance and to gain control over the land of the peasant. The latter is able to solve his immediate need but becomes separated from his production means. The peasant producer of coconut has to depend on an intermediation sector that gets the main benefits from the market incentives for the copra.

Commercialization.

Currently the ejidatarios of Los Luises are linked with the market by a sector of intermediaries and only rarely sell directly to the regional industries that extract oil. Since the TUPC was dissolved the ejidatarios of Los Luises lack an organized leadership and the commercialization of the copra has been left to the local sectors of power, in spite of the
attempts that the official institutions have made to offer alternative sources of market.

Such is the case of the IGC which influenced the increase of prices observed after the first few years of its formation. But although the IGC competed with the intermediation sector, as time went by, its financial problems and its high costs of operation had led it to delay payment to the producers. But the peasants cannot defer their consumption needs and therefore are reluctant to sell their product to the IGC. Currently this firm buys the copra at 22,000 pesos per ton, discounting 800 pesos per ton, if the copra does not cover its standard of humidity or if it has stains. Also it charges for the cost of transportation of the copra from the dryers to the oil-extracting plants.

The other alternative offered by the State for the commercialization of copra is the National Company for Popular Subsistence (CONASUPO). For the producers that sell copra this agency is a better alternative than the IGC as it pays immediately, although its norms of quality are more strict and it charges 100 pesos extra per each ton it receives; money that it gives to the National Union of Producers of Copra.

But for the peasants of Los Luises the nearest reception centres of CONASUPO are in Tecpan and Petatlán, hence the producer has to have money for transporting the product, and this he almost never has. Currently a reception centre of this agency is being built in San Luis San Pedro. This would mean a solution for the commercialization of copra.

However this solution leaves out the majority of the
producers who lack the resources for paying for the extraction of copra and have to sell the coconut fruit or the whole orchard in advance.

Hence the local sector of intermediaries remains necessary for the commercialization of the peasants because of the inefficacy of the official institutions in responding to the peasants' needs but also because of the lack of alternatives offered by the peasant organization.

In Los Luises there are two intermediaries of copra who buy most of the local production of coconut from which they directly extract copra and the whole production of the copra extracted by some local peasants. The coconut is bought at 450 pesos per gross, if the copra were extracted from these coconuts the peasant would get 660 pesos. The copra is bought at a price two pesos lower than the price of guarantee. According to the peasants the local intermediaries buy the copra without punishing the price for impurities, degree of humidity, etc., although they "get even" with the weight which is under-estimated.

These intermediaries sell the product to the industrial firms of the State of Mexico or to the soap manufactures of Acapulco. In Los Luises, the intermediaries are the ones that add value to the coconut, because they have to pay the costs of the harvest and those of the extraction of copra. This mechanism has been assimilated by most of the local peasants who are aware of the fact that they are benefitting the intermediary but also they are conscious of their impossibility of covering these costs and of facing the risks involved in the practice of drying the coconut in the sun in the rainy season.
As can be observed, in the way in which the producers of copra are linked to the market an essential characteristic of the process of commercialization has prevailed: the transference of economic surplus towards private, State or transnational industrial firms. One could add the fact that the official institutions have been unable to solve as a whole the problems that the peasants face in the commercialization. In their turn, the peasants, after the dissolutions of the Trading Union of Producers of Copra, have not been able to establish alternative organizations linked to the betterment of their conditions of production and trading.

Organization.

The organization of the producers of Los Luises is weak and does not deal with their production process; the only organism that has had some achievements is the National Union of Producers of Copra. However in these ejidos its representativeness is not significant as it is only related to the Comisarios Ejidales. In Los Luises, the organization of the ejido does not deal with the design of tactics and strategies for the solution of the problems of the collectivity; the Comisariados only play the role of negotiators with the official agencies. But in San Luis San Pedro, these negotiations far from favouring the collectivity, are performed in the benefit of the Comisariado and the small group of persons that support him. This ejido is submitted and manipulated by the person in charge of the Comisariado; he, a prosperous merchant in the region, has been able to become the legal representative of the ejido because of his economic and political power in the region and because of the weak organization observed within the
ejido, but not as the result of a democratic election among its members. This person has been controlling either directly or through one of his allies the post of Comisario Ejidal for nine years.

This Comisario uses his office to get official concessions for the ejido which he uses to his own benefit or as mechanisms for submitting and controlling its members. For example, he distributes the credit that BANRURAL gives to some ejidatarios only if they pay them for doing so, he uses the credit of other ejidatarios in his own production process, he is the only user of the tractors that the ejido got with credit from BANRURAL, etc. In the face of this situation, the ejidatarios maintain an attitude of passive resistance. They do not participate in the assemblies and avoid contact with the Comisario.

As far the Users Associations are concerned, these are only formal organizations which do not participate in the real distribution of the water resources. These formal organizations are submitted to the local groups of power and their Presidents are the Comisarios Ejidales. Hence, the irrigated lands are the main area over which the local intermediaries exert their power, monopolizing practically the entire irrigated production of coconut and producing commercial crops in the watered surface. This, they do with the labour force of the owners of the plots, who get alienated from their main means of production and become a sort of virtual worker in his own plot.
4.3 SAN JERÓNIMO

Description of the Case Study.

The ejido of San Jerónimo is located in the Costa Grande of Guerrero in the municipality of Benito Juárez at the 75th kilometer of the main road that runs from Acapulco to Zihuatanejo.

The ejido has an area of 3,963 has. and is bounded to the south by the ejido of Hacienda de Cabañas and the tourist resort of Pez Vela; to the north by the main road Acapulco-Zihuatanejo; to the east, by the ejido of el Tomatal and to the west, by the ejido of Los Arenales.

The population of the ejido lives in three settlements: San Jerónimo, Las Tunas and Corea. Amongst them, San Jerónimo, which also is the head of the municipality, has the largest number of inhabitants. This town is the only village in the whole municipality that boasts urbanization services. It has public lighting, and drinking water; although its facilities of drainage are partial and flow into the San Jerónimo river whose stream is used for drinkable water by the inhabitants of Las Tunas.

In San Jerónimo one finds the best health facilities of the municipality and two nursery schools, three primary schools, one secondary school, one preparatory school and a commercial school; while Las Tunas and Corea have only one primary school.

But in spite of the schools available, the sons of the ejidatarios of San Jerónimo in general do not finish their
primary education because of the need to become incorporated at an early age to the family work.

The main means of communication of the ejido is the road Acapulco-Zihuatanejo although it has unpaved municipal roads that link it to its settlements. People can be transported in buses or taxis. San Jerónimo also counts with a telephone network and with telegraphic services.

The town of San Jerónimo has 16,500 inhabitants from which around 16% are heads of family - that is there are about 2,750 families - and around 5,500 are more than fifteen years old. The main economic occupation of these people is agriculture, although some of them are employed in industry or services.

In San Jerónimo two agroindustrial plants are established: an oil extracting plant of the IGC and Calahua. Also in the town there are several repair shops, restaurants and shops that sell different products to the people of the nearby towns. Also as San Jerónimo is the head of the municipality the government employs some local natives.

However, it is estimated that the sectors of services and industry employ at the most, 30% of the active population men and women, while agriculture absorbs the rest of the economically active persons.

A great number of families of San Jerónimo live from the salary they get as daylabourers or through the work in plots of land to which they get access through different mechanisms. However in the ejido, the regional emigration trend of its inhabitants towards the nearby tourist resorts or outside of Guerrero is observed.
Legally, the ejido of San Jerónimo is formed by 584 ejidatarios, and was constituted in 1924 with an endowment of land of 2,629 has which was increased in 1947, to 3,963. From them, 43.4% can be devoted to agriculture, that is, 1,921 has and from them 80.5% are seasonal lands while the other 9.5% are irrigated lands. (table 3.3.1).

The agricultural area of San Jerónimo is very fragmented in small plots of land. On the one hand, the average size of a plot per ejidatario is 3.2 has; 1.8 has, less than the average size of the plot in the Costa Grande of Guerrero, on the other hand, and as has already been mentioned, there is a wide sector of sector of landless peasants that cannot be employed in industry or services and that get access to the land by means of their links with the families of the ejido or with the community. This access allows them to attain subsistence level but is also a factor that contributes to increase the fragmentation of the land. 1/

Next to the sector of peasants that work in “minifundios”, a reduced number of producers that have larger extensions of irrigated land can be identified. This sector gets financial aid for producing high yield products intercalated between the palm plantations.

As happens in the other ejidos, the production process on the land of San Jerónimo is subject to the structure or power that, by means of different mechanisms extracts the economic surplus generated by the work of the local peasants who become separated from their production means and are left marginalized from the benefits of their work.

1/ It was estimated that in San Jerónimo, at least 600 families that lack legal rights over the land have access to the plots of the ejido.
TABLE 4.3.1. LAND TENURE IN THE EJIDO OF SAN JERONIMO

<table>
<thead>
<tr>
<th>Number of ejidatarios</th>
<th>584</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area (has)</td>
<td>3,963</td>
</tr>
<tr>
<td>Arable Area (has)</td>
<td>3,921</td>
</tr>
<tr>
<td>Area</td>
<td></td>
</tr>
<tr>
<td>Irrigation</td>
<td>376</td>
</tr>
<tr>
<td>Seasonal</td>
<td>545</td>
</tr>
<tr>
<td>Arable</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48.4%</td>
</tr>
<tr>
<td>Seasonal</td>
<td></td>
</tr>
<tr>
<td>Arable</td>
<td>80.5%</td>
</tr>
<tr>
<td>Irrigation</td>
<td></td>
</tr>
<tr>
<td>Arable</td>
<td>19.5%</td>
</tr>
<tr>
<td>Arable Number of ejidatarios</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Source: Direct investigation.
Production.

In the ejido of San Jerónimo most of the agricultural producers are "minifundistas". The agrarian distribution that initially gave a piece of land large enough to meet the subsistence needs of the peasant family did not take into account population growth and the incapability of industry to absorb the rural manpower. Also, agricultural production in minifundios has not allowed the peasant to become normal subject of credit and has allowed financial capital to adopt the form of usurious capital and to become the most frequent mechanism of control of production of great extensions of land.

In fact, in the ejido of San Jerónimo, as well as in most of the ejidos of the region, the small producer frequently has his plot of land seized and is obliged to give the product of his harvest to those who, at a given moment, financed his consumption or production needs; to those who possess the resources to pay the costs of the harvest or to those who have the means of transport and link with the market.

In San Jerónimo the crops, in irrigated and unirrigated lands are coconut, corn, grasses, beans and rice. Also some fruits such as banana, papaya and mango are produced.

83% of the agricultural area is cultivated with palms. This amounts to 1,594 hectares. However in this area other crops are intercalated. In seasonal lands the intercalated product is corn which requires a very small investment for covering production costs but which yields only 700 to 800 kilogrammes per hectare. Also rice is cultivated on a very small scale by means of manual flooding of a small part of
the plot. On a similar scale beans are produced for the self consumption of the family.

The most profitable products are grown on irrigated lands, either alone or intercalated with coconut. These are fruits that need large investments but the production of which does not involve great risks and is very profitable. Also, the main cattle rearees of the ejido use irrigation for the cultivation of grasses they use as food for cattle.

One can observe that irrigation is a first resource that strengthens the polarization of the producers in San Jerónimo by allowing its users to increase the productivity of their land and to adopt the production of commercial products or crops that can be integrated to the production of cattle. However the introduction of irrigation infrastructure did not follow a specific program with precise objectives of benefitting a determined sector of producers. Irrigation in San Jerónimo has been used according to rules of selection of capital, which benefit most those who had a widest economic base.

Irrigation was introduced in San Jerónimo in 1977, when the building of a derivation dam was concluded. Currently the area dominated with infrastructure in San Jerónimo amounts to 1 454 has, from which only 376 can be watered. The differences between those areas can be explained by some deficiencies in the building of the infrastructure. On the one hand, part of the canals are unpaved and frequently become obstructed. On the other the channels are built at lower levels than those of the plantations; hence, for irrigating them water has to be pumped. The installation of water pumps has been done only by those who can afford it and the irrigated area is used only by 86 of the 450
registered users. 1/

But the problem apparently caused by building errors has a political antecedent. It seems that the dam was built in a hurry, to respond to the pressures exerted by the governor of Guerrero. In this hurry they built the dam without having concluded the construction project. This also caused the turnover of companies in charge of the construction of the dam.

There is no organic form of participation of the users in the operation of the dam. The formalities for the use of water are performed individually at the offices of the SARH located in Atoyac. The users who wish to use water have to go there; and from there the priorities for the utilization of irrigation are fixed. During the last two cycles corn has been the crop with the highest priority as a response to the national programmes of self sufficiency in basic foods, but normally water is destined first to fruits and grasses. Water is not given to irrigate coconut unless some other crop is cultivated on the plantation. However the fixing of these priorities is only formal, because the producers that have the money install pumps and use the water for whatever they wish to cultivate. In San Jerónimo corn is never irrigated; water is used, as always, in grasses and fruits.

In San Jerónimo as in the rest of the Costa of Guerrero, the palm yields in seasonal lands, 750 to 800 kg. of copra per ha. San Jerónimo annually produces about 1 500 tons of copra

1/ It is worth remarking that the average size of the irrigated plot in San Jerónimo is 4.3 has., that is, one ha. less than the average size of the agricultural plot per ejidatario.
which could be increased to 2,000 if the irrigation infrastructure operated at its full capacity. But in San Jerónimo the sector that has benefitted the most from irrigation are the owners of cattle.

The rearing of bovines is a generalized activity in San Jerónimo and almost all the peasants have between three and four animals of creole race that are reared on stubble. This activity represents a complement to the income of the peasants. But the activity is also performed in a large scale by a small group of cattle owners. About 90 people have more than 10 animals and four persons own more than 200 heads of zebú crossed with Dutch or Swedish cattle or thorough bred. This group feeds their animals with the grasses grown in the irrigated area in plots of their own or in the plots of other peasants. The mechanisms of control and centration of the plots are similar for this crop to those observed in the plantations of palm. Hence one can find instances of ejidatarios that besides having lost the possibility of harvesting their coconuts, have lost that of cultivating the land beneath the palms.

Cattle is mainly used for the production of milk and yields, if it is creole, 5 lt. per day; if it is crossed, 8 lt per day and if it is of pure race, 14 to 15 lt per day. Part of the milk is used for family consumption, but most of it is sent to Acapulco through a sale intermediary that buys the production of small and large producers.

Commercialization.

The way in which the producers related to the market is one of the factors that exerts more influence on the combination
of resources for reproducing the productive cycle. In San Jerónimo, as has already been said, the main product of the land is coconut, for which a local market with demand large enough to absorb local production exists but to which the small producers do not sell directly in spite of its proximity.

In San Jerónimo one finds a reception center of the CONASUPO a plant for extracting oil of IGC with an installed capacity sufficient to process 16,000 annual tons. of copra and a plant for manufacturing coconut cream, Calahua, with a processing capacity of 19,600 grosses of coconut per year which are equivalent to 560 tons. of copra. Both industrial plants buy copra or coconut in several ejidos of the region. The IGC has an area of influence that comprehends the municipalities of Petatlán, Benito Juárez and Attoyac. In regional terms Calahua has a smaller area of influence that IGC, but its influence in the production of nearby ejidos is definite.

The peasants of San Jerónimo do not have close links with the local agro-industries because of the mechanisms through which these firms buy the product and because of the obstacles placed by the moneylenders that monopolize the product.

The IGC buys the product at official guaranteed prices and through a system of coupons that in theory can be cashed a fortnight after the product is sold but that in practice, take even months. This form of payment is totally incongruent with the economic situation of the peasant, who needs the immediate satisfaction of consumption needs, which in being linked to his subsistence, cannot be deferred. One could add that the peasant of San Jerónimo needs money
resources for paying the costs of harvest and of extraction of the copra. That is, he has to pay for the tumbling of the coconut, separation from the bunch, drying, splitting of the coconut and transportation to the reception centre. Although some of these tasks can be done with family labour, some others need specialized manpower whose access for the peasant producer is restricted and very expensive, as the "jimadores" are almost always contracted by the people or the firms that buy great volumes of product.

The small producers of coconut lacks a plot large enough to obtain profits by selling his product in the market. He also lacks access to official credit and as he is subject to subsistence living conditions, he lacks resources of his own for paying the costs of the extraction of copra. Therefore, he reproduces the productive cycle up to a certain feasible point, in which he sells the product. Hence sometimes, he sells the plantation in advance getting in exchange usurious credits; other times he tumbles the coconut and sells the fruit nest in his plot and only occasionally he extracts the copra and sells it directly in the reception centres of the CONASPO or the IGC. The latter instance is the least frequent, because of impurities and inadequate humidity of the product-discounts that are arbitrarily applied as they do not obey a strict quality-control procedure- and because of the fact that the price of the copra is not an incentive for the small producer. Although the price of copra duplicated last year, the production costs for the small producer lacking economies of scale, do not let him get a significantly larger income than the one he obtains by means of the sale of the coconut fruit next to his orchard. 1/

1/ For more detailed description of the production costs and income that the peasant gets from the sales of copra or coconut, see tables 3.2.4 and 3.2.5.
As a general result, the oil extracting plant of IGC in San Jerónimo buys only a small volume of the copra produced in the ejido of San Jerónimo, which it gets from local intermediaries who buy the produce from the peasant producers.

As the intermediaries have economies of scale in the costs of the harvest and the extraction of copra, and as they can fix arbitrary prices to the orchards they have seized, they get a larger margin of profit when they sell the product to CONASUPO or IGC. However, this situation is more the exception than the rule because the intermediaries who buy the produce of San Jerónimo are mainly linked to large monopolizers of Acapulco in the chain that takes the copra of Guerrero to the industrial manufacturers of soap and oil.

This situation is an obstacle for the acquisition of copra of IGC and places this firm in a competitive process with the rest of the agents that buy this product.

In its turn, Calahua has opted for a strategy more adapted to the situation of the peasant but not less harmful than the strategies of the other agents.

The vertical integration of the productive process of Calahua with the production of coconut is disguised under a scheme of participation between the State and the peasant. This agroindustry was established with State funds which formed a society between the firm and forty ejidatarios of San Jerónimo. In the plans of constitution of Calahua, the ejidatarios would take the management of the firm, when it attained its equilibrium point. This happened one year ago and yet the participation of the ejidatarios is nought and the profits obtained are not distributed among its associates. Initially the associated ejidatarios supplied the coconut
required by the firm. However, currently, Calahua buys the coconut from plantations it selects in the ejido or in other nearby ejidos; mainly in Hacienda de Cabañas, Los Arenales, El Tomatal and Nuxco. It buys the produce of 700 has. of palm plantation.

The buyers of Calahua select the plantations and make a global negotiation with the ejidatario for the whole produce of his palms. The firm sends its crews of workers for tumbling the coconut and separating the fibre from the fruit. The ejidatario in the production process only performs the tasks of the dray and the separation of the dry leaves from the palm. The agroindustry, without having to make long term investments for the buying of land; for the cultivation of palms, that take five or six year to produce or for the installation of the irrigation infrastructure, vertically integrates its production process separating the ejidatario from his means of production. In the transaction, the ejidatario gets an immediate payment but under the same mechanism by which any other intermediary or local monopolizer extract the peasants' economic surplus.

Calahua has achieved the official institutionalization of the traditional practice of buying the produce of a plantation before the harvest although the firm is presented as modernization agent, it is adapted to the local structure and has successfully filled a place among the local sectors with economic power that control the production in the ejido.

In short, it can be observed that the link between the production of San Jerónimo and the market are formed by mechanisms that tend to perpetuate the polarization of its producers; and that the process of agroindustrialization in the ejido has not substituted the traditional forms of commercialization, but has rather been adapted to the local
structure of power whose practices it has imitated.

Organization.

The organization of the ejidatarios of San Jerónimo can be observed only in super-structural organisms in which the base does not participate. There is no organization for grouping the small producers around objectives related to the production process or strategies for increasing the autonomy of such process.

There seem to be two factors that contribute to the weak organization of the ejidatarios of San Jerónimo: the subdivision of the ejidatarios settlements into three villages and the large increase of non-ejidatarios settled in San Jerónimo. This dispersion diminishes the contact between the Comisariado Ejidal and the members of the ejido, and increases the anonymity of the small producers. This weakens the organization of the peasant family units in the larger framework of the agrarian community. Some symptoms of the dispersion are the use of irrigation that is ruled from the offices of the SARM in the district, and the lack of an organization that carries out and fights for improvements in the irrigation area.
Synthesis of the case studies: Los Luises and San Jerónimo.

In the two ejidos of the Costa Grande of Guerrero in which the case studies were made, it can be observed that the productive activity is performed in a frame of polarization of the producers. This is manifested in poles that maintain differences in the property of goods and capital and in the possibilities for access to the resources canalized by diverse institutions for supporting the local productive process. This represents a process in which both poles are opposite but complementary.

When the ejidos were established, the State had assigned to this form of tenure the role of guaranteeing the subsistence of the peasant family. For that, the plot of land should be large enough to give employment to two adults. However, as time passed by, the increase in the number of inhabitants: that the industrial sector has not been able to employ exerts increasing pressure over agricultural land. In fact, in the three ejidos the plots of land have been constantly subdivided, not legally but in practice as a large number of landless peasants get access ot a plot by means of their family links or thir relations with the agrarian communities. But one finds a sector of producers who own large extensions of land or who control, through various mechanisms the production of large extensions of agricultural land.

In this context, irrigation is an element that has contributed to the polarization of agricultural producers. Irrigation allows its users to improve the yields of their crops, to decrease the risks of loosing the harvest and to profitably use chemical inputs and mechanism in the
productive process, which also impinge upon the increase of the yields. But irrigation is a resource that has been entirely monopolized by a small number of persons, most of them being the ones that have the economical and political power in the ejidos. It can be stated that not even the reduced number of legal users have access to irrigation as autonomous producers. Although for most of the peasants of these ejidos, irrigation is a scarce resource, it has contributed to the consolidation of the productive enterprises of the small group of actual users who use it for watering the palm plantation and the fruits that intercalate between the palms.

This small group of producers is linked with the market and has its own resources of investment, that have increased with time through the appropriation of the productive resources of the ejidos and the political control that they exert over the population.

The members of this group have the possibility of functioning as monopolizers of copra or as bonds between the producers and the market. Hence, they are part of the sector that advance capital for hiring manpower and for performing the tasks of harvest of the coconut and other fruits.

As most of the producers have unpaid debts with the official bank, they lack credit lines and the harvest of the coconut is for them an economic problem. Therefore, a large number of producers sell their plantations in advance. The monopolizers offer to buy the coconut at the plot or the plantation as a whole. This implies that the producer does not need to find the money to pay the cost of labor for the realization of the harvest and the extraction of the copra.
As has already been seen the production costs of the copra do not allow the peasant to get a significantly larger income that the one they get from selling the coconut fruit at his plot. This is a factor that benefits the intermediaries who can overrun the cost by buying large volumes of product for which they have buyers.

But the lack of resources obliges many peasants to sell the product of their plantations in advance, when they need money for covering an urgent need. In the three ejidos, it is not rare to find peasants, the product of whose plantations have already been sold for three or four years in advance.

This shows the control that the traditional sector of monopolizers and intermediaries has over the production of copra and the inefficiency of the official institutions for responding to the needs of the small producer.

The delay on the payments for the product, the arbitrariness with which prices are punished, the tax charges, and so on, are factors that discourage the small producer of copra to sell his product to IGC or CONASUPO.

But behind this problem lies the scarcity of resources of the peasant producer of copra, who cannot widen his economic base while he is subjected to the power structure that extracts the economic surplus generated by his productive activity.

In the three ejidos the capital that operates in the intermediation sector can control large extensions of land without having to appear as its legal owner. This control gives rise to the separation of the peasant producer of
copra form his production means: land and water; although he maintains the image of a free producer.

In the process of extraction of surplus of the irrigated and the unirrigated production, the main beneficiaries are the industries that consume copra; they are the ones that can realize the profits of the economic surplus generated by the peasants. But in the process the intermediation chain keeps a substantial part of the surplus without practically adding any value to the product.

The IGC plays also a role in the intermediation sector. This firm adds value to the copra and manufactures oil which it sells to the cosmetics and food industry. The value that IGC adds to the copra does not revert in improvements for the peasants as their product flows to the State's industry practically through the same channels as it does to private industry.

The fact that the peasants from Los Luises and San Jerónimo do not sell to the State's agroindustries is a proof of the obstacles they place for the acquisition of copra and their inefficacy in responding to the needs of the peasantry.

Also, the fact that the reception center of CONASUPO in San Jerónimo almost only buys copra from local intermediaries makes one doubt that the reception center that currently is being installed in San Luis La Loma would solve the commercialization problem of the ejidatarios of Los Luises.

But even if some local intermediaries sell the product to IGC or CONASUPO, most of them are linked to the large monopolizers of Acapulco, and represent the first link of
commercialization chain that takes the coconut to the cosmetics and oil manufacturing firms.

Hence, the State's industries have been unable to displace a series of agents that by means of usurious credit, the harvest of coconut, the extraction of copra and the introduction of the product into the market, retain for themselves a large part of the economic surplus of the peasant's work and become the main beneficiaries of the irrigation infrastructure installed by the government.

Faced with this situation, the only space in which a strategy of peasant organization is currently manifested is in the distribution of his family work for the attainment of a level of subsistence. This strategy leads the peasant to adopt practices that at first glance may seem irrational: he sells the coconut fruit at his plot, he produces corn with very low yields, he rears cattle on stubbles, etc. However these practices are actually defense mechanisms of an economy of subsistence that is threatened by the market relationships within which it is inserted. The small producers withdraw from these relationships and limits his activities to the utilization of the resources at hand, in a framework in which, from an entrepreneurial point of view, production is not profitable and through which, the peasant can attain a subsistence level by means of the organization of his family labor.

The peasants of San Jerónimo and Los Luises reproduce their living conditions from the production of corn, that they intercalate in the seasonal plots with the coconut tree: from the sales of coconut fruit, that in many instances is done in advance and from the sales of their labor force, in the ejidos or in other productive contexts outside the
ejido or the region.

In spite of the existence of a history of peasant struggle against these traditional forms of domination, currently the organization of the producers of copra is broken and lacks special options. It can be stated that the regional incentives for production reinforce the weakening of the peasant organization and represent an extra obstacle to overcome, because they are intrinsically related to the local structures of power.
5. A COMPARATIVE ANALYSIS OF CASE STUDIES: TYPOLOGY OF PRODUCTION PROCESSES.

In this chapter, a comparative analysis will be made of the case studies. This will afford some generalization about the process of adoption of small-scale irrigation projects in the communities being studied.

The comparison of the cases will be seen from the perspective of changes appearing in the process of production, attempting to distinguish the effects of irrigation on them. That is, irrigation will be taken as co-producer of these changes, though not the principal co-producer in very case, since at times the contextual elements present a dynamic to which irrigation is subordinated without any modification.

The importance that has been given to irrigation in the agrarian policies of Mexico lies in the potential this offers for the incorporation of seasonal lands into more profitable production. These projects are evaluated by the State according to this potential. In spite of that, the process of modernization has not occurred in the expected manner. The peasantry do not always adopt irrigation in the context of incentives for products profitable in the market; and in the cases where this is the context, there is insufficient profit to begin a process of production which would enable a process of accumulation to be foreseeable. That is, the peasants have not become small-scale entrepreneurs.

It has been argued that in rural Mexico there is a process of polarization into modern and traditional sectors; and leaving on one side dichotomic theories both poles may be
seen as variations of one same process of dependent
development, and as integral parts of a global society:
poles at the same time opposite and complementary. Opposite,
because of different levels of wealth, different forms of
production, ways of making decisions for the organization of
production, lack or resources, etc. Complementary, because
to a great extent the wealth of one is a result of the
poverty of the other. We are using the concept of articulation
to make a conceptual analysis of the interrelation of
peasantry with the economy, with industry, with the modern
sector of non-agricultural production, and with the
intermediary sector. Articulation is the manifestation of
the transference of economic surplus of the peasantry to
the rest of society. The relation which enables us to
understand why peasantry is pauperized, and why it is repro-
duced as a structural necessity of the system. It is
obvious that the poles are not closed: there is a degree of
permeability. That is, there is big business that goes
bankrupt and is pauperized; and there are also peasants who
are able to bridge the gap separating them from the modern
sector, and they become prosperous businessmen. But this is
the exception not the rule.

Even though irrigation at times may not be the principal co-
producer in change, its introduction does not leave the co-
relation of forces between the adopting peasant sector and
the rest of the economy intact. Changes are produced which
may not favour the adopter. It is precisely the analysis of
those changes which will afford the direction we must take
to establish concepts at the intermediate level, between
theory and reality, to study more closely the particular
process in which the adoption of irrigation is inserted.

In this chapter we will propose an instrument at the
intermediate level, a typology which will represent the integration of the empirical evidence found in case-studies with a group of concepts enabling a number of hypotheses to be established concerning general tendencies adopted by peasant production processes wherever small-scale irrigation has been introduced. This permits observation of concrete forms of pauperization of the agrarian sector occurring when a group of peasants is given the option to gain access to irrigation as a production resource.

For the development of the typology, we referred initially to two main concepts. The first has to do with the way in which peasant economic unit makes its decisions about what, how, and how much to produce and consume. That is, its management logic, which is specific and different from the logic of enterprise, as has already been stated. Secondly, we will make use of the concept of control that contextual factors exercise over peasant production. Here we will identify the principal variables affecting the increase or decrease of control. These variables will later refer to the information in case-studies, attempting to stress the modifications that their occurrence implies for the management logic of the adopter. Finally, we will propose an approximation of an initial nature to a typology of production processes practised by peasant economy enjoying small-scale irrigation. This typology is not a finished model: its construction is based on four case-studies in Mexico. But it enables some generalization to be made, to be taken as hypotheses for future research which will hopefully provide feedback and enrich the development of the typology itself through a process of validity for the agrarian communities possessing small-scale irrigation or planning to introduce this infrastructure.
The managing logic.

By this concept we mean the rationality that guides the decisions about the production process. The logic which is intrinsically linked to the ends of the economic activity. Two types of rationality were discussed at length in the literature revive and in the conceptual framework. Here we will merely re-phrase some of their more salient features. Hence, the peasant rationality would guide all economic activities of the family unit towards the attainment of a culturally-defined subsistence level. Subsistence comprises a variety of consumption needs which cannot be reduced to the common factor on money. That is why the evaluation of the result of peasant economic activity by conventional economic analysis would yield to the discovery of systematic money losses. As such, its decisions about production are interrelated with its decisions about consumption. Peasant rationality gives rise to forms of organizing production which radically differ from organization of production in entrepreneurial units. First of all labour is the central element for organizing production: When consumption needs increase, peasant families intensify their labour until needs become satisfied; that is, until the equilibrium of subsistence is re-established. When peasant families find that their labour is affected, intensification may take the form of an increase in the area of land under cultivation. However, when land is limited, intensification of labour may imply a decreasing remuneration per unit of work. This 'self-exploitation' of peasants is taken only to the extreme of subsistence. Subsistence acts as the main incentive for peasant production. Peasant would produce in low yielding marginal lands which would never yield a remunerative harvest (monetarily speaking) but in which peasants produce at the expense of the self-exploitation of their own labour. Labour is not only
performed by members of working age: the peasant unit will use labour of children or the aged; that is, labour which would have no value in other economic contexts. Labour is intensified until subsistence is attained. Once this happens, peasants stop intensifying labour. A second issue is that related to the selection of crops and products which imply a high elasticity of labour and complex tasks for their organization. Such tasks may not have a market-value, but play an important role in the attainment of subsistence.

Directly linked to peasant rationality we find the way in which peasants internalize risks. Normally peasants would avoid the adoption of new projects, forms of production, other varieties of crops, etc., if they imply a risk to subsistence. This is because peasants are vulnerable to adverse results. Hence the persistence of traditional forms of production which have proved to be reliable over time. They would also avoid the adoption of technology if it implies the displacement of family manpower. That is, for peasants it is irrational to purposefully displace from work one family member, not only because his probabilities of finding an alternative productive employment would be low, but mainly because the objectives of the family units are first of all of the family nature, and only secondarily are they economic. The whole variety of economic activities of peasant families produces a global income, that needed to subsist; but in such an income one cannot differentiate the categories of salary and profit. First, because income cannot be measured by the common factor 'money'; and secondly, because the cost of labour does not equal its marginal productivity as labour intensification may frequently imply decreasing remuneration of work. Family members would be prompt to intensify labour in order to increase the global income, even if this implied a decrease
in the average value of their collective payment.

Peasant economies are not autarchic. They buy inputs for production or consumption goods at the market. For that, they have to pay in money. Peasants obtain money by selling some of their products in the market; but they approach the market by selling products which were not selected as a priori commodities (unless some elements of external compulsion impose the opposite). Products are selected by their role in the support of the family and the production unit. Hence, when peasants sell a crop linked to his basic diet, they won't sell the whole production at once, but prefer to sell small amounts when consumption needs so demand. Only after the product is finished is it possible to work out the amount consumed by the family and the amount sold.

In periods when more labour that that available in the family is needed, peasant economic units use the labour of other units; the payment of such labour would be treated as an exchange of equivalents. External labour may be paid in money or in product; but even when it is paid in money, such salaried relations would not be regulated by the norms of the labour market. Salary paid between peasant units is an exchange between similar units and works as a mechanism of co-operation which enables them to use labour in a more intensive fashion.

One main factor which permits the reproduction of peasant units lies in their ability to become linked to the larger framework of the community. Peasant communities are social arrangements which share a common territory and whose birthright is managed collectively. This permits a concentration of resources which in a certain way represent an
alternative to the concentration of capital needed for productive exploitation. In the framework of the community peasant, besides gaining access to a territory, find the possibility of obtaining support when the resources of some family units are more scarce and endanger the attainment of subsistence. From the community stems the cultural character of subsistence as it is this social arrangement which, by tradition, sets forth the norms for the performance of religious, ceremonial and social activities. However, communities are in no way unstratified social beings. Social stratification exist, with some families more able than others and the subordination of some families to the resources of others implying, in way, a loss of social status and the obligation to pay for the favours received. Such payment may not necessarily mean an exchange of equal goods and services: they are reciprocal exchanges and may represent payment in loyalty or in some other intangible asset. What they represent are re-distributive exchanges which give a sort of right to all members to attain subsistence. It is in this sense that relations between peasant units are considered as horizontal relations of production, as exchanges of equivalents are performed because of a process of social consensus which sets forth the social norms to impede the collapse of a family, the subsistence of which is in crisis.

A different managing logic is found in entrepreneurial units. The economic activities of agricultural entrepreneurs follow a logic different from that of peasants; they follow the rationality of the market, an economic activity is the obtention of a profit and the reproduction of capital. Such goals can be measured in a single unit: money. The economic activity of entrepreneurs deals only with production. The consumption needs of their families may be satisfied
afterwards, by using money to buy commodities. Money is then a bridge between production and consumption needs. In its accounting, an entrepreneurial unit clearly differentiates the concepts of salary, rent and profit. According to economic rationality, a monetary value can be imputed to all factors of production: labour, land and technology. Hence the introduction of new funds into the productive enterprise would be made only if an increase in marginal profit were expected. The intensification of labour would be evaluated according to its contribution to marginal profits. Labour is contracted under strictly salaried relationships and may be substituted, if legal rules so permit, flexibly, when it is convenient for the enterprise. The amount of labour would be increased or decreased in proportion to its contribution to profit. The worker in an enterprise would have to intensify his own labour to the point at which his marginal productivity were at least equal to the salary he receives.

Under economic rationality the selection of products would be made according to its remunerativeness in the market. Entrepreneurs approach the market as producers of commodities which they would not produce if market prices did not mean an incentive; that is, if they did not yield profit. As their exchanges obey market values, entrepreneurs would try to minimize costs as much as they could in order to attain competitiveness in the market.

Normally entrepreneurial units would adopt technologies intensive in capital, as this would represent the possibility of improving the productivity of land. They would tend to obtain the maximum quantity of product from a piece of land, even at the expense of displacing labour. This is because the commitment of the enterprise is limited
only to salaried relationships and the legal norms that regulate them.

The risk involved in new investments would be evaluated by rates of profit proportional to the probabilistic estimation of risk. This does not mean that entrepreneurs run no risks; or that they would assume risk with no consideration of contingencies. What it means is that economic rationality allows risks to be taken when they are evaluated as worthwhile. Entrepreneurs would try to balance the expected rates of profit with their own estimate of the risk involved.

Enterprise operates in the context of the market, and relies on the availability of capital to organize a competitive exploitation.

In México, the two types of units just described do not work independently; they are part of one single society. Both play a role in the socio-economic system which, to an extent is defined by the dynamics of this larger whole. Forces from the environment impinge upon peasant units and break the equilibrium of the organization of their production process. This breaking of the equilibrium may be manifested in several ways: 1) Peasant units may be decomposed when they lose the possibility of organizing production and have to rely on salaried work only for the satisfaction of their needs in other exploitation, either in rural or urban centres. However, this does not seem to be the main trend in México, as the majority of the rural population still obtain subsistence from their links with peasant units. Dependent development of domestic industry does not offer sufficient job opportunities to rural people. Hence, peasant economies tend to be reproduced as a
structural need of the system.

But this does not imply that the articulation of the peasant with the larger whole leaves the organization of his production intact. As they become more closely linked to the market, they enter into tight vertical social relations of production, the trend of which implies that increases in income lead to increases in the transference of surplus. Peasants then have to look for strategies which lead to increments of income with no regard for the effort in labour intensification implied by their adoption. By becoming linked to the market, subsistence stop being the limit of labour intensification, because families have to produce enough to pay the claims of different agents besides covering their subsistence needs.

The question are: who are those agents? what do they represent? and why do they hold power to extract peasant's economic surplus? In chapter two, the articulation of peasants with different sectors of the economy was explored; here its main conclusions will only be stated. Firstly, the agricultural sector is articulated to industry by means of: 1) financing its development through the generation of foreign exchange from exports; 2) supplying raw material to domestic industries at prices that mean transference of economic surplus; and 3) supplying consumer goods at prices which are undervalued and co-producers to keep at low levels the salaries of industrial workers.

Secondly, the articulation of peasants with the modern sector of agriculture can be appreciated in the market of products and labour; and the nature of the asymmetrical character of the exchange lies in the differences that occur at the level of production. Abundance of peasant
manpower and its low productivity are the basis of the mutual dependence between both poles in detriment to the peasant sector.

Thirdly, the articulation between agriculture and non-productive sectors found at the level of circulation of commodities and financing of agricultural production was explored. These intermediate sectors obtain their profits by acting as vehicles of economic transference to the detriment of the peasantry.

In short, the agents that claim economic surplus from peasants are linked with the external or domestic market; with industry and with financial or commercial capital. Their capacity to extract surplus emerges from the process of dependent development of Mexican economy, in which the development of agriculture has been subordinated to industrialization and in which modern entrepreneurs of agriculture have been encouraged and given support at the expense of peasant sectors.

Now, for the ends of this thesis we are interested in exploring which agents have intervened and through which mechanisms in the process of production supported by small-scale irrigation; what are the implications of this intervention for the internal organization of the production process and for the attainment of the objectives of the peasants; and which mechanisms of defense have been used by these peasants throughout the process.

In order to perform that task, the action of these agents will be grouped around the concept of control of the productive resources of the peasant units.
Control.

In this thesis control means the exercising of domination over peasant productive resources; control implies a restraining act, a subjection of the controlled under the authority of the controller, because the latter has the power to restrain the acts of the former.

When the degree of control over peasant resources is nil, they are autonomous; they are able to self-govern the organization of their productive process. For the purpose of this work, autonomy of peasants will be understood as their possibility to freely mobilize and manage the productive process according to their own objectives. It is worth remarking that the concept of autonony used here does not necessarily imply that management of resources is performed outside market relationships; autonomy here is used as a wider concept than the one implied by a pure peasant economy.

While the degree of control that external agents exert over the process of production increases, the space left for the adopter to mobilize and manage his resources decreases and the process of production is fitted to the objectives of the controlling parts. Hence, control is highly related to the strategies of peasants to attain subsistence and as such to the possible modifications in their managing logic.

As the peasant economies become articulated with external factors, the trend of the latter is towards control of the process of production, which itself is diminished by the peasant trend of retaining autonomy in the process of production linked to this subsistence.
There are different forces that contribute to increase the degree of control over the peasant process of production supported by irrigation, and other forces which promote his autonomy. We are interested in stressing which of these operated throughout the process, before and after the introduction of irrigation; what were the responses of the peasant economies affected by it; and how the resulting benefits flowed.

In conceptual terms we may classify such forces by their source:

a. Forces that emerge from the State's policy towards agriculture.
b. Forces that emerge from activities of bond agents or bond institutions.
c. Forces that emerge from purposeful actions of modern sectors of agricultural producers.
d. Forces that emerge from demographic dynamics.

a. State's Policy Towards Agriculture.

The agrarian policies of the State are based on two fundamental platforms. On the one hand, on the encouragement given to the foundation of entrepreneurial production units (agricultural policy) and on the other to the distribution of land (agrarian policy).

The instruments of agricultural policy are principally credit and investment, besides a series of forms of support such as guaranteed prices, fiscal subsidies, research, promotion of innovations, etc. Their application is in the hands of a large number of institutions not connected
amongst themselves, inefficient, with problems of corruption, etc. Their main aim is to obtain profit from agriculture by means of technical solutions requiring the concentration of productive resources.

In accordance with this policy and under a variety of modifications beyond the scope of this brief exposition, the State has concentrated resources for the strengthening of entrepreneurial units in the areas of greater productive potential. This is with the hope that from these poles the benefits will spread to the rest of the peasantry. Obviously this has not happened and labour has shifted from these centres towards marginal zones.

In point of fact, the technical economic model on which the State bases its agricultural policy is an entrepreneurial model. In the terms of this model, productivity implies an increase in production arriving at the market. That is, productivity must be reflected in a "profit" that guarantees the prevalence and growth of the enterprise. Under this model, all relations are subject to market exchanges: financing, sale of the product, purchase of inputs, salaries of workers, etc. The State as promoter of agricultural policy encourages and supports the units of enterprise in the country and as entrepreneur dictates the norms that produce and sell in accordance with the orientation of the global economic policy.

Thus the main tendency of the agricultural policy of the State is towards an increase in the control of the production process of the peasantry by imposing a project foreign to his objectives and possibilities. In the first place, the State regards as beneficiary of its agricultural policy the peasant who is a head of family, the particular
income of whom, the entire family is supposed to survive. Therefore it is considered that an increase in this income would be most favourable: this increase would be achieved if products were grown that are more remunerative on the market and if some tasks were mechanized. This reasoning does not take into account the fact that the income of the peasant family comes from the labour of all its members; that mechanization displaces labour and that the project as a whole may well imply a reduction in real terms of the global income of the peasant family. In effect, profit takes the place of work as a source of income. The reasoning clearly ignores landless peasants unable to benefit from the agricultural policy and faced with further reductions in their job opportunities.

Another difficult point about this model of agricultural policy lies in the increase of productivity of the land implying an increase not necessarily of the productivity of labour, which in fact can decrease to the extent that factors such as chemical inputs or mechanization intervene in production. Finally, it must be added that the technical advantages of this model are not applicable in the majority of land in Mexico.

As a consequence of the agricultural policy it is to be found that the incorporation of land to commercial production has affected the production of basic foodstuffs since 1965, and these have to be imported. It would seem that the tendency of the model is to substitute maize for a more profitable product. Success in productivity is measured through statistics which conceal and deform the picture of reality. First, because statistics do not show home-consumption, and an increase in the volume of goods reaching market may well hide a decrease in grains kept for home-
consumption. Secondly, because accounts are kept in terms of money, which hides the fact that the price of maize is kept low to subsidize urban consumers, thus representing a competitive price comparable to others.

Now, peasant production is essential since it supplies the rural milieu with basic foodstuffs, as well as many cities. This is why agricultural policy from time to time seems to foment or support growth of basic grains to avoid the crises of deficit. This for the time being may mean that the peasantry has more room to negotiate, concerning the organization of the production process.

Financing to agriculture has followed the same model as direct investment. The small percentage channelled to impoverished sectors of the peasantry is taken as a subsidy, with political motives, to control social unrest; there is no clear intention of giving support to production in the peasant sector. Credit to the country is handled with banking criteria, so priority is given to projects which are more stable in terms of profit, independently of the productivity of other factors such as land and labour.

Through credit, the State imposes its model, since the official bank not only dictates the norms for the process of production: it also hires the services or private concerns on many occasions for the realization of mechanical tasks. For the peasant, investment with borrowed money implies an enormous risk should the crop fail or if yield drops below expectations, implying subordination of productive decisions to the control of the bank.

Agricultural policy also is thought of for the benefit of entrepreneurial concerns in the choice and creation of
technology. For example, the "Green Revolution" works only on flat lands, with irrigation and large amounts of investments for the purchase of inputs.

Thus the agricultural policy leaves out landless peasants and marginal sectors; and in its search for more profitable concerns for resources of greater potential, there are serious implications for the equilibrium in the organization of family work by controlling aspects of the productive process that displace labour, affecting the choice of products and monetarizing income.

Agrarian policy has to do with the distribution of land, which is carried out through legal mechanisms and institutions charged with administration and operation. Their acts are characterized by inefficient and corrupt practices, long drawn-out procedures, full of complexities and confusions, etc. The main ends of the agrarian policy is an expression of the State project for Mexican agriculture, and its possibilities for the incorporation of the peasantry into the institutional pyramid of political power. It is directed by two criteria: 1) to maintain social stability, curbing unrest due to lack of land and 2) to give support to agricultural policy. The first criterion implies distribution of land; and the second, putting a brake on distribution and seeking forms of ownership that promote the concentration of resources.

Distribution of land implies a trasference of resources to peasants, since it makes it possible to utilize labour and retain a remuneration of this labour consisting in part of the product. Although the distribution of land does not free the peasant from his subordinated role, it does give him the possibility to continue as a peasant. Besides, the land
distributed is removed from the control of enterprise and from its possible field of future growth. The search for forms of ownership that tend to concentrate resources implies basically the control by the State through diverse institutions of a group of peasant units. These suffer the imposition of a project of organization foreign to their communal forms of exchange and which in fact represent an effort to perform profitable production on a large-scale, tending to displace labour or split the peasant economy.

Irrigation policy has similarities with agricultural policy. On the one hand, there is a move to confirm the large entrepreneurial concerns of the irrigated districts; and on the other, to install small irrigation projects in marginal communities. Sometimes it attempts to palliate and other to consolidate commercial concerns.

b. Activities of Bond Agents or Bond Institutions

In this category we include individuals and institutions which in the field of commerce and finance influence the control of peasant productive processes.

Those lands which can be incorporated into irrigation offer an attractive potential for those individuals who, in the area of commerce, are interested in placing the product of several peasant units on the market. For this purpose, production must be oriented towards practices of a commercial nature, requiring operational capital and resources that the small peasant units lack. Thus, agents of commerce invade the area of finances. Financing is short-term, of the productive cycle, enabling them to transfer to the market large significant volumes of product from small plots, without the need to tie up capital in long-term investments.
These are at the expense of the peasant and the State itself: land, irrigation, soil-improvement and agricultural machinery.

Dealings between peasants and commercial agents take different forms. Amongst them we may mention:

1) The risk or the productive enterprise is assumed by the peasant. If the harvest is lost, yield is less than projected and if the market-price drops, the peasant has to pay the debt, or agree to sell the product of later harvests.

2) The risk can be shared by the agent when a purchase contract is drawn up, guaranteeing a minimum price for the product.

3) The risk can be shared with the agent when forms of association are established whereby the operational capital is involved not as direct financing to the peasant, but in a kind of society where, it must be said, the peasant contributes the lion's share but receives the lamb's.

In every case, the agent acts as the vehicle to transfer product to market. The product is acquired at less than market price, and sometimes at a price less than the average for the country, if the level of debt of the peasant with the agent affects his negotiating power over prices or prevents him from turning to alternative sources of commerce should these exist. Thus the agent retains an amount of the peasant surplus, without the need to join-in on the productive level.

Now there are cases where the intermediary agent intervenes
in production. For example, when he buys the product before
the productive cycle is over, and assumes the tasks needed
for its completion. This he manages to do when the family
unit lacks the money to cover the costs of finishing the
cycle or when some contingency arises demanding the urgent
supply of monetary resources.

The intermediary agent may be an individual from outside the
community, or a member of the community. His sphere of
operations may be limited to that of the physical space of
just a few fields, or extend to the control of production
on large tracts of land (as in the case of neo-latifundist
financing and commerce). The functions of the intermediary
agent may be fulfilled by one or more institutions of the
State, such as in the case of BANRURAL loans which tie up
the sale of the product to a previously defined channel.
This may be an agroindustry operating in the region, seeking
to establish contracts to guarantee supplies of raw materials.
Or a broker with an interest in exporting agricultural
products, or a representative of domestic industries, etc.

The agents and institutions of intermediation link local
production through a chain of intermediaries to a variety of
outlets which transfer the peasant economic surplus towards
the urban consumer, overseas, into industry or to regional
markets. In this process, each link retains part of the
surplus.

The basis of the power of agents and institutions of
intermediation is to be found in the needs of the peasant.
Needs of resources for production, transport, storage
capacity, or lack of installations to process the product
(For example machines to remove the grains from maize, mills,
packers, graders, etc). The intermediary has these resources
the capacity for transport and storage enabling him to wait for favourable market conditions; or the capacity to introduce raw materials produced by the peasant into a process of transformation.

The agents and institutions of intermediation are able to operate within the law as mere intermediaries, but their actions can reach extremes of regional monopoly and be classified as usurious practices, coercion, and hoarding. This often leads to the establishment of a network of economic power over a large number of local peasants. And it is not infrequent to find that this economic power extends to the sphere of political control.

Thus, to a greater or lesser extent, these agents control the process of peasant production in different aspects. They can even impose norms on production through the application of specific inputs or the mechanization of certain tasks, and thus displace peasant family labour and drastically affect the organization of production. They may leave the family organization of labour intact, concentrating specifically on the aspect of the transference of product to market.

They are to be found in the intermediary sector which links peasant economy with other sectors or with the rest of society; the mechanisms of their activities tend gradually to subject the productive process to technical norms and to specific channels and commercial practices through control of the means of production. Thus the autonomy of the peasant sectors is significantly limited by their actions.
c. Purposeful Actions of the Modern Sector of Agricultural Producers.

We have already argued that peasant economies transfer surplus to the modern sector of producers through the mechanisms of market prices and by means of supplying cheap and seasonal labour to entrepreneurial units. But here we wish to distinguish a more concrete mechanism of control over peasant economies; a sort of control which involves illegal practices, and which nevertheless is generalized throughout rural Mexico. Then, we find the territorial neo-latifundism which has been super-imposed on the formal agrarian structure and represents the possibility of grouping large agricultural enterprises despite the legal limitations concerning land-ownership. The basis for territorial neo-latifundism is ownership of good quality land with irrigation offering profitable product to its owner. The earnings from this enterprise are re-invested in technological improvements; but the limitations in the size of the plot means that technical capacity surpasses the limits of exploitation. Then the enterprise begins to expand, renting nearby lands from minifundists who at moments of crisis are left without resources for the continuation of production. The process of accumulation of land on the part of the entrepreneurial unit is achieved in its turn through usurious practices; this involves the peasant in a cycle of growing indebtedness forcing him to rent his plot to the neo-latifundist and depriving himself of his means of production. This would be a form of neo-financial latifundism. Now, the neo-latifundist may not collect land to work it directly, but rather control the production of large areas of land. This he would do in the form of commercial neo-latifundism. Neo-latifundism in these cases can count on the means of access to markets and will
serve as vehicle to channel the product of a large number of small plots to market. Again, this form may gain strength through usurious practices, tying up the sale of the peasants' crop for the future, or even imposing norms for production enabling them to ear-mark product of homogeneous quality.

The result is practically the same as that of territorial neo-latifundism. The space for peasant decisions about what, how and how much to produce and sell; and about what, and how much to consume, is gradually limited. His indebtedness with the neo-latifundist grows, and the deterioration of his standard of living worsens.

Now, for the neo-latifundist the possibility of incorporating large quantities of product imply access to better market conditions; the possibility of a greater and more efficient use of productive elements; and consequently the obtention of profit out of all proportion to the size of the productive enterprise of its nuclear territory. In this context, neo-latifundism is primarily interested in bringing under its control the best lands of the vicinity, i.e. the most productive, and of these, lands with irrigation, since this offers the possibility of benefitting from State investment without needing to tie-up capital an investments on the long-term.

The very base of neo-latifundism is peasant poverty and frequent crises of subsistence.

d. Peasant Organization

Links between peasant organization and production may be considered at three levels. The first refers to internal
organization of peasant family members for the productive process linked to their subsistence. This has been elaborated upon extensively throughout various parts of this thesis. Suffice it to say here that this organization, repeating, has as basic characteristic autonomy in the organization of resources of the unit in the productive process; and to the extent that this prevails, tends, to remove productive resources from the control of external agents.

The second level would be that of the community where, as has also been repeated already, there is a tendency for symmetrical relations of production to prevail, with the main idea of providing every member of this social situation with the possibility of meeting subsistence needs with resources controlled by the community: mainly lands, and with it products of nature and irrigation water.

The third level is apparent in the links between peasant economy with external forces. Here participation in an organization linked to economic activity enables the peasant to increase his capacity for bargaining and maneuvering with individuals or institutions. We refer, for example, to strategies of collective commercialization of local production, to joint purchase of inputs in the market, to group negotiations with State institutions (credit, commerce, agrarian distribution, installation of irrigation, etc), to the establishment of collective contracts with agents or institutions for conditions favourable to large groups of peasant, and to forms of self-organization in the adoption of modernization projects for the forms of production, given priority over organizational forms imposed by agents of modernization, etc.
These organizations contribute to the maintenance of autonomy of the peasant over his productive process and to a diminished degree of control over productive resources on the part of external agents, and hopefully to an improvement in living conditions for participants.

e. Demographic Dynamics.

Here we refer basically to the impact of population growth of the organization of labour in peasant communities. As has been mentioned, the special rationality of the peasant leads him to utilize labour from his family in productive tasks within his economic unit. On the other hand, community norms tend to redistribute access to resources for production. When these resources are limited, population growth causes on the one hand fragmentation of the plots to a degree that not only prevents the adoption of profitable production, but also, increases the fragility of the peasant economy; since increase in consumption needs implies a relative decrease in the means of production for the families of the community. This leads to the detriment of the global level of subsistence.

Peasant units begin to supplement their income by exporting labour to other productive areas, thus helping to swell the ranks of the urban marginally employed.

Social discontent and conflicts arising among this peasant mass, the subsistence of which is threatened, is manifested in invasions of land, stealing water, etc... The State may try to mitigate this situation by means of subsidies with which it can control conflict for short periods of time. But the loss of autonomy for the attainment of subsistence
levels impinges upon the break-down of peasant economic units.

The variables intervening in the control of productive processes amongst the peasantry may be synthesized in the following table:

**FIGURE 5.1 CONTROL AND ITS INTERVENING VARIABLES**

<table>
<thead>
<tr>
<th>AUTONOMY</th>
<th>DEGREE OF CONTROL</th>
<th>COMPLETE CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>State subsidies and endowments of land and water to peasant sectors</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>State programs of modernization of agriculture</td>
<td>+</td>
</tr>
<tr>
<td>-</td>
<td>Actions of bond agents and institutions</td>
<td>+</td>
</tr>
<tr>
<td>-</td>
<td>Neo-latifundio (Territorial)</td>
<td>+</td>
</tr>
<tr>
<td>+</td>
<td>Peasant Organization</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>Population growth added to constant levels of the material base for producing</td>
<td>+</td>
</tr>
</tbody>
</table>
The concepts of "managing logic" and "control" will now be used to analyze the case-studies. The comparison of these will be based on their reference to the variables of control and form these, we will mention peasant strategies to organize production and repercussions in managing logic. On this basis, modifications in the organization of peasant productive process before and after the introduction of irrigation will be reconstructed through the intervention of the diverse factors that have intervened to a greater or lesser extent in the control of peasant productive resource in the case-studies. It is worth mentioning that the reference to variables in the case-studies is made in an attempt to respect the point in time; so the same variable may appear several times throughout the description.

Amatzinac.

Managing Logic: - At the first stage following agrarian distribution irrigation was not an important element in the organization of production since the infrastructure of canals was practically destroyed and represented a marginal element in peasant production. Family units, upon resuming control of lands which for years had been in the hands of the hacienda, re-organized work for production. The objective was to produce maize and some fruit for domestic consumption. But this re-organization was not made through a scheme of self-sufficiency, due mainly to the fact that with the armed movement of 1910 – 18 the population had been weakened; labour was scarce; and peasants lacked resources save their own labour and their newly acquired land. Thus from the start, the process of peasant production required the introduction of outside energy which in its turn implies the subjection to the control of external agents of part of
production. Now, these elements of control may be summarized as follows:

**Actions of the State:** The first factor, though it be the one the effects of which are felt later, paradoxically is the agrarian distribution itself, carrying out a project to super-impose on traditional forms of community land-ownership the _ejido_ and small property. This weakened the traditional institutional expression of the communities (the _mayordomias_) giving authority in its place to the representatives to the State: the _Comisarios Ejidales_. It is probable that initially this factor did not have a clear defined impact on the peasant productive process, since the number of peasants was small and agrarian distribution meant a hay-day for peasant production which for years had not even existed. Nevertheless, the part played at this stage consisted in strengthening and to a certain degree legitimizing the acts of local agents tending to control the peasant productive process. This takes us then to the second factor of control.

**Actions of bond-agents:** In Amatzinac, from the last days of the revolutionary movement can be observed the emergence of individuals who, whilst being members of the community, had a leaning towards the outside. This was because their preparation enabled them to speak the language of the bureaucracy and direct peasant agrarian demands towards official institutions in charge of distribution of land and water, an ability lacking among local revolutionary leaders. The actions of these individuals were thus acceptable in the eyes of the local peasants, and they became agents for land distribution. In the process, they began to keep for themselves the best irrigated lands; and they acquired recognition from the institutional political system later.
being nominated local representatives to the State, that is *Comisarios Ejidales*. But their importance went beyond the limits of political-institutional representation and extended to the economic-productive sphere since they counted on the resources that the peasant lacked: draft animals and corn. Probably, in absolute terms, their wealth was not great; but in the prevalent conditions of local scarcity they were the only ones in a position to carry out the cycle of maize production. As has been mentioned, the peasant lacked sufficient labour and seeds to begin production. The agents of distribution then re-established in a modified guise the *aparcería* of the Hacienda and began supplying animals and seed on credit. This form of financing was payable in kind at the end of the productive cycle. These agents thus gradually took over the product of a large number of local family units. They gradually became local *caciques* and their exchanges with peasants gradually became more unbalanced. The more the peasant needed 'help', the greater were the claims on his loyalty, his resources and his labour.

Peasant production was forced to intensify the use of resources to cover subsistence of family and produce a surplus great enough to pay the credit. As debts multiplied, some families began cultivating rice and wheat on a small scale on small plots that they could irrigate. The peasants with no such resources grew peanut. For the first crop, the peasant borrowed money from a private money-lender; and for peanut the money came from local monopolizers of this product. Money obtained from the sale of wheat and rice was used almost entirely to pay debts; whilst the product of peanut harvest was given, again almost in its entirety, to the monopolizer. That is, the cultivation of these crops did not give the peasant any surplus, but allowed him to obtain resources in advance to cover consumption needs of his family when his stock of maize was low, without the need to
further increase his debts with the caciques who monopolized maize. Thus, he was able to maintain a balance between the claims of the caciques for this staple grain and the needs of family consumption. At the first stage, peasant production was organized around this balance; but as time went by, this was broken by the intervention of a third factor:

**Demographic Dynamics:** From 1940 till 1960, the population of the East of Morelos increased by 40%. This meant a gradual but considerable increase in the consumption needs of the peasant units which were forced to re-establish volumes of production at ever-higher levels. If to this is added the cycle of growing debt in which the peasant found himself, to the benefit of the caciques, we can see the key to a re-formulation of the decisions of peasant units concerning how much and how to produce. They had to produce more, and the first answer to this need was seen in the disappearance of the traditional practice of letting some of his lands rest for each productive cycle. This decision, very close to the formula of Chayanov (1974) concerning the behaviour of peasant economies, had a significant impact in Amatzinac on the organization of peasant production. By cultivating the entire arable land, the fertility of the soil soon fell and the need arose to re-establish it by using chemical fertilizers. At the same time, lands used for pasture were cultivated and cattle moved to more distant lands. Animal work became scarce, leaving the way open to the introduction of tractors. The global effect of this process was the gradual monetarization of the productive process. Fertilizers and tractor rental was paid in money. Finance, in money, had to be procured. At the same time, debts could not be paid in kind, so production in one way or another had to think of the market. In this way, the organization of peasant production underwent a radical
change. The need arose to adopt modernizing elements in production, amongst them irrigation.

The State's Actions: Water was distributed with the same criterion as for agrarian distribution and on unfair terms. At first, this did not alter the organization of labour in the peasant family; but after 1940, its effects are noted to a greater extent since global scarcity becomes a meaningful bottle-neck for the reproduction of the productive cycle of peasant units. These felt an increasing need to adopt modernizing elements into production. These new elements introduced into peasant forms of production helped to increase dependence on money for the reproduction of the productive cycle. This resulted in an increase in the control exerted over production by the different agents providing this resource. In fact, as will be seen in the ensuing paragraphs, in this process the activities of new agents were established, along with new forms of control over production; but as a general theme in this process we find the prevalence of peasant rationality through the adoption of strategies linked to the re-establishment of the balance of their production tied to subsistence.

Actions of Intermediary Agents: Towards the fifties, one can note the presence in the region of agents, mostly of commerce, with an interest in the cultivation of vegetables in the region. Their interest lies in transporting the product to urban centres, mainly to Mexico City but also to Cuautla and Puebla. They contacted local money-lenders and promoted the channeling of credit towards this crop. For the peasants, the adoption of the growing of vegetables was intended to obtain money so much needed for the purchase of fertilizer and for the rent of tractors. By that time, maize no longer gave good yields without fertilizer. This
input was indispensable if production were to cover the needs of family consumption, and payment of part of the product to the cacique. Tasks performed by members from outside the family unit, previously paid in grain, were now paid in money since payment in kind implied a decrease in the supply of maize for the family, and a growing dependence on the consumption of market goods affecting subsistence needs. Nevertheless, it is worth insisting that these payments in money still mean symmetrical exchanges which helped to intensify work at peak periods of the productive cycle.

Thus the peasant adopted the cultivation of vegetables with the intention of re-establishing the increasingly more difficult equilibrium of their levels of subsistence. But, just as in the case of the cultivation of peanut and wheat, the product was barely sufficient to meet financing, which in part went to the production costs of vegetables and in part to production costs of maize or consumption needs. This was possible mainly because the highest cost for the cultivation of vegetable is labour, the only resource which peasant families had in abundant supply. Thus vegetables offered an alternative to intensify the use of family labour and re-establish, to their cost, the deteriorated level of subsistence. Moreover, this behaviour was consistent with the logic of peasant management.

Despite this strategy, a physical limit was encountered: the limited supply of water. The supply of water for Amatzinac was insufficient to grow vegetables throughout the arable land. Only 11% of the surface can be irrigated. Thus, vegetables were grown in minute plots mostly in the hands of ejidatarios and on irrigated areas of considerably greater extension. These were in the hands of entrepreneurs of the former hacienda, who managed to establish high-yielding units
around these products. Now, owing to their speculative nature, the growth of vegetables offers a high risk for the producer. This risk was absorbed totally by the peasant, since if the price was not remunerative, he was unable to sell the product, and had to pay off his debt with the money-lender. Thus, failure was absorbed by them. Nevertheless, the peasant had no alternative, since although it threatened his subsistence, at the same time if offered him the best alternative to use his labour and consequently reach an equilibrium in subsistence.

Also, in seasonal lands new forms of control appeared over production. These were exercised through:

**Actions of the State:** - Also around the fifties, the official bank began large-scale promotion of the cultivation of sorghum. This offered competition for maize since it is a seasonal crop grown in similar conditions. The promotion of this crop followed a global policy of intensifying cattle-rearing, to be used as the main input for the manufacture of balanced food. This promotion reached the seasonal lands of the East of Morelos. The official bank offered credit to the peasants, partly in cash and partly in kind (improved seeds, fertilizer and weed-killer mostly). The peasant used this credit for the production of the crop, but also some went to his maize production or to consumer needs. The bank sent machinery to harvest the crop and gave to the peasant an income equivalent to the value of production minus the amount financed, which on many occasions resulted in a negative balance. Thus the peasant began a cycle of growing indebtedness to the bank, which, following programs for the production of this crop, continued to loan or suspend credit to the peasants with debts.
Since this crop uses seasonal lands, maize was gradually replaced until the area devoted to maize was reduced to a minimum needed for family consumption.

**Actions of Intermediary Agents:** Both the presence of agents with an interest in the promotion of the growing of vegetables and the promotion of the cultivation of sorghum by the official bank gradually displaced the *caciques* engaged in the monopoly of maize. They gradually weakened the basis of their power, making way for agents began to control some Comisariados Ejidales and Municipal Presidencies of the region. The adoption of sorghum and of vegetables is based on inputs which to a certain extent has implied the modernization of peasant forms of production. At the same time, the production of vegetables has led to an intensive use of the totality of the water resources of the stream of the Amatzinac, which occurs in an atmosphere of conflict in the area. The analysis of this conflict leads us thus to a more detailed consideration of the other factor influencing the process of peasant production.

**Peasant Organization:** A guiding-line in the analysis of this variable in the Amatzinac is without doubt the use of water. As has been said, distribution is not done fairly. Nevertheless, in the general terms of the organization of peasant production, this represents an indispensable resource, defining the limits of the peasant production of vegetables. The waters of the Amatzinac serve 6 towns of the seasonal zone, all competing for the use. The regulation of the use of this resource does not follow the legal specifications concerning distribution. The water is stolen, diverted, stop-valves are destroyed and the towns reach no agreement concerning the use. The quantity of water each town is able to use depends both on the geographical
position (the higher up the town, the more water obtained) and on the organization of the inhabitants into watchmen who not infrequently have violent clashes with those of other towns. Nevertheless, within the communities the mechanisms for the re-distribution of water mostly obey community norms. Water within the communities is a resource regulated by its network of relations. Thus, the users are not only those registered on the State rolls. Access to water is given to members of the family or the members of the community who, by belonging to the organization have traditional rights to obtain subsistence from local resources. That is, not only water is re-distributed: land is also given out. This demonstrates the prevalence of community norms which enable peasant units to obtain subsistence from the land they share. Peasant organization acts as an element giving greater degrees of freedom to the communities in the control of water resources, and consequently to obtain more bargaining-power in the organization of their productive process. Although this has allowed the strengthening of the communities, it also brings about a gradual division of lands. This leads us to the next element.

Demographic Dynamic:— Population growth implies a growing demand for resources. Peasant families have an ever-decreasing amount of land and water to satisfy subsistence needs, apart from ever-increasing consumer needs. This gradually threatens the obtention of subsistence levels. The peasant faces a process of deterioration of living conditions increased by his growing need to supply consumption needs with manufactured products purchased with money.

In summary, up to now the agriculture of the region has been based, in irrigated lands, on vegetables and small fruit orchards; and in seasonal lands, on peanuts, sorghum, corn
and beans. The agents that increasingly control production through asymmetrical social relationships extract the economic surplus of the peasants. Their actions are reduced to the spheres of financing and circulation of commodities. However, by being vehicles that transfer peasant economic surplus, they keep for themselves a substantial portion of it.

Bond-agents and Institutions:— The wealthiest in the village finance vegetables and confirm their position as bond-agents with the market. The risks involved in the speculative market are assumed by the peasants. It is they who are ruined when market prices collapse. But the bond-agents are the ones who benefit most from an unexpected rise in prices. They transfer the economic surplus generated by the peasants' work to the urban consumer or industries, since they are the first link of the chain connecting local production with its final destination.

The monopolizers of peanut still monopolize harvest in small areas, and extract a substantial portion of the economic surplus which they transfer to the toasteries, packing or manufacturing firms of candies.

BANRURAL gives subventions for the production of sorghum, helping to broaden the management space of the peasant in the production of other products. But the main beneficiaries of this subvention are the firms that manufacture balanced food for cattle. The largest amount of the peasant surplus is transferred to these firms. Hence, through this mechanism, the State subsidies mainly benefit the industry.

Managing Logic:— In the face of vertical and asymmetrical social relations of production with bond-agents and bond
institutions, peasant units adopt strategies that imply the intensification of their labour and of the use of their productive resources: land and water. But in spite of the large variety of products that go to the market, peasants still produce crops whose only use is home-consumption: beans, corn and fruit. These they can produce with the resources they divert from the financing of market produce. By doing so, they look for the equilibrium between labour and subsistence; but for the attainment of this equilibrium they have had to adopt technologies that imply modernization of their forms of production and which involve substantial risks for subsistence. However, they are the only feasible alternative to intensify productive resources for survival.

In this strategy for subsisting, the peasant organizes his family labour and mobilizes the resources he gets from the production of some crops for the financing of others. But the mobilization of these resources is not entirely free because it has to be adjusted to the use of certain inputs. His subsistence is based on the production of corn and on the obtention of money which he uses for the acquisition of market goods which are indispensable for his subsistence.

But the achievement of subsistence does not take place in a balanced framework; there is a process of gradual deterioration of levels, which is the result of extracting surplus, and of population growth that contributes to the increasing fragmentation of the plots of land.

The lack of alternative sources of employment has forced the peasant to absorb the whole weight of the population growth without any increase in their productive resources and by facing a complex network of mechanism of control. They have
been able to do so because some communitarian norms of redistribution of local resources have prevailed. These norms have permitted the landless peasant to gain access to the means of production. But although these norms help to maintain the autonomy of the local natives as a whole, they also operate against the reproduction of their standards of living and contribute to the gradual sharpening of conflicts over the use of water between the villages.

The process of adoption of irrigation in the Amatzinac has resulted in a diversification of crops and an increase in the volume of production in the region. But it has led to the organization of a productive process linked to subsistence in a framework of redistributive relationships at the inside of the communities which, given the population growth, increase the relative scarcity of land and water and sharpen social conflict. The economic surplus generated by peasant production is increasingly extracted from the region by the diverse bond-agents who gradually have more control over the local process of production.

The observed trend in the process of adoption of irrigation is towards the formation of infra-subsistence economies with the consequent aggravation of the local social conflicts. Although the emigration of peasants from Amatzinac is not yet a frequent phenomenon, most probably it will be if the current situation prevails.

Atlacahualoya

Previous to the introduction of irrigation into Atlacahualoya (1974) the ejido members produced mainly maize, sorghum and peanut. Due to the favourable characteristics of the
climate and of the soil and the average size of the plots, yields for maize were sufficient to cover the needs of family consumption and to produce a small surplus for sale in local markets. A small group of ejido members were also able to grow some products in the irrigated zone of the Jaguey basin. These included rice, wheat and courgette. Some was for family consumption, and the rest was sold in local markets close to the nucleus. Production was effected almost entirely with family labour, the main objective being subsistence. When the productive cycle so required, labour was sought in other units, paid in money or maize, through exchange of equivalents, since the work on another family's unit was compensated later by work form another unit. Subsistence needs were met through self-supply of grains, and partly by the purchase of merchandise in local markets (mainly Cuautla) or in small stalls within the ejido. Atlacahualoya was an ejido already involved in mercantile relations, both because of its proximity to towns which are market centres in the region and because of the existence of small-scale commercial activity within the ejido arising from manufactured goods made by inhabitants, mostly processed foods, bottled drinks and alcohol. In this way, peasants were linked to the market; in the exchange they appeared as sellers of goods, the selection of which did not obey greater or lesser profit in the market, but rather strategies to achieve family upkeep. Within this strategy there was a need to obtain money for consumer goods on the market. This money was obtained mostly from the production of peanut and sorghum with the intervention of two intermediary elements: peanut monopolizers and BANRURAL.

**Actions of Bond Agents and Institutions:** Because of their precedence in time, we must recognize first the regional monopolizers of peanut. This crop was produced in the spring
summer cycle, over about a half of the arable land. For the ejido member, production had as main objective the obtention of money resources needed for subsistence. These were obtained before beginning the productive cycle through loans at double interest, afforded by peanut monopolizers and payable in kind at the end of the harvest. Payment of debts absorbed practically the whole of the peanut crop. That is, the ejido member was left with no surplus from this crop. The surplus was retained by the monopolizers who took part of the crop to candy factories and the rest to markets outside the region. Nevertheless, the activity had a rationality for the ejido member. Although he recognized the subordinate nature of his relation with the monopolizers, he was allowed access to money needed for consumer needs.

The production of sorghum, in its turn, was financed by the official bank. For years this institution had provided credit for the production of maize, with the aim of supporting production and influence the application of some chemical inputs which guaranteed greater yield. Towards the end of the sixties, the bank stopped credit to the ejido for maize, and began promoting the cultivation of sorghum. This then took over part of the area previously sown with maize in Atlacahualoya. Credit obtained for the growing of sorghum was in part diverted for the production of maize; and from the crop of sorghum sufficient surplus was obtained weather permitting, to pay back the credit and obtain a monetary income. Of course, when yields were poor some ejido members became indebted to the bank and lost the possibility of obtaining finance, or were forced to accumulate debts for later harvests.

Thus, the ejido members were able to establish an equilibrium for the achievement of subsistence through the usage of their
resources of land and water combined with outside resources coming from the official bank and the peanut monopolizers. These, in their turn, imposed relations of exchange that were asymmetrical and unfavourable.

Organization:— The ejido of Atlacahualoya already meant an institutional expression of the local peasant community. The representatives of the ejido were elected by the floor, and acted as representatives to the State agencies for matters relating to agrarian distribution and credit, basically, and also for the provision of services such as education. All owner of plots of land were also members of the ejido even though some of their lands might be classified as small property. As time went by, the sons of peasants with no land-deeds gradually obtained access to land through the sub-division of the plots of parents, through the renting of land from widows with sons too young to work, or through the establishment of agreements of medieria or terceria where the owner of the plot joined resources with the peasant and divided the global income in kind.

Actions of the State:— Agrarian distribution in Atlacahualoya was the material base which allowed the achievement of subsistence. The difference in the size of the plots distributed are not very significant. Nevertheless, they represent a first difference in the social stratification of the inhabitants. As time went by, they enabled those with greater areas to acquire agricultural machinery and perform commercial activities through the establishment of stalls in the town. They were also able to demand credit from private banks. Nevertheless, this social stratification so far has not represented an element of control of any great significance over local production.
Around the seventies, State programs again began to influence the ejido through the installation of twelve deep wells. This followed a global project of strengthening productive areas in places where a high degree of potential to increase productivity was possible, but which could not use irrigation from large dams. By 1976, infrastructure for irrigation was sufficient to accommodate 70% of arable land. Irrigated lands on average were from 3 to 3.5 hectares. Wells were sunk to serve a compact area. Canals were designed in such a way that should one well break down, another could help out. To date, the water-table is sufficient to irrigate the area served by the canals.

Irrigation for the peasants of Atlacahualoya was the first element to increase their bargaining power in the productive process; it opened the road to a modernization of their productive behaviour. This did not jeopardize the achievement of subsistence, since it was used to uphold the cultivation of maize and peanut of spring-summer (seghum was grown on seasonal lands). It enabled productive projects to be developed for the autumn-winter cycle. Through these projects they were introduced to a process of mercantilization of their product. In this process, several agents have intervened through various mechanisms. But, before analyzing the impact of these on the organization of family labour and on the channelling of the transference of the peasant economic surplus, it is convenient to return to an important factor affecting the intervention of these agents.

Peasant Organization: Before the beginning of the construction of wells, we can detect an organized process of representation of the ejido to the SARH for the installation of irrigation. Peasants understood the advantages of its use
both from experiences with irrigation from the Jaguey basin as from experiences they could observe in the region. In the East of Morelos, cultivation of vegetables was already widespread. It was well-known locally that this could lead to an important source of increase of income. When the Water Resources Secretariat (SARH) began promoting the construction of wells, and ad-hoc organization was already there to assist in the canalization of work. The organization of a Water Committee was no problem for the government promoters. In point of fact, this organization went beyond the expectations of the institution and proposed its own project for organization refusing to split into independent organization for the distribution of water resources at each well. This, which at first sight may seem trivial, has had important repercussions for the strengthening of community norms to give access to the use of water to the members of the community with no legal right to its usage; and for the regulation of decisions concerning production and commerce affecting the inhabitants as a whole. This is a factor that, as will later be seen, has directly influenced the organization of local productive processes and the development of strategies to jointly counter balance the actions of external agents affecting the process and who submit the peasantry to relations of production characterized by the extraction of economic surplus.

Bond Agents and Institutions:— Precisely the cycle previous to the beginning of operations in the wells, an intermediary institution of the State made its appearance: National Promoter of Seeds (PRONASE). This had a negative effect on the balance of peasant production by promoting the cultivation of an improved strain of maize. Adoption of this strain led to failure practically on a general scale among the peasants since the harvest was lost. This adoption of
seed finds no apparent logical explanation in peasant rationality. This implied the acceptance of a risk which jeopardized subsistence. Nevertheless, this risk was taken, creating a crisis for its own achievement. It could be speculated that, by that time, the peasants wanted to try out new methods enabling them to increase their global income. This crisis in subsistence left the peasants with no resources to begin the next productive cycle with irrigation. This cycle was implemented by an external agent who rented the land to cultivate onions. During this cycle the peasant saw his hopes of autonomous production disappearing, and was obliged to seed the satisfaction of his most immediate needs with money obtained from the rent of his lands, from the wage earned working on his own land, and from usurious loans from the peanut monopolizer.

During the next cycle, the group of peasants with most resources managed to resume production by signing a purchase agreement promoted by the government of the State of Morelos for the Emiliano Zapata Ejido Union. Finance was provided by BANRURAL. Other ejido members grew onions with finance from a commercial agent, and even the poorest worked some lots.

Since then, the process was instigated whereby peasant production in the autumn-winter cycle began to be organised on market lines. The introduction of small-scale irrigation was the deciding factor for the total and almost overnight adoption of forms of production based on the use of chemical inputs. The pattern of adoption was varied, with the fundamental characteristic of an intensive use of labour. Thus, labour which previously would be exchanged between local peasant units began to be hired under salaried conditions. Peasants from other localities in the region
came to Atlacahualoya to sow and harvest vegetables, since local labour was insufficient to carry out these tasks. This process of adoption was no longer guided by the goal of achieving a subsistence level. This was now guaranteed by seasonal production. Objectives were now related to the utilization of opportunities to raise that level. But, although the adoption of this crop responded to incentives special to local peasants, familiar with regional experiences of vegetable-growing and aware that good profits were to be made when prices were favourable, the presence of commercial capital interested in placing the production of vegetables on the market definitely contributed to the adoption of the production in the ejido. At different moments and in the plots of various peasants, one finds the intervention of:

a. Agents that rent the land for money and who directly produce. In these instances the peasant hires himself as day-labourer of the lessee and becomes alienated from his means of production. The norms for producing obey the entrepreneurial logic of the external agent.

b. Agents that finance the production of the peasants. The latter acquire the commitment of selling their produce to the agents. In these instances, when the market price relatively high, the agent is the main beneficiary of production, as he is the one who takes it to the market. The peasants, meanwhile, receives an income which varies with the conditions obtained in the transaction with the money-lender. But when the price of the market collapses the peasant does not have any return for his productive enterprise, because for the bond-agent it is not profitable to take the local production into market. Hence, the main risk of the enterprise is taken by the peasant.
c. Agents who buy the orchards and assume the costs of harvest, selection and transportation of the produce. Under this mechanism, the peasant receives an income larger than the expenditure he has incurred in the planting and raising of the orchard; but, on average, the buyer receives more profit by selling the product at the market than the income obtained by the peasant.

d. Agents that are linked to foreign industries or with the export market, and who establish contracts for buying local products. These contracts serve as a mechanism for transferring the peasant surplus abroad. But they help the peasant to obtain a relatively secure income and to have access to favourable conditions of financing, the amount of which is enough to cover the costs of the inputs bought in the market. All these help the peasant to influently mobilize the external energy that the process of production requires.

Now, faced with the actions of these agents, the peasants have replied by seeking to increase their negotiating capacity concerning local productive processes. This leads us to the factor of:

**Peasant Organization:** In its relations to the process of production of vegetables, mainly onions, peasant organization has operated on two fronts. On the one hand, on the improvement of conditions in the purchasing contract. Through the promotion of the government of the State, this is drawn up between the peasants belonging to the Emiliano Zapata Ejido Union and diverse agents. These contracts, which as has been seen in the description of the case-studies initially left all the risk of the productive enterprise in the hands of the peasants, have gradually
changed their terms. Financing now covers production costs in money, and minimum purchase prices guarantee the recovery of investment. Thus, the main risk left to the peasant, albeit high, is within his capabilities since it consists in the provision of labour.

On the other hand, peasant organization has acted to involve the greatest possible number of members in the purchase contracts for onions, especially since the terms of these contracts enable peasants participating in them to increase their income. This has been carried out by regulating the use of water for different crops. Also, the ejido has intervened in the drawing up of contracts preventing negotiations being made on an individual basis. Although not every ejidatario is able to benefit from these contracts, the peasant organization designs long-term strategies to this end. But the peasant organization of Atlacahualoya still has serious internal problems to solve relating precisely to cohesion before implementing middle-term projects which could imply sacrificing income on the short term.

It is worth pointing out that the existence of an active democratic peasant organization connected to the economic activities in the ejido does not imply that this occurs in a homogeneous community. Atlacahualoya is a stratified community linked with a dominant system which tends to reproduce and increase social strafication. But in the ejido the group with most economic resources has not controlled local production. It is a fact that they have organised their productive activities in agreement with majority decisions, although in their formulation these members represent the oposition.
But, despite the organization the reproduction of the product cycle in the *ejido* depends on links with the rest of the economy. In Atlacahualoya, irrigation agriculture is practised in a process ruled by two opposite forces: vertical relationships of production govern the obtention of resources and sale of produce, whilst horizontal relations prevail in community strategies to manage and regain control over the production process. Here it is worth remarking that peasants in Atlacahualoya who hire labour from outside the community start to submit peasant labour to asymmetrical exchanges that benefit the peasant producer. But peasants become incorporated into modern production without definitely stopping being peasants, as they become inserted into the process with their own model of organization. However, for the insertion they have to pay the cost of asymmetrical relationships.

**Bond Agents:** Bond-Agents control diverse aspects of the process of production of the peasants of Atlacahualoya by means of mechanisms that represent an asymmetrical and unfavourable relationship for the peasants. This is so because through such mechanisms flow the economic surplus that cannot be retained for local or regional capitalization. But in this case-study, the part of the economic surplus which has been kept locally since the introduction of irrigation has enabled the levels of income of the local peasants to increase. Certainly, these benefits have not been equitatively distributed among the members of the ejido. They have been distributed in the framework of a stratified community. But even the peasants having the smallest resources have been able to increase their income by means of the possibility of selling their orchards.
Managing Logic:— The surplus that these peasants have been able to keep for themselves is not enough for their introduction into entrepreneurial production; but is enough to enable them to work in a surplus economy leading to the betterment of their conditions of living and production.

This retention of surplus is not fortuitous. Rather it is the result of the internal organization of the ejido members the democratic and active nature of which has enabled them to employ the local resources for production in an orderly and re-distributive way within the agrarian community.

It has also enable them to start a learning process related to the management of the different contextual factors that channel resources to the process of production in the ejido. That is, over the years they have been able to increase their bargaining capacity and to incorporate an increasing number of peasants into favourable conditions of financing and trading. In this way, they have been able to begin to balance the control that the bond-agents exert upon the production process while gaining autonomy in the mobilization and management of the productive resources.

When the peasants lack resources for starting the productive cycle, the degree of control of the bond-agents increases. But in later cycles this control tends to decrease when the productive strategy of the peasant is able to obtain resources from other sources. A co-producer of the success of this strategy lies in the fact that the peasants have secured their self-consumption of corn.

In Atlahualoya, the production of crops for family-use (corn and beans) is carried out in an autonomous fashion.
When the peasants get no income from the production of other crops they at least can cover their basic needs for food. Also, the production of semi-irrigated peanut from self-produced seeds and with family labour gives the peasant access to money resources offered by the monopolizer of peanut. Although this implies total control over the production of peanut by the monopolizer, it also offers the peasant the possibility of diverting money to cover some consumption needs and to produce vegetables. This gives the peasants some degree of freedom to assume the risks involved in production, which takes place on a speculative market.

Other factors co-related with the success of that strategy are the diversification of production; the material-base of land and water which is enough to give productive employment to all heads of family in the ejido and the peasant organization which is still ruled by norms of re-distribution of the communitarian resources.

In short, the process of adoption of irrigation observed in Atlacahualoya departed from a system of organization of production of a peasant economy, the relative autonomy of which enabled the peasant to obtain and re-produce a level of living. This economy envolved towards a process of production, the surplus of which is partly retained by the peasants who have been able to regain, keep and, in some instances, increase their autonomy over the management of the different resources on which their production depends. The ejido member of Atlacahualoya has intensified the use of labour to an extent beyond the equilibrium of subsistence, although he cannot reproduce his investment and obtain profit because, due to the asymmetrical relations with the outside, the renumeration of his work is still given in decreasing terms. In this sense, one cannot speak of the
prevalence of a market-economy mentality among the *ejido* members (although small entrepreneurial units can be detected amongst the three or four peasants with most resources). What can be observed is that for the intensification of work there is no search for a relatively stable subsistence level; instead a level of income is sought which represents a shift in the cultural level of subsistence.

San Luis San Pedro and San Luis La Loma

Even before irrigation was introduced into the Lujes, in 1951, the whole region of the coast of Guerrero was practically isolated, since it lacked the infrastructure of paved roads. At the same time, public services such as drinking water, drainage and electricity had practically not reached the towns in this area. Despite this, the greater volume of regional production was linked to industry. In the Lujes, production was of maize, *ajonjoli* and coconut. Maize was destined for family consumption, whilst *ajonjoli* and coconut were sold to local intermediaries who in their turn took the product to factories of oil and soap, and to food-processing industries of the State of Mexico. The larger part of arable land has been used for many decades for the coconut plantations. This crop began to assume importance in Mexico after the Second World War. National domestic and transnational industry use copra as raw material. With the increase of the importance of copra on the market, Los Lujes saw the growth of phenomenon generalized throughout the coast of Guerrero. This was a tendency to control the production of copra in the region and throughout the *ejidos* of this study with roots in the nature of the agrarian distribution.
Actions of the State:—Land distribution in the *ejidos* of Los Luises followed no equitave criterion. Formal figures for land-ownership enable us to detect a large number of *ejido* members with minute plots of land, compared with very small numbers of legal owners with large areas of land. These differences enable us to distinguish a perfectly clear local stratification between prosperous concerns of large producers, compared with peasant concerns absorbing a little of the population growth dividing up plots of land. They were forced to supplement their income by exporting labour to the large concerns of the region. As time went by, the polarization of the agricultural producers became more acute. Added to the differences of resources and consumer needs, we find the actions of the sector of large producers.

**Neo-Latifundio** In San Luis San Pedro, the large local producers began to extend their activities towards the lands of the *minifundio*, by means of usurious practices. Large producers loaned money to needy peasants on the condition that harvest would be sold to him. The peasant began a spiral of increasing debts with his copra plantation mortgaged for several future cycles. His only opportunity to organize his work was in the production of maize spaced between the palm-trees. For the *neo-latifundist* this guaranteed that the plantation would be cared for and clean. For the *ejido* member, this was the only opportunity to obtain an income from his productive resources since the copra he harvested was handed over en bloc to the money-lender. For the peasant, his plantation represented a mere asset to accumulate more debts, and in this manner become more alienated from his principal productive resource: his palm trees.

In San Luis La Loma the process of submission to the *neo-
latifundio showed a small variant. Here, neo-latifundism extended its power though the commercial field; and through the same usurious mechanisms was able to concentrate local production of copra and arbitrarily deform the price structure of local producers.

The neo-latifundists were the link with industries from the State of Mexico. The surplus of the palm-plantations of the Coast was transferred to them, with some portion in the hands of the intermediation agent who widened his base to the detriment of the peasant sector. This process of polarization occurred in an atmosphere of conflict and violent repression. The neo-latifundists, besides using their economic power, utilized violent methods of control supported and legitimized within the political institutional apparatus which allowed them to widen the arena of control beyond the limits of economic activity.

Precisely in the year when the diversion of the waters of the San Luis river went into operation, the ejidos saw the beginning of a social movement reflecting a similar process at a regional level. The effects of this were to temporarily split the power of the regional neo-latifundist, and along with it that of the caciques of the Luises.

Actions of the State:- In 1951, the government of the State of Guerrero imposed a tax on the coconut plantations. This decree caused small and large copra producers to react to their threatened interests forming a union to oppose the project, the Regional Union of Producers of Copra (RUPC). This organization managed to have the tax removed, negotiating in its place the payment of a tax on volumes of production. Although this tax still meant an economic burden the peasant accepted it because it offered flexibility to
pay less when harvest was bad. The RUPC was co-opted by the State. After several years, in 1955, the conflict between large an small producers once again erupted in the heart of the union, which split.

Peasant Organization:- In 1957 the small producers of copra formed the Trade Union of Producers of Copra (TUPC) which arose with a concrete program of joint trading of peasants production. This organization, just as the RUPC, reached regional dimensions. Here the ejido members of the Luises, especially those of La Loma, participated actively, even at the level of regional leadership for the Coast of Guerrero. The TUPC was an organization that managemed to shatter neolatifundio throughout the Coast.

The first victory of the TUPC was to arrange for the State to channel part of the special tax on copra production into a project for joint trading. Contact was then made with the industries that purchase copra and contracts were draw up. With funds obtained from operations, the palm plantations of some peasants began a strategy of freeing themselves from the control of the neolatifundist. This was achieved by the payment of debts, thus attracting widespread adherence from small-scale copra producers throughout the Coast who see in the organization the opportunity to regain control over production on their palm plantations. But at the same time they invited strong opposition from the large producers who saw their interests affected. The latter persuaded the purchasing industries to cancel contracts with the TUPC. After many vicissitudes, and after overcoming diverse obstacles, the produce of the copra-producing peasants was channeled into outside markets. The industries facing short supply over this cycle re-established contracts with the TUPC and the organization was strengthened as a viable
alternative for the small-scale copra producer to trade with. At the same time, the peasant was able to increase his income considerably without intensifying work. But triumph over neo-latifundism was short-lived since the TUPC began to undergo a process of co-option on the part of the State, and of internal corruption which led it to lose face before the peasant base. It was dissolved in 1961 amidst general conflict in the region. This was controlled by the State and repressed to the last consequences, leaving local peasant organization completely broken. This was partially diverted into guerilla bands, but to date has not affected again the construction of joint strategies connected with economic activities of local peasants.

**Actions of the State:** Irrigation in the Luises went into operation in 1951. It was a factor which contributed to the polarization of local producers since it was monopolized by neo-latifundio. Only in exceptional cases during the period of TUPC ascendancy (1957-1960) did neo-latifundio not benefit from irrigation through monopoly of production. It is partially due to this that the irrigation infrastructure was never used in an organized way. The Users' Associations have been mere rubber-stamps, and the canals never received the necessary upkeep. The canals gradually silted up till the network became practically unusable. Recently repairs were carried out and in 1981 the ejido irrigated 703 has., approximately 9% of the land under cultivation. Both ejidos used land that had previously been under direct control of the neo-latifundist.

**Actions of the neo-latifundist:** With irrigation, the large producers increased the yield of the watered palm plantation and applied some fertilizer. However, irrigation did not influence the adoption of modern forms of production of
coconut trees. Palms are not replaced, pests are not exterminated, species are not improved, etc. The production of copra has increased by extending the area under cultivation and not by increasing the productivity of the soil. Recently, large producers have adopted the production of fruits that they inter-space between the palm-trees. The cultivation of such fruits offers substantial profits to the modern sector of agricultural producers, but requires large investments which peasants lack. A large number of peasants lack even the resources needed for the completion of the cycle of production of copra. With the growth of the population, the plots of the peasants have been fragmented. Thus, a group of minifundists has arisen. For this group, it is not profitable to remove the coconut from the trees and extract the copra. As has already been seen, production costs of copra do not allow the peasant to obtain a significantly larger income than the one they earn from selling the coconut fruit at their lot. This is a factor that benefits the intermediaries who can reduce costs by buying large volumes of product for which they have buyers.

The minifundist sector inter-space corn in the palm plantation. Their subsistence is then attained by means of family-consumption of corn, and the income obtained from the sales of the coconut fruit. But this strategy does not yield enough income to cover consumption needs, and they are forced to export labour from the family unit to the enterprise of the large producers, to other regions of the country or abroad. They are also obliged to seek usurious credit. Although this credit enables the peasant to meet his immediate needs, it means tighter control of the usurer over peasant production. At the same time, lack of resources forces many peasants to sell the product of their plantations in advance, when they need money to meet urgent needs.
In the three *ejidos*, it is not rare to find peasants who have already sold the produce of their plantations for three or four years in advance.

One finds that the peasant production of coconut is linked to the rest of the economy through land *neo-latifundio*. This transfers the economic surplus of the peasant towards the national or transnational industries; or towards the agro-industries of the State that manufacture coconut oil and which are themselves agents that transfer surplus to the same industries.

**Actions of the State:** The process of agro-industrialization promoted by the State on the Coast of Guerrero in the mid-seventies follows the general strategy of regional investments undertaken as a consequence of the social conflict at the beginning of the sixties. In one decade, roads were cut, schools were built, as well as warehouses for the storage of grain (CONASUPO) or coffee (IMECAFE), coffee-processors, etc. As for copra, a plant was opened for the extraction of coconut oil with sufficient capacity to process the whole of the production of copra from the Coast of Guerrero. The value added to the copra is not converted into improvements for the peasants. Production flows into the State agro-industries along practically the same lines as to private industry. That is, the *neo-latifundist* relation of domination over the peasant has not been destroyed. The Guerrero Copra Industry (IGC) acts as just another buyer for the *ejido* members of the Luises whilst the power of the *neo-latifundistas* is based on financial dealings.

On the Coast of Guerrero a process can be observed of competition for the acquisition of copra, between the *neo*-
latifundist, or between agents linked to industries desirous of receiving the product directly. The IGC, by fixing a guaranteed price, has regulated the arbitrary nature of price policy imposed by the local oligarchy in this process. But the guaranteed price is followed by the neo-latifundists up to a point, because the system of payments of the IGC implies delays which the peasants cannot absorb due to the urgency of their consumer needs.

Intermediary Institutions:-- The CONASUPO would be another institution purchasing copra at guaranteed prices. At present there is a warehouse of this institution under construction in the Louises. Nevertheless, the arbitrary manner in which the norms for quality control are applied throughout the Coast disuade the peasant from selling produce. The real price after deductions have been imposed is less than that offered by the monopolizers. The CONASUPO is a vehicle to transfer the economic surplus of the locality directly to transnational capital selling the copra at the same guaranteed price.

Actions of the State:-- The existence of guaranteed prices, despite the problems mentioned, increases the bargaining capacity of the peasant, even if his land is mortgaged. Nevertheless, it means a stimulus for the large neo-latifundist. Since production costs are calculated for the worst conditions, greater profits are offered to those who can reduce costs; that is, to those who extract copra in large volumes and can develop large-scale economies for the tumbling, splitting and drying of coconut; and in the extraction of copra.

In this way, the peasant sector has been alienated from these incentives. More is obtained from the sale of the
coconut fruit or that of the whole plantation on the trees
than the income which would be received from the sale of
copra.

Managing logic:— Faced with this situation, the only space
in which a strategy of peasant organization is currently
manifested in in the distribution of family labour for the
attainment of a level of subsistence. This strategy leads
the peasant to adopt practices that at first glance may
seem irrational: he sells the coconut fruit at his plot of
land, he produces corn interspersed among the palm trees
with very low yields, he rears cattle on stubble, etc...
However, these practices are actually defense mechanisms
of an economy of subsistence threatened by the market
relationships within which it is inserted. The small
producer withdraws from these relationships and limits his
activities to the utilization of the resources at hand. From
an entrepreneurial point of view, this framework of
production is not profitable, but it is through this that
the peasant can attain subsistence level by organizing
family labour.

The sectors of large-scale producers in their activities as
bond-agents, besides keeping for themselves a large portion
of peasant economic surplus, carry out production that
enables them to make profits without modernizing production,
Rather, they extract cheap labour from the peasant units,
respond to official incentives for production, and above all
exert control over the production of coconut on the plots of
the ejidatarios.

In the course of time, the production of coconut in the
Luises has followed a path that led to the establishment of
entrepreneurial units that produce fruit interspersed among
the palm trees. At the same time, neo-latifundists derive profit from their links with the production of coconut fruit in peasant economic units. The latter are adversely affected, exporting labour in increasing amounts, and by the deterioration of their living conditions. Irrigation is only one factor that has helped to reinforce this process, but no the deciding factor (Figure 4.6).

San Jerónimo

In the ejido of San Jerónimo, the factors influencing the process of production with irrigation are very similar to those analysed in the Luises. Just as in that case, San Jerónimo has differences in the government distribution of land; just as in that case, large areas of palm groves are in the control of neo-latifundist copra production; and just as in that case, peasant organization for the elaboration of joint strategies linked to production was dispersed at the beginning of the sixties.

In San Jerónimo, the action of State agro-industries, the IGC, is even more evident than in the terms described for the case of the Luises. The plant is found on the edge of the ejido town, and even so the small peasant does not sell directly but rather through the structure of local neo-latifundism.

In San Jerónimo, there is only one basic variant compared to the Luises, and this is due to the actions of the following sector:

The Actions of the State:—The State's agro-industry, Calahua, has incorporated into its process of industrialization
of coconut a group of *ejido* members from San Jerónimo, who sell to the firm the entire produce of their plantations before the coconuts are felled. That is, the agro-industry has vertically integrated its process of manufacturing cream of coconut, without having to tie capital in long-term investments in the buying of land and the establishment of plantations. The industry fells the coconut from the trees of the *ejido* members and transports the product to its installations that are located in the town of the *ejido*. In this way, it incorporates into its industrial process the group of peasants that sells it the product. This group has passed from the control of the *neo-latifundist* to the control of the State's agro-industry that keeps for itself the main surplus of the peasant production.

As in the case of the Luises, irrigation in San Jerónimo is a resource that has only reinforced a situation of domination over the peasant producer of copra.

**Typology**

From the analysis of the information from the case-studies, in accordance with the variables influencing a process of production linked to a greater or lesser extent to irrigation, and in accordance with a managing logic guiding the adoption of strategies for organizing the economic activities of the agricultural producers in the communities under study, four types of "economies" may be distinguished arising directly from the case-studies.

In the Amatzinac the variables which have influenced the gradual loss of control over the productive process performed by the peasant communities of the region may be summarized as:
1) influence of intermediation agents and institutions which extract increasingly greater amounts of economic surplus produced in the local centre of production; 2) The adoption of modern forms of production which introduces the peasant units into a process of monetarization to meet production and consumption needs; and 3) local population growth added to a constant material base of local resources for production, which after re-distribution on community norms implies a relative decrease of resources for the production of local peasant organization for autonomy of local productive processes. The managing logic special to the peasant units guides the organizational strategy of the productive process towards an intensification of labour to find subsistence and the re-distribution of land and water resources within the communities. Objectives are never reached due to the growing demands on local economic surplus by external agents and institutions implying a growing impoverishment of local peasantry. Thus, a first type arising from this case in the "economy of infra-subsistence". Within this group are to be found communities whose peasant units produce under a minifundist regime, on good quality land with some irrigation and with climatic conditions favourable for high-yield crops to be channeled to market. In these communities, there is no tendency to export labour to the outside, but rather there is a tendency to absorb growing labour-force by gradually subdividing the plots of land, strengthening the minifundist scheme. Their links with the market are through intermediation agents and institutions of the middle sector representing finance and commercial capital both private and State. These agents directly influence the selection of crops for cultivation to be produced in the community. At times they even impose norms for productive modes. Their production and consumption are increasingly dependent on
monetary transactions, except for the production of maize for home-consumption which manages to keep a degree of relative autonomy. That is, the organization of labour tends to be more intensive in the diversity of productive projects adopted as strategies to free from the control of external agents the food supply. These strategies are designed in accordance with a peasant rationality which has as its objective the attainment of subsistence through an intensification of labour. But the demands of the intermediation agents and institutions on the economic surplus and the growing miniminjio gradually lessen the income that peasants can withhold and along with it their standards of living. In the relation between peasant units, there is a prevalence of communitarian norms, enabling access to the scarce productive resources to be re-distributed. But the community lacks any institutional expression. On top of the social system of the community, the institutional structure of the State is super-imposed. Representatives of this are linked with the interests of intermediary agents and institutions. This contributes to the exercise of economic power over the peasantry extending to the sphere of political control. Within the community are to be observed conflicts arising mostly from the daily fight against the crisis of subsistence. This arises both from the existing lack of resources and from relations of production with the outside. These tend to extract economic surplus in ever-increasing amounts, resulting in the gradual impoverishment of family units.

In Atlocahualoya, the main element influencing the control of the local production processes in the presence of intermediation agents. Their actions are managed through the peasant organization linked to production and commerce and the actions of the State concerning agrarian distribution.
and the furnishing of irrigation infrastructure. This provides degrees of freedom to manage the organization of the productive process in a relatively autonomous fashion. The managing logic guiding the productive strategies of producers in Atlacahuatoloya has shifted from the objective of meeting subsistence needs to that of improving standards of living. In general terms this does not offer every peasant profitable production in terms of profit and re-production of capital (a process to be observed only in the cases of two or three local producers) but provides an introduction to the second type, which we will here call "surplus economy".

In this type will be included communities whose peasant units produce on medium sized plots of land with irrigation, with good-quality soil and favourable climate and conditions for high-yield production per unit of area. The strategies of organization of labour enable subsistence to be guaranteed for the family unit beginning to guide their productive activity by the objective of improving their living conditions. The community has an institutional expression and leaders are representatives of the interests of the inhabitants. Thus, in the productive activities community norms prevail, in the exchange of labour between family units and in the access to productive resources of the members of the community. Except for the production of maize, which remains linked to the needs of family-consumption, production is inserted in the market and the choice of products obeys these incentives. As such, they are affected by market fluctuations. But links with the market are not direct. This is performed through the intermediation agent operating from the middle sector through financing and commerce. They extract local economic surplus which they transfer to other sectors. But the
process of extraction of surplus is limited by the capacity for bargaining and negotiation of local producers. This capacity arises on the one hand from the fact that subsistence is kept in balance; and on the other, from the peasant organization linked to economic activities through the adoption of strategies for joint trading, regulation of local production and negotiations with State institutions. In this manner they are able to manage the financing from outside at a point of equilibrium which does not insert them into a spiral of growing debt. They win a degree of freedom to protect the attainment of subsistence and the retention of part of the economic surplus enabling them to raise the global amount of their income. That is, the peasants begin a process of retention of part of their surplus enabling them to reproduce living conditions at a higher subsistence level. The reproduction of their productive cycle depends on the obtaining of resources through asymmetrical relations implying transference of surplus. However, the peasant is thus able to retain a space for negotiating and managing conditions of exchange, retaining a growing amount of surplus created by his production.

In the three case-studies of the Coast of Guerrero, neo-latifundismo and the actions of the State gradually establish a process of definite polarization of the agricultural producers emphasized by irrigation. This process of polarization is aggravated by the tight control of neo-latifundismo (territorial and commercial). Through mechanisms of usury and monopoly, these control the production of large areas of land, separating the peasant sector from their means of production. Neo-latifundismo extracts the economic surplus from the palm-groves of the peasants. The labour of the ejido members is used through salaried relations implying the extraction of surplus.
Peasants, on being separated from their means of production, seek subsistence through limited production of maize with low yields and largely the exportation of labour to neolatifundist enterprises, to nearby tourist centres, and outside the region altogether. In the Luises, this leads to the type, which we will here call "peasant economy of decomposition".

In this type we find agricultural communities polarized from within. Minifundist producers are in the hands of the neolatifundist (territorial). This control is further accentuated by the insertion of the small producers into a cycle of growing debt, separating them from their means of production. The neolatifundist monopolizes local production and transfers it to market. Thus, this form of dominium affects production, financing and commerce. Profits are obtained both from links with the market and from the utilization of the means of production and labour of the small peasant. The neolatifundist is linked with the State institutions of local representation, legitimizing the political power exercised over the peasantry. Attempts by peasant organization to free themselves from this control repressed and broken by the neolatifundist and by the State itself. Agricultural lands in these communities may well not possess favourable conditions for production throughout, but the best lands with irrigation and the lands largest in area belong to the nuclear territory of the neolatifundist. It is from here that mechanisms of control are exercised.

The peasant units seek the attainment of subsistence through the production of maize for their own use. But the main source of income arises from salary. That is, the peasant units export labour to the lands of large producers or outside the community. But salary here is still an integral
part of global income linked to subsistence needs of the family. In this manner, salary does not imply the total proletarization of local peasantry since subsistence is still linked to the family nucleus even though this be through the production of maize alone. The community has no institutional expression and its form is gradually weakened. This is in spite of the persistence of norms for the distribution of land especially within a family or closest ties.

In San Jerónimo, as in the Luises, the presence of the neolatifundist is to be observed and the peasant economy in decomposition are to be observed. But within the impoverished peasant sector, we find a sector directly subordinated to the actions of the State agro-industry. This is the origin of the fourth type, the "appointed economy".

In this type, we find groups of family units, which can be the whole of the community of a sector of this. Production has the basic characteristic of being vertically integrated into a process of transformation implemented by an outside agent.

This agency may be located near the community or outside, even in distant places, but productive norms are thereby imposed, transformed by the monopoly into a process of agro-industrialization. Precisely, some of the tasks of the productive cycle may be implemented by agents of the agro-industry. The peasant is separated from his means of production, since he loses the choice of decisions regarding organization and even performance of the productive process. The agro-industry may influence the area of finance, providing in advance the operating capital needed to carry out the productive process. This capital is
recovered in the short-term and manufacturing activities are thus integrated with production of raw materials without the necessity of tying up capital in long-term investments for the purchase of land, soil improvements, irrigation infrastructure, etc. The peasant is still the legal owner of the land, but in point of fact becomes a virtual wage earner of the agro-industry. The flow of economic surplus of the peasant is transferred to society through the agro-industry which obtains profit by placing production on the market and lowering the cost of raw material obtained without intermediaries. That part of the economic surplus normally retained by the intermediary sector is absorbed by the agro-industry and is shown as part of global profits.

The peasant units are separated from the community arrangement whose norms are gradually weakened. Links to the land continue through the tasks imposed by the agro-industry and on occasions through the prevalence of production of maize for self-consumption. Income received as salary from the agro-industry may be less, greater or the same as that needed for subsistence. On this will hinge the export of labour to other productive contexts. But, in general, this income does not compensate the ground-rent since the agreement with the agro-industry is established under the appearance of leaving the peasant as a producer, although he loses his condition as a free organizer of the flow of energy of the productive process. The peasant becomes a resource defined from the outside. The agro-industry may be private or State, but this form of domination becomes a modality that the State promotes in development programs for the land. This modality is, moreover, constant in the tendency to support the industrial sector to the detriment of the agricultural sector. The agro-industries of the State may give the appearance of being institutions created for
the participation of the peasant and for his benefit. But, in general, the State administrators kill that idea and operate divorced from the needs of the peasant who does not benefit from the profits. The controlling agents or institutions impose norms for producing and selling; and through them flow the transference of economic surplus generated by their productive activity.

The four types (infrasubsistence economy, surplus economy, peasant economy in decomposition and appointed economy) are real types in the sense that they emerge directly from the case-studies. As such, their validity at the moment is reduced to case-studies in this research. But the potential for generalization of the agricultural communities in Mexico with small-scale irrigation lies in the instrumental nature of the types for the guidance of later research. Precisely, the typology already foresees a middle-range theoretical instrument between theory and reality, since its structuring arose from a research process which goes from theory to field-observations and back again to the theory through a process of inquiry which enabled us to integrate the evidence of field-work into themes and patterns of behaviour through their reference to the theoretic concepts. But the typology is still a long way from being a finished model. The possible combinations of a conceptual nature in the variables of control and the managing logic of the recipients of irrigation may give rise to new types, to the enrichment of those already defined or to the re-definition of some of them. By way of illustration, in conceptual terms we could think of two more types. The first would be the peasant economy as such, formed by family units, autonomous, designing their productive process with a pure peasant rationality. Here, contacts with the market would be of a limited nature and the principal exchanges would take place
towards the centre of the agricultural community. Inhabitants would reproduce living conditions at a level of subsistence dictated by cultural norms and biological needs. Transactions in money would be scarce and relations with the market would be through outside agents. These would transfer part of the economic surplus, but the community as a whole would not be dependent on commercial relations. An example of this type would be the "quasi tribal system" described by Nash ( ) for the indigenous communities of Mexico.

The second type occurring in conceptual terms would be that of an economy of small entrepreneurs of the farmer type. They guide their activities by the objective of maximizing profit and reproducing their investment. For this end, they will manage productive resources and commercial mechanisms in accordance with the norms of a free market.

Another potential implicit in the typology lies in the possibility use by the institutions charged with the implementation of small-scale irrigation programs or other programs linked with agricultural production. The types found in this research invalidate the implicit hypothesis that these programs would lead the adopting peasant units to a process of transition towards entrepreneurial economies. That is, they invalidate the dichotonic thesis of rural development accompanying the conception of these programs. Although the typology may not give recipes of what to do, it does underline the importance of starting from the managing logic of the peasants and search for forms of intervention which, instead of reinforcing mechanisms of control over peasant production, will seek alternatives to strengthen autonomy. This will enable the benefits of the program to be retained at least in increasing proportions in the communities supposedly being developed.
This implies the adoption of a concept of development which considers polarization and articulation as existant phenomena. This structural reality forms the basis for the very conception of investment channeled to the country.

This typology is the result of a process of field-research. This could represent potential for peasant organizations which could take it up as document experience to support their designing of strategies. Nevertheless, this potential is very much restricted by the difficulties inherent in its dissemination.
CONCLUSIONS.

This thesis dealt with four case studies of peasant communities which have small irrigation infrastructure.

The research included a permanent revision of theoretical material (chapter 1). Such material was subjected to a process of referral to the empirical evidence found in the fieldwork. At some point during the fieldwork, a conceptual framework was structured which served to provide an explanatory content to the field information and to integrate the themes that emerged from the settings (chapter 2).

Concepts from different trends of thought were included in the framework, but its kernel is mainly derived from the campesinist tendency. Peasantry is viewed as a sui-generis system of production with a specific rationality. Peasant rationality guides productive decisions for the obtention of subsistence level, which is culturally defined and which cannot be measured by the common factor of money. Peasant economic units are seen as parts of a larger and dominant socioeconomic system to which they are subordinated. Relations of domination were explained by the concept of articulation which is manifested by the asymmetry of exchanges with the larger system to the detriment of the peasants. Such exchanges imply transfers of economic surplus of peasants to the rest of society by means of the intervention of agents and institutions; the mechanisms of operation of which tend to increase polarization between peasant producers and between agriculture and other sectors of society.

The issue of modernization of dichotomic thesis was dropped. Instead, polarization was seen as the manifestation of the dependent development of national economy which tends to reproduce it as a structural need.
The case studies gave some insights about the change of the productive process in which peasants engage when irrigation becomes a productive resource. In this process, many factors intervene; among them, irrigation is only a co-producer in some instances more significant than in others.

In the case studies of the East of Morelos, irrigation was adopted by the local peasant economies, while in the cases in the Costa Grande of Guerrero, the use of irrigation was mainly concentrated by the local neocolonial elites.

In the cases where the adopters are the peasants, the process of production suffers a series of significant changes: it is inserted in the market through bond agents who demand the economic surplus generated by irrigated production. The peasant response in both cases is different. In the Amatzinac, peasants retracted to the objective of subsistence as a sort of defense mechanism. They design complex strategies of organization of their labor based on the adoption of crops for the market. The only benefits that peasants obtain from such strategies are the maintenance of the autonomy of production of maize—their basic food, and the possibility of obtaining the monetary resources needed for covering scanty needs of consumption. The main effect is the gradual pauperization of peasants and the increasing extraction of economic surplus. (chapter 3.2).

In Atlacahualoya, peasants adopt irrigation in crops linked to the market. Bond agents extract increasing amounts of economic surplus, but their control over the local productive process is counterbalanced by a process of peasant organization linked to strategies of collective trade and of regulation of production with irrigation. These strategies permit the peasants to obtain more degrees of freedom to bargain and to manage the control exerted by bond agents. Peasants in Atlacahualoya guide their
productive activities by the objective of improving their level of subsistence. (chapter 3.3).

In the case studies of the Costa Grande of Guerrero a structure of neolatifundio controls the productive process of local peasants. The irrigation has been a factor which has helped to reinforce the power of this structure of domination.

Peasants from Los Luises are increasingly separated from their means of production. An instance of peasant organization to become free from the control of local neolatifundists was soon broken and the neolatifundio regained control over local production. Peasant subsistence increasingly depends on usurious credit, exportation of labor and the production of low yielding maize for self-consumption. The neolatifundio monopolizes production and transfers it to industry. The agroindustrialization promoted by the State has not been able to break such structure of power which partly functions as intermediary between the local peasant economies and the industrial plant. (chapter 4.2).

In San Jerónimo a sector of peasants has been shifted from the control of the local neolatifundio to the control of one State agroindustrial plant. The plant vertically integrates the production of the raw materials with its process of manufacturing, keeping for itself the surplus normally retained by sectors of intermediation. Peasants become virtual salaried workers of the agroindustry and lose the possibility of freely organizing the energy flow of the production process of their land. (chapter 4.3).

Once the case studies had been described, a comparative analysis was presented on chapter 5. For the performance of such analysis two main concepts were taken. The managing logic of the peasant economies and the control that contextual factors exert upon peasant production. Six
main variables intervene in the concept of control: 1) State subsidies and endowments of land and water to peasant sectors; 2) State programs of modernization of agriculture; 3) Actions of bond agents and bond institutions; 4) Neolatifundio; 5) Peasant organization and 6) Population growth. From them, the first and the fifth tend to decrease the control of external agents over the production process while the others operate in the opposite way.

Such concepts were used in the analysis of each case. Then, the comparisons became implicit in the referral of the information of each case to common variables. Four types of economies were extracted: infrasubsistence economic, surplus economy, peasant economy of decomposition and appointed economy (chapter 7).

The communities studied have evolved from peasant economic units to one of the four types. This process has happened in different periods of time. In the process, irrigation has played a role sometimes significant and sometimes marginal. However it has not played the role expected by the institution in charge of the small scale irrigation program. That is, their legal users have neither become small entrepreneurs nor have they obtained profits from their production. And least of all, the surplus generated by irrigation in agriculture has neither been kept in the communities nor used for their own development.

The typology permits us to pinpoint the particular ways in which process of production supported by irrigation lead to a differentiation of peasant producers. Sometimes this implies the relative betterment of their conditions of living (surplus economy); but mostly it implies their gradual pauperization.

Types are "real". They emerge from the four case studies but they represent an instrument for generating general hypothesis about agrarian
communities which enjoy small scale irrigation in Mexico. These hypothesis may then guide further research.

The typology is a middle range theoretical instrument and as such has a potential for guiding further research along more concrete concepts. The case studies are examples of the transition of the local process of production after the introduction of irrigation. However, these examples are not enough to illustrate all the alternatives of the production process implicit in the variables; neither are they enough to show all the variables that intervene in the transition of one peasant economy to one of the types. The typology is not a finished model. An attempt of operationalization should be made in order to make it more potent; such an attempt involves in itself a whole process of inquiry which lies beyond the limits of this work.

Some main general conclusions can be derived from this research:

It can be stated that the degree to which the process of production of the peasants in the communities under study is articulated with its context is closely related to the institutions and agents who, by means of different mechanisms, impinge upon and even determine the productive process observed in a community.

Those agents and institutions present the incentives or the restrictions for the adoption of a process based on new forms of production; and they are the ones that delineate the productive trends that pave the way for the transition from traditional forms of production to forms of production based on cash crops and linked to the market. In this transition irrigation is a necessary factor. However the dynamics and direction of the transition are determined by the institutions and agents of the dominant system, whose interests subordinate the direct action of the program of small scale irrigation.
BIBLIOGRAPHY


______, 1979 "La explotación del Campesino por el Capital" Ed.-Macehual, México.


CIDIA, Centro de Investigaciones Agrarias, 1970, "Estructura Agraria y Desarrollo Agrícola en México" CIDIA (3 vol)

CEPAL, 1981, "Economía Campesina y Agricultura Empresarial", (mimeo)


COPRA, undated, Revista de la Universidad Autónoma de Guerrero, (fotocopies).

Díaz Polanco H., 1975, "Teoría Marxista de la Economía Campesina" FCE, México


______, undated, "Technology and Peasant Production. Reflections on a Global Study" Biblioteca del Cieglo de México (mimeo)


______, 1975 ed. "Los Problemas de la Organización Campesin-
na" Seminario sobre Organización Campesina y Desarrollo Agroindustrial, Oaxtepec Morelos) ed. Campesina, México


Rodríguez O., 1980; "La Teoría del Subdesarrollo de la CEPAL CEPAL", Siglo XXI, México.


Samir Amin, 1975, "La Cuestión Campesina y el Capitalismo" ed. Nuestro Tiempo, México.


________, 1972, "Sociología y Subdesarrollo" Nuestro Tiempo, México.

Szekely M.E., 1974, "Estrategias de Inversión en el Medio Rural" SOP, (fotocopias), México.


____, 1975, "Producción y población Campesina", Comunidad, Num. 54, nov., México.

____, 1976, "...Y Venimos a Contraerse: Los Campesinos de Morelos y el Estado Nacional", La Casa Chata, México.


____, 1978, "Frente a la Crisis: ¿Política agraria o Política Agrícola?" Comercio Exterior, Vol. 28, Num. 6


____, 1971, "Los Campesinos", Labor, Barcelona

____, "Kinship, Friendship and Patron-Client Relation in Complex Societies" in ed. Scott J. C. et al., Friends Followers and Factions. A Reader in Political Clientelism, S Steffen W. Schmidt,

Womack J., "Zapata y la Revolución Mexicana", Siglo XXI, México
INDEX

A

Adoption 9, 63, 66, 124, 126, 127, 200, 201.
Agrarian Structure 12, 13, 19, 22.
Agroindustries 11, 25, 154, 161, 189, 193.
Aparcera 82, 228.
Appendini 29.
Appointed economy 60, 266, 267.
Articulation 22, 26, 49, 151, 73, 85, 123, 126, 201, 209, 211.
Articulation Agriculture-Industry 49, 51, 209.
Articulation Agriculture-Intermediary Sectors 60, 63, 210.
Articulation Modern-Traditional Sectors 58, 60, 209
Autharchie 5.
Authority 10.
Autocracy 18.
Autonomy 110, 112, 126, 170, 171, 175, 211, 220, 224.

B

Baily 9.
BANRURAL 110, 111, 119, 121, 235.
Bartra A. 26, 28.
Bartra R. 22, 23, 28, 53.
Bengoa 49.
Bond Institutions 60, 62, 235

C

Calahua 160, 161
Campesinist Tendency 28, 48.
CBIA 12, 15, 22.
CEPAL 12, 62.
Ceremonial Activities 6.
Class Struggle 26
Clientele Systems 15, 17.
Coercion 18
Colonialism 20
Collective 13, 14
Commerce 126, 132, 134, 146, 147, 176, 179, 188, 193.
Community 38, 40, 57, 205, 206, 233, 227, 234.
Community Oriented Groups 17, 18.
CONASUPO 121, 153, 154, 157.
Conflict 86, 87, 96, 97, 146, 147, 152, 233, 234.
Control 211, 226.
Credit 82, 89, 116, 157, 170.
Critical Continuity 8, 15.

CH
Chayanov 28, 32, 54, 55, 229.

D
Decapitalization 27
Demographic differentiation 32
Demographic dynamics 224, 225, 229, 234
Diaz Polanco 23, 28
Division of Labour 27, 37
Dobrowolski 10
Domination 20, 25, 26, 41, 92, 95, 123, 125, 127, 274
Duncan Powell 15

E
Economic Rationality 203, 210
Eikstein 12, 14
Employment 11, 13, 18
Entrepreneurial Unit 54, 57, 95, 203, 210
Exchange (Asymmetrical) 94, 127, 130, 209, 235.
   (Foreing) 9
   (of equivalents, reciprocal, re distributive, symmetrical) 6, 96, 121, 205, 206.
Existence Rationality 36
Expansión of Capital 27
Exploitation 26, 31, 39, 41, 46

F
Feder 18, 53
Fernandez y Fernandez 13
Financing 61, 62, 166, 175, 176, 215, 217
Flores 12, 13
Forms of Production 20, 21, 83, 94, 105
Franklin 56
Friederich 16
Glantz 14
Gomez 22
Goulet 36
Green Revolution 216
Guaranteed price 20, 121, 154, 157
Gutleman 21, 22.

H

Hacienda 80, 82, 228.
Historical Structural 21, 48
Horizontal relations of Production 40, 125, 206, 223.
Hewitt 51
Huizer 10.

I

Infrasubsistence Economy 261, 262.
Intermediary (Sector, Agents) 60, 63, 94, 95, 115, 121, 126, 129,
142, 143, 146, 156, 159, 165, 197,
219, 220.

J

Jedlicka 57
Johnston and Mellar 10

K

Kerblay 29, 32.

L

Labor Intensification 30, 33, 37, 203, 207, 209, 228, 229
Landless Peasants 13, 34, 53, 99, 100, 146
Landlord 18
Lange 35, 54
Level of Subsistence 35, 36
Lipton 57.
Managing Logic 203, 210, 226, 235, 248, 250
Medieria 88, 99, 100
Mode of Production 26, 41
Modernization 9, 10, 19, 200, 230
Modern Sector 51, 54, 58, 60, 221, 222.
Monopoly 81, 94, 125, 142, 143, 146, 150, 156, 159, 165, 166, 170,
195, 220, 235.
(of lend, of productive resources) 165, 183, 195.
Myrdal 11.

Nation Oriented Groups 17, 18
National Union of Producers of Copra 153, 154.
Neolatifundio 20, 59, 221, 222, 251, 254, 256.
Neolatifundist 42, 46.
Non-Productive Capital Sector 27.

Official Bank 61, 116, 175, 232
Organization of labor 220, 223
Organization of Peasants 13, 14, 109, 119, 124, 125, 130, 141, 179,
180, 193, 222, 224, 233, 240, 241, 245,
247, 253.
Organization of Production 109, 223.

Paré. 24, 26, 53, 62, 163.
Patron-Client Relationships 15, 17
Pauperization 201, 202
Pearse 17, 57.
Peasant Economic Unit 32, 33, 36, 41, 54, 57.
Peasant Economy 29, 32, 33, 36, 203, 210
Peasant Economy of Decomposition 265, 266.
Peasant Labour 30, 31
Peasant Rationality 29, 32, 203, 210, 230.
Peasantry 34, 124.
Peasants and the larger socioeconomic system 41, 48.
Polarization 19, 21, 27, 51, 54, 194, 200
Power 18, 125, 142, 147, 153, 161, 165, 174, 175.
Proletarization 23, 25, 28, 34.
PRONASE 110, 119.
Quasi-Tribal System

R

Rationality 21, 203, 210
Reciprocity 40
Regional Union of Producers of Copra (RUFC) 144, 148, 152.
Rent (of lend of machinery) 25, 43, 59, 82, 83, 110, 125.
Re-production 24, 26, 125, 126
Restrepo 12
Reyes 12, 13.
Rodríguez 12
Rogers and Suenning 9

S

Salary (Salaried relationships) 31, 109, 110, 123, 207, 208.
Samir Amin 25, 28
Schejttman 8, 21
Scott 36, 38, 39.
Scott 49
Secondary economic activities 38, 84, 120.
Self exploitation 203, 204
Senior 14
Shanin 34
Simple mercantile mode 22, 25, 26.
Social Class 26
Social fomtein 23
Social relation of production 21
State's policy traders agriculture 212, 217, 227, 230, 232, 240,
241, 252, 256.

Stavenhagen 19, 20, 42, 52, 53, 56
Stratification 126, 165, 206.
Subordination (subjection, Submission) 24, 25, 206, 210
Subsistence "ethic" 36, 39
Subsistence security 39
Surplus economy 263, 264
Symetrical relations of Production 86.
Szekely 27, 28, 49, 50, 59, 61.

T

Tepicht 54, 55, 57
Thomer 34
Trade Union of Producers of Copra (TUFC) 147, 153.
Traditional Sector 51, 54, 58, 60
Transnational capital 21, 148, 145, 157
Typology 202, 260, 271

U
Union of Ejidos Emiliano Zapata 105, 111, 114, 115, 124

V
Vertical Integration 129, 155, 159, 191, 193.
Vertical relations of production 209, 235.
Vilar P. 25, 28.

W
Warmen 14, 34, 35, 37, 38, 42, 54, 59.
Whetten 14
Wolf 16, 17, 37, 41, 44