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DEPOPULATION IN A TAIWANESE FARMING COMMUNITY

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THE MEANING OF DEVELOPMENT FOR RURAL AREAS:
DEPOPULATION IN A TAIWANESE FARMING COMMUNITY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN ANTHROPOLOGY
AUGUST 1981

By
Ruth Ann Sando

Dissertation Committee:
C. Fred Blake, Chairman
Alice G. Dewey
Richard A. Gould
Takie S. Lebra
Linda G. Martin
Dedicated to my mother

Ruth M. Harrity Sando

and to the memory of my father

Frank E. Sando

1916-1979
ACKNOWLEDGMENTS

It is difficult to find the proper starting point for a list of individuals and institutions which, with great effort or even unknowingly, have contributed to the success of this study. At the University of Hawaii, faculty members C. Fred Blake, Sen-dou Chang, Alice G. Dewey, Richard A. Gould, and Take S. Lebra gave much time and advice while I wrote my research proposal. Dr. James Watson stimulated an early interest in Chinese migration. Later, Dr. Chung-wen Shih, Chairperson of the East Asian Language Department at The George Washington University acquainted me with the Pacific Cultural Foundation in Taipei and encouraged me to apply for a research grant. This foundation provided me with both a research grant and a travel grant for which I am extremely grateful.

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Many researchers are finding that there is little unemployment among well-educated young people in Taiwan and it is sometimes difficult to hire research assistants. For me it meant frequent changes of assistants who could only work during vacations or a few months at a time. I was fortunate to have the services of seven assistants during the course of my research who were college students or recent graduates. All were motivated, inquiring, thorough, and a pleasure to know. They were: Ms. Chen Chü-hui (陳俊惠), Ms. Ong Lili (翁莉莉), Ms. Ong Yuan-yuan (翁薔薔), Ms. Wang Pi-hua (王碧華), Ms. Hsü Shu-ch'üan (許淑綿), Mr. Ch'iu Ch'iu-t'an (邱秋潭), and Ms. Chang Mei-chen (張美貞). The parents of my assistants Ong Lili and Ong Yuan-yuan extended their kindest hospitality to me whenever I was in Taipei. I often stayed in their home and was made to feel a part of their family. Their kindness is one of my nicest memories.
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During part of the writing period I was supported by a Foreign Language and Area Studies Fellowship (FLAS) from HEW. The University of Hawaii, Center for Asian and Pacific Studies provided assistance for the preparation of the dissertation through an Imai Foundation Scholarship. Financial assistance during research and writing was also generously contributed by my brother and sister, Paul E. and Marilyn M. Sando. I am extremely grateful for their encouragement and help.

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This dissertation provides a case study of the effects of economic development at the local level. There is a need for such case studies examining the impact of national-level industrialization on the ability of agricultural communities to continue farming. Because it serves as a model of development for other nations in Asia, Taiwan is an important site for research. Since the most important consequence of Taiwan's industrialization for its local areas has been the encouragement of a flood of out-migration, the focus of much of my research is on depopulation. The rapid, heavy loss of population to urban areas means important adjustments for those left behind. This dissertation, then, presents the results and analysis of fifteen months of data collection in a depopulated farming village in southern Taiwan.

Some of the most obvious changes for residents of the village studied are in their economic activities. Many families have children working outside who send money home regularly; some families are completely dependent on these remittances. Less than one-quarter of the households in the village are involved in farming full-time. The labor shortage has caused an increase in the hiring of daily wage labor and a concommitant decrease in exchange and family labor. At the same time, wages for daily hired labor have risen as much as 2,200 percent over the last ten years. The division of labor between men and women has changed recently, with women being drawn into more kinds of tasks, and heavier work than ever before. At the same time, the gap between their
wages and those of men has become greater. Through the increased use of chemicals, and the adoption of machines for important tasks such as planting and harvesting, farmers have changed from labor intensive to capital intensive agriculture. Some farmers have experimented with their cropping cycle, switching to crops which do not require much labor. There is also a move toward selling land or leasing it out, using a variety of plans for compensation.

The social impact of depopulation has been equally strong. The decline of enrollments in rural schools has meant a loss both of funding and teachers. The most highly educated of the villagers have already moved out and candidates for important social positions are hard to find. Political factions have developed making group actions and solutions difficult to achieve. Village elections are hotly contested rather than pro forma as they were in the past. Few marriage partners are available locally which has meant that marriage distances are much greater for young people than they had been previously. Postmarital residence patterns are now usually neolocal, resulting in a loss of authority for the mother-in-law, and also depriving her of a replacement for her work in the fields. Villagers have thrown much of their energy into religious activity which has become the one cohesive element in their lives. A new temple, partly financed by donations from migrants was under construction during my stay there. Finally, attitudes toward involvement in agriculture have changed and villagers have adopted the urban perspectives on rural life and farming. This has led them to encourage their children to prepare through education to move out and has made it nearly impossible for even the most apathetic youth to stay.
Parents are not transmitting traditional information to their children who are thus unprepared to carry on their lives as farmers. For this reason and because of land use laws requiring that agricultural land not be converted to other uses or owned by non-farmers, the ability of this village to continue farming in the future is in question.

Using ecological theory, I developed a model of economic development based on this empirical study. The model explains changes taking place at the local level, and more importantly, the results of the interaction of pressures from outside and local needs. Made up of four stages, the model successfully demonstrates why economic development nationally has meant agricultural changes such as specialization and dependency on the larger economy. The structural change which is the result of the four stages has resulted in local areas which are able to respond with great efficiency to extralocal needs but have less flexibility for dealing with their own needs.

In summary, this study incorporates a variety of factors involved in economic development which are operating locally, nationally, and internationally. Such a large scope furthers our knowledge of change in local communities and demonstrates the interrelation between technological and social change in modern societies.
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CHAPTER I
INTRODUCTION

As a contemporary human experience, economic development may be said to be the most significant outcome of this century. It is occurring in all parts of the world and is changing the political relations between nations. But what, if anything, does it mean to the average person? Does he want it, oppose it, or know what he is getting? Does he participate in its arrival or success in any way? In this dissertation I will examine changes in a farming community in Taiwan during this century. All the major alterations in this community can be attributed to early or contemporary development. What these alterations are and in what context they occurred are the foci of my work.

Since mid-century, model building in economic development has gone through several stages: (1) the idea of the "dual economy" made up of the traditional and modern sectors (Boeke 1953; Fei and Ranis 1964; Furnivall 1945; Jorgensen 1961, 1967); (2) Rostow's "stages of growth" (1960); and (3) the currently popular dependency theory (Goulet 1971). These attempt to explain economic development, or its absence, at the national level through the use of national-level data. In addition, specifics of historical variation are usually ignored as are internal variation. Because work on development is generally of an applied nature, that is, its immediate purpose is to evaluate and find ways to stimulate development, there is a general lack of concern with the phenomenon of development at a more basic level: who are the developers, what is the purpose of development, and what is the meaning of development for the individual.
For a long time social scientists evaluated the successful economic development of an area by looking at selected indices of modernization such as radios, cars, telephones, and subscriptions to newspapers. The more of each, the more modernized the population. Unfortunately, these are empty statistics. They would lead us to believe that the ultimate purpose of development is to give everyone the opportunity to ride around in his own car and answer his own phone. Of the many important areas these indices cannot speak to is the problem of distribution. Who owns the radios, cars, etc.? In a society with no middle class the assumption that these benefits of development will be available to everyone, or even to a large part of the population, is a naive one. It also avoids questions of appropriateness and ultimate purpose.

Development is an artifact of human society. It is a result of a social process involving political and economic decisions. The usual assumption is that development is good in general, or good for a particular population or group. This assumption is so ingrained into Western culture and the structure of international relations that it is rarely questioned. Is development, in fact, beneficial? To whose benefit is development? How is development generated? The question of who benefits from development is really a political one. That development will be good for the poor is a well-entrenched idea. Developers often assumed that many of the problems that people are facing are unnecessary: they can be solved by development.

An example of the convergence of political needs and developmental theory is the topic of the "rational peasant." Since the mid-1960s, this topic has received much attention (see Nair 1979; Popkin 1979). In the
literature the conclusion has been drawn that peasants do, indeed, think rationally. They are involved in maximizing what they value. Recent research on decision making addresses the same area of concern—how do these people think? It is not a coincidence that while these topics were growing in importance, programs of economic development were simultaneously being refined from capital intensive growth models to resource and community development. The latter puts emphasis on motivating the public, making knowledge of their concerns more important (see Cohen and Uphoff 1980:213-235). Once research has established: (1) that their thinking is rational; and (2) what their concerns and values are, the ability to bring programs of economic development into the local level is tremendously strengthened. When developers discern decision-making patterns; people's lives can be manipulated more efficiently. This, it seems to me, is the motivation behind this whole topic. Increasing the expansionist ability of higher level agencies to penetrate local areas is an important political policy today. This political motivation is frequently overlooked.

Development does not begin at the local level. Instead it is generated at higher levels, even outside the national context. In this sense, development becomes a study in political process. It is not until an understanding of the political basis is reached that it is possible to discover what role people have in the decision-making process. Although it is generated outside the local level, development affects small communities in important ways. It creates a changing physical environment and certainly a changing political, financial, and social environment for the local community. These forces for change are all
coming from outside. However, the flow of information is one-way: from high to low. Development is generated by outside needs, involves the local level, but complementary information rarely flows back. The local level is involved almost as a passive recipient. Therefore development removes the local level from decisions made about its own economic activities, in many cases from the fruits of its labor, and brings it into a larger system in which it plays an essential but smaller role.

Gall and Saxe (1977) have compared such growth of the larger system to predation. As they point out, the predator gains control over more territory, becomes more highly organized, and more complex. The prey becomes specialized according to the needs of the predator, simplified, dependent, and less autonomous. The relationship between the higher level and the local level in the context of development is analogous to that of predator-prey. The higher level becomes more organized, complex, autonomous, and extensive. At the same time the local level is modified in a complementary fashion: it is transformed into a less organized, less complex, less self-sufficient and a smaller unit. In evolutionary terms, such predation involves the consolidation of many small political units into larger units.

The purpose of this dissertation is to provide a case study of the effects of development on the local level. To do this I will review research carried out in a farming community in Taiwan, Republic of China, in 1978. That this micro-scale study was carried out in Taiwan serves two purposes. First, Taiwan is often held up as a model of economic development for its fast-rising GNP, industrialization, urbanization, high level of exports, and so forth. Whether it is possible for other
countries to follow in Taiwan's footsteps, given some of its unique characteristics, is still a question. Second, regardless of the suitability of such development, the experience of development at the local level has a great deal of universality. That is, given that the higher level makes the decision to develop, there are a number of things which are going to happen at the local level, regardless of location. My case study indicates that we might expect to see shifts in directions such as out-migration, labor shortages, wage increases, cash cropping, and changing values. The chain of events which development sets in motion has more universal application than the decisions which cause it to occur.

In addition to addressing the question of whether Taiwan can and should be used as a model of development for other nations, my study examines the impact of national-level industrialization on the ability of an agricultural community to continue farming. Because the most important repercussion of Taiwan's industrialization on its local areas has been the encouragement of a flood of out-migration, the focus of much of my research was on depopulation. I examined such areas as farming technology, wages, domestic work, leadership, marriage, and education for signs of stress resulting from depopulation. Such signs were everywhere.

Population changes are capable of affecting almost every segment of life. Population is labor (past, present, or potential) and labor is critical whether it be in factories or on farms. Population is also membership in social activities. By focusing on the topic of population change, the relationship among a host of changes in the village becomes apparent. In addition, a better understanding of the real meaning of
economic development for the individual and the local community is possible.

The Setting

At first glance K'ung Liao \(^1\) impresses the observer as a good-sized village with houses of various ages clustered tightly together. Several winding roads, most of them asphalt-paved and well-lit at night, lead the visitor through all nine neighborhood divisions of the village and out past the flat, surrounding fields stretching into the distance. From the time of the Dutch occupation in the late seventeenth century until today Chinese settlers have lived and farmed in this area. The intensively-worked soil has provided a sufficient, if not always abundant living for the descendants of those Chinese from Fukien Province in southeastern China who crossed the seas to reach Taiwan. For perhaps three hundred years there have been villages in this area, and according to local tradition, K'ung Liao is part of a settlement also going back that far.

Probably because of its long history, the social life of most of the residents is concentrated within the village, and gods have their "camps" at its boundaries to protect it from evil originating outside (see Jordan 1972:50-53). There is no written history of the village and no written genealogy of any of its several lineages. However, there is an oral tradition which many of the older men can relate. Koxinga, a Chinese general, defeated the Dutch in Taiwan and established a

\(^1\)K'ung Liao (空寮) is a pseudonym meaning "Empty Hut." Many Taiwanese villages are called "Liao."
short-lived rule, attempting to revive the Ming dynasty after its over­
throw on the mainland. He and his army came to the area of K'ung Liao
and settlers followed later. Before his army routed the Dutch, ancestors
of the Lin lineage of K'ung Liao were living near the Matsu temple which
faces onto the river in Yenshui town. At that time it was a harbor
town and much traffic plied the river between rural settlements and the
capital, Tainan City. When the Dutch, who had considerable settlements
in the area, left and the land was freed for new claims, the Lin lineage
came to what is now K'ung Liao and settled down. It is said by the old
men that at that time one had only to plant a flag on land in order to
claim it. The Lin lineage must have claimed a great deal, for according
to the old saying, "If you ride a horse for three days and nights you
will still not be out of Lin land."

Soon after Koxinga's time, early settlers from different villages in
the same county in China arrived in K'ung Liao and gave rise to two of
its most important lineages. Today these are still the three largest
lineages. There are fourteen other surnames in K'ung Liao today which
were probably introduced by uxorilocal marriages; that is, the marriage
of a man into his wife's family (see Wolf 1980:96-107 for a description
of the varieties of this type of marriage in Taiwan).

The K'ung Liao of the twentieth century shows evidence only in its
architecture of its long history. Many of the houses are of bamboo and
plaster walls with cement floors and tile roofs. Others are entirely
of wood, or of brick, or various combinations. Reflecting current
tastes in architecture in Taiwan, there are three very recent houses
built of cement with tin roofs which, in contrast to all the others
have two stories. Those who can afford to build or remodel now seem to prefer tile or marble floors, recessed ceiling designs, and other styles popular all over Taiwan. The majority of houses have reached full-flowering in their traditional design. They have the U-shape indicating an extended family needing wings to house the various segments. However, on closer inspection the design seems to be no longer functional. Many houses, built to shelter thirty or forty people, now are needed only by an elderly couple, and there are even a number of homes occupied by single individuals. Each neighborhood has its share of homes which are unoccupied, and in some cases, falling down.

Research Methodology

The methods used in gathering data during the fifteen-month research period in 1977 and 1978 were those of traditional ethnography. This was necessary for two reasons. First, I had never lived in a village in Taiwan before, or in fact, in any farming community. In order to identify the stresses and changes caused by depopulation it was necessary to achieve a preliminary idea of normal life. Second, although there is a sufficient literature of ethnographies on Chinese society, I anticipated that the effects of population loss would be comprehensive enough to affect most of the normal social and economic activities. An ethnographic approach was appropriate in that it led me to examine the villagers' activities with some breadth.

Specifically, the techniques I used involved mapping the village followed by a complete census. I also interviewed representatives of each lineage on kinship relationships and used that information together
with the censuses to construct genealogies for each lineage. These sources were the bases of my demographic information. Additionally, I interviewed representatives of each household concerning agricultural matters and social activities. While doing this I compiled a list of good informants and returned to them later for special interview topics. Some of these special topics involved such areas as: the costs and profits of each crop; religious associations; the settlement of disputes; the division of labor in farm tasks; the introduction of new techniques; ceremonies surrounding marriage and birth; and so forth. I collected a number of life histories which were particularly valuable documents of social change. Outside the village I was given important cooperation by the Farmers' Association, through whose assistance I located and moved into the village; local school officials; county officials in charge of land reform, land consolidation, and population records. The local Irrigation Association and Taiwan Sugar Company officials were important sources of data. Most stimulating were visits to the county land records office whose head was himself interested in research and most gracious in his assistance. All of these outside agencies added important information and insights.

I was always accompanied by one, and sometimes by two research assistants. This was necessary both because of the large number of interviews conducted and because of my lack of familiarity with Hokkien, the dialect spoken by the villagers. I was able to interview younger people and migrants in Mandarin which I also used to converse with my assistants, but the great majority of villagers did not speak Mandarin. My assistants all made important contributions and data gathering was a
joint effort. I also participated as a village resident in much of the social life: religious festivals both inside and outside the village; a trip to the Pescadores Islands with a group of villagers; weddings; and medicine shows. Sometimes I went to the fields and participated in the work. I photographed a wide variety of activities and several times rented a projector and held slide shows for the village. All of this resulted in different kinds of information and allowed me to maintain a wide scope in doing the research.

Presentation of Data and Results

Having explained the major concern of the dissertation, the setting, the methods used to gather the data and the kinds of data collected, I will last describe the arrangement of research results. The next chapter, "The Development of Colonial Agriculture," probes the historical background of the setting and problem. The Japanese colonial administration of Taiwan attempted to maximize the utility of the island and its resources for the benefit of Japan and the growing Japanese empire. During this colonial period, the beginning of predation, Taiwan was drawn into a network of trade relations and became dependent on outside areas. At the same time, internal units lost autonomy and were increasingly manipulated to satisfy the needs of the empire. The effects on life and agriculture at the local level are discussed.

Chapter III compares the demographic history of Taiwan with the village. Increase in population stemmed from the interaction of the Chinese emphasis on sons and the improvements in public health under the Japanese. The development of out-migration from the village is
examined and demonstrated to have been a result of population pressure and a program of industrialization drawing labor out of the countryside.

In Chapter IV we see the implications of this transition and the resultant local depopulation. The consequences for the economic activities of villagers, particularly the adoption of capital intensive agriculture are traced and discussed.

Chapter V explores the responses to depopulation of such social institutions as the family, education, politics, and religion. The changing role of agriculture in the larger economy is reflected in villagers' new attitudes, values, and plans for the future.

Chapter VI concludes the discussion of migration and population. I evaluate the implications of this research for Taiwan and other developing societies and the larger question of the future of agriculture. As this study reveals, economic development is a phenomenon involving a variety of factors operating locally, nationally, and internationally. Chapter VI concludes with a model of the economic development process incorporating local and extralocal interactions. Reviewing the causes and consequences of rural out-migration, I explain why it has become a vicious circle depopulating the countryside. The impact of such depopulation is so extensive that, in a larger sense, it constitutes the real meaning of economic development for rural areas.
CHAPTER II
THE DEVELOPMENT OF COLONIAL AGRICULTURE

The development of farming villages in Taiwan has its roots in many aspects of local history. In order to explain to the reader the forces acting upon these communities, some background information is necessary. In the following pages I describe the physical environment both of Taiwan and the research site. I then briefly review Taiwan's history prior to the end of World War II, tracing the mounting impact of political forces on local areas. Agricultural history at the national and village level will occupy the remainder of this chapter. The need for an understanding of current agricultural decisions demands a knowledge of the environment (physical, social, economic, and political) in which these decisions are made and a similar knowledge of past periods. With such knowledge, we will be able to identify the roots of depopulation and the constraints on the farmer's present ability to cope with a shortage of labor.

The Physical Environment

Taiwan, having borne various political statuses over time, is now a province of China. It is located 100 miles from the eastern coast of mainland China, 695 miles south of Japan, and 200 miles north of the Philippines. Altogether it is composed of 78 islands with a total area of nearly 14,000 square miles. But one main island comprises most of the area called Taiwan. Because of the small size and relative unimportance of the remaining islands, I will be referring to the main island
when using the name "Taiwan." Its characteristic leaf shape results from its size; 152 square miles long, it is only 56 square miles across at its widest point. (See Figure 1, Map of Taiwan.)

Taiwan is bisected by the Tropic of Cancer, so that the southern half lies in the tropics while the north is semi-tropical. Its climate has been compared to Cuba's, with a more notable monsoon season (Hsieh 1964:44). One of Taiwan's most distinctive features is the Central Range of high mountains running from northeast to southwest. These divide Taiwan into two sections, a large western half with flat plains and gentle slopes leading gradually up to the hills, and a smaller eastern half with a plain cut short by steep rising cliffs.

The mountain range has important consequences for Taiwan's agriculture as it affects rainfall, seasonal temperatures, and availability of arable land. Over two-thirds of Taiwan is mountainous. The highest peak, Yü Shan (Jade Mountain), also called Mount Morrison, is 13,064 feet above sea level. All in all, land which can be said to be flat makes up only 15 percent of the island and arable land is about 25 percent (Nuttonson 1963:345). In terms of climate the influence of the mountainous terrain, along with the ocean currents, results in great variation in rainfall over the island (see Figure 2). Of great importance is the fact that the wet and dry seasons are reversed for the two halves of Taiwan. Wet winters are the rule for the north and east while for the south and west, winter is a dry season. In general, the summer is relatively dry for the northern half of Taiwan, but it is during this period that the south gets most of its rain. As a result, farmers have different cropping patterns depending on the area. Tainan
FIG. 2: RAINFALL DISTRIBUTION IN TAIWAN
county, where K'ung Liao is located, is in the dryest part of Taiwan and the consequences of climate for its agriculture will be discussed later.

There is more uniformity to the temperature in Taiwan than to the rainfall. Generally, summers are hot and humid. The winters show an average difference of only five degrees centigrade between north and south; they are short and only moderately cold (see Figure 3). In the mountains, the winters are more severe and there may be snow.

From July to October is typhoon season for the whole island, although typhoons do not occur only within this period. Each year several typhoons hit Taiwan, and the strong winds and heavy rain can do a great deal of damage. Vegetation in Taiwan is abundant. The island was once heavily forested, and lumbering is still an important industry today. But trees are rare on the western plain where farmers have long practiced very intensive agriculture; most trees are found to serve as windbreaks or are associated with temples.

Thus in Taiwan one finds a number of important environmental conditions: variable rainfall, little temperature difference island-wide, and moderate winters. Some of the benefits to agriculture of these environmental conditions are: first, that they permit multi-cropping; second, that they allow the growth of great varieties of plants; third, that they favor the easy introduction of new plants; and fourth, that they allow a year-long growing season. These are important factors behind the present position of the Taiwanese farmer as one of the most productive worldwide.
FIG. 3: TEMPERATURE IN TAIWAN
Colonial History

Prior to the seventeenth century, the island of Taiwan was left largely to its original Malayo-Polynesian inhabitants. The two closest nations, China and Japan, displayed interest in it from time to time, and it was visited by pirates and traders, but nothing occurred to bring it into any closer contact with its neighbors. The first nation to gain control over any part of it was Holland. The Dutch landed at the Pescadores islands, off the western coast of Taiwan, where they encountered no opposition. They later learned that the inhabitants felt that these visitors fitted the description of "red-headed men" whom their prophecies told them would rule over them. As a result, the Dutch found no difficulty in setting up a fort which was used as a base directed at developing trade with China. After some diplomatic and military maneuvering, the Dutch left the Pescadores islands in 1623 and in 1624 established another base on the island of Taiwan in what is now Tainan County. Although the Chinese had never claimed Taiwan as their territory, they ceded the island to the Dutch in exchange for their leaving the Pescadores. The Dutch found about 25,000 Chinese in Taiwan who were farmers and fishermen, and some Japanese merchants. Within a few years extensive trade was being carried out. Products from Asia and Europe were imported and then sold for export. Locally grown rice and sugar immediately became important export commodities.

To counteract the growing Dutch importance in Asia, the Spanish established a fort in the north of Taiwan, but the Dutch captured it and expelled the Spanish. In 1650 at the height of Dutch influence, a total of 293 villages were under their jurisdiction, mainly in the southwest,
but also in parts of northern and eastern Taiwan (Davidson 1903:23). Hunting and fishing were taxed. To encourage agriculture, the Dutch brought 121 oxen from Europe (Davidson 1903:24). Missionaries enjoyed some success in converting the aborigines to Christianity.

The earliest Chinese migrants to Taiwan may have arrived through misfortune or accident. There are reports of Chinese blown off course or shipwrecked. This was especially true in the Pescadores, as these islands were off the coast of Taiwan nearest China. During the Sung dynasty (960-1279) raiders found numerous Chinese in the Pescadores. Later, during the Yuan dynasty (1271-1368), an administrative office was established in the Pescadores and Chinese control was assumed. Despite restrictions imposed on the people of the southern coastal areas of China during the Ming dynasty (1368-1644), there must still have been a sizable number of emigrants since the Dutch found many Chinese when they arrived in the Pescadores.

For prevention of intrigue . . . restrictions for sailing abroad were imposed on the inhabitants of the coastal area of Southeast China, especially in Fukien in 1371 . . . While the prohibitions could not be easily carried out, it is recorded that the Ming Government took a step further to evacuate all inhabitants of the Pescadores in 1388 . . . Historical records do not relate whether this policy had been a successful one, but it is very clear that when the Dutch tried to occupy the islands in the early seventeenth century, they were once again heavily populated by the Chinese. (Chen 1972:120)

The Dutch were in control of Taiwan from 1624-1662. They themselves were partly responsible for Chinese immigration during this period as they needed laborers for agriculture. They were especially interested in the cultivation of sugarcane for export. According to C. S. Chen, "In 1650 the sugar production reached 6,000 metric tons
... the export to Japan exceeding 4,000 metric tons yearly..." (Chen 1955:3). In order to develop sugar production, the Dutch encouraged Chinese settlement and even transported Chinese to Taiwan on their own ships. Conditions in China also encouraged migrants; many were leaving because of war, harsh conditions, and food shortages. After the Dutch were expelled in 1662 by the Chinese General Koxinga, and his army of Ming loyalists, Chinese emigration to Taiwan was forbidden and the Chinese Ch'ing government even took the disruptive measure of evacuating the southern coast for a distance of twelve miles (Chen 1972:123). This was a hardship for many, but despite having been made illegal, the movement of people continued. After 1683 when Koxinga's grandson surrendered Taiwan to the control of the Ch'ing government, these barriers were dropped and migration increased once more. At this time it became possible to migrate seasonally. Previous emigration had been permanent.

From 1683 to 1895 China retained control of Taiwan, administering it as part of Fukien Province. Upon losing the first Sino-Japanese war, the Ch'ing government ceded Taiwan to the victorious Japanese. For the next fifty years, Taiwan remained a colony of Japan. The most important change for the people of Taiwan was the dynamic control exercised by the Japanese. While China had been comparatively uninterested in the island, Japan saw it playing an important role in its plans for a Japanese empire. Initial resistance to Japanese rule by the Chinese living in Taiwan was overcome within the first decade; it took the Japanese longer to overcome aboriginal resistance. During this period of pacification of the island, Japan set up an administrative organization
with long-range goals. Taiwan was to play a critical economic role as a major source of agricultural products flowing to Japan as well as a reliable market for industrial products leaving Japan. By utilizing Taiwan in this way, the food supply for Japan could be made secure and its balance-of-payments would be relieved by the new supplies, especially of sugar, produced within the empire (Puchala and Stavely 1979:118).

**Early Agriculture**

As seen earlier, under the Dutch the Taiwanese farmers received equipment, oxen, and seeds for cultivation. Because all land was in the name of the Dutch ruler, none could be individually owned (Knapp 1975:39). Farmers claimed the land for their use and their rights to remain on that land were recognized. It would seem that this created no conceptual hardship for the Chinese, who were used to concepts of land tenure emphasizing many different types of rights to land (see Schurmann 1956).

When the Dutch lost control of Taiwan, all land came under the Ch'ing emperor, as in mainland China (Knapp 1975:40). Since much of the land was being opened up to cultivation for the first time, and large areas were still occupied by aborigines, the government was eager to see the land settled and made productive. To encourage this, grants of land were distributed to individuals and groups, assigning them permanent ownership of parcels of land if the applicant could bring that land under cultivation within a set period of years. The land-holding class which resulted soon shifted much of the actual work of reclamation to new immigrants, some of whom they recruited from China themselves. Building on a model of land-owner relations found in southeastern China at this time (Wichberg 1970:80), a "one-field two-owners" **yi t'ien liang chu**
(一田兩主) system of land ownership arose. These "two owners" were the original grantee and the immigrant who leased the land from him. Both of these, the grantee or yeh-hu (業戶) and the lease-holder or t'ien-hu (佃戶), had rights in the same parcel of land (Okamatsu 1902: 49). The lease-holders received several rights including

... the right to use the lands in any way they wished, to lease or encumber the lands, or even to sell them.

(Wickberg 1970:81)

Lease-holders also gave rent payments averaging 10 percent of the annual harvest to the original grantees who were responsible for paying the land tax to the government. The rights of the yeh-hu and t'ien-hu were autonomous; a change in the status of one would not affect the other. The two parties were much the same as landlord and tenant, but as time went on the situation became more complex. The t'ien-hu or lease-holder often sub-leased the land to a tenant from whom was due an annual rent of sometimes 40-60 percent of the harvest (Myers and Ching 1974:561), much greater than the amount received by the yeh-hu.

In time the rent paid to the yeh-hu by the t'ien-hu became known as the ta-tsu (大租) "big rent" and that paid by the tenant to the t'ien-hu was called the hsiao-tsu (小租) "little rent." The holder of rights to the "big rent" gradually lost direct relation to the land and it often appeared that the holder of rights to the "little rent" was the actual owner. In the confusion which over the years naturally developed, rights were often lost or alienated. In 1888 Governor Liu Ming-ch'uan had attempted to abolish "big rent" rights but he was not completely successful (Okamatsu 1902:51, 52), and it was not until after the arrival of the Japanese that this indigenous tenure system was changed.
Between 1898 and 1903 the Japanese conducted the first successful land survey in Taiwan. Governor Liu's attempt in 1888 had revealed that 20 percent of the agricultural land was untaxed (Myers and Ching 1964: 561), but the report was incomplete. The Japanese survey uncovered nearly 40,000 families holding "big rent" rights and they decided to institute a "rent/tax squeeze" which forced many to sell out (Puchala and Stavely 1979:114). The remainder were given interest-bearing bonds in exchange for their land rights which, to some extent, stimulated the economy, but "... it seems that a large majority of this class sank into economic ruin and social oblivion (Myers and Ching 1964:562). The "little rent" holders became full owners. As Puchala and Stavely note, this was not a populist land reform which attempted to alter an unequal distribution of land on Taiwan (1979:114). After this reform, one-third of Taiwanese farmers were landlords and the remainder were tenants. In terms of land holdings 10 percent of all households owned 60 percent of the land (Ibid.). What this rent/tax squeeze did accomplish was an increase in the tax revenues paid to the Japanese and an increase in the administration's ease of access to the land-owners.

Most transactions involving land before 1895 were not simply sales but were transactions called tien (限り) which gave complete rights to a piece of land, but only for a limited period of time. It was more like a pawn than a mortgage, although not strictly either in that the owner gave up all rights for a specific period of time, retaining the right of redemption at the original price. It was generally for large immovable possessions such as land and buildings. As Okamatsu (1902:145) has pointed out, tien in Taiwan was different from that on the mainland in
that, if the owner did not redeem his land, it could not be sold but had to "forever" await repayment by the debtor. Customarily, such a situation ended after 30 years, which was considered one generation, whereupon the debtor lost his rights to the land. Additionally, while holding tien rights on a piece of land, one could tien the land again, the receiver could tien it again and so forth. As soon as the owner redeemed the tien, however, the other tien must be redeemed and use reverted to the owner. To make more clear that tien was not a sale, it was possible to sell a piece of land which had already been given in tien. The new owner might then, if he wished, redeem the land (Okamatsu 1902:149).

The early Chinese settlers in Taiwan brought with them techniques for growing rice, sweet potatoes and sugarcane. Fukien and Kwangtung provinces in China were important sugar producing areas and, before the mid-1600s, Taiwan had become one as well. The emphasis on sugar grew under Dutch administration and even later, under Japanese control. Taiwan's southwestern plain was the original area of production and was well suited to the growth of sugarcane. The sweet potato was also suited to the conditions of the region. It had been cultivated in southern China in the late sixteenth century (Ho 1955:194), and in parts of Taiwan it became a staple. Rice was well in third position in importance until very recently.

The Chia-nan Plain

Tainan County is located in the southwestern part of Taiwan, on the Chai-nan plain. There the winters are dry, the summers rainy, and mild
temperatures permit planting year-round. The Chia-nan plain is not the most fertile area in Taiwan. In some places, the soil tends to be heavy clay or to have a high salt content. Typhoons constitute an island-wide seasonal risk for agriculture. However, the long dry season in the south provided still higher risk until the Japanese built the huge Chia-nan irrigation system in the 1920s. Later, the drought problem was lessened even further by the building of the Tseng-wen Reservoir in 1973. As we shall see, it may be that these construction projects have had the most serious and lasting impact on the people of K'ung Liao. At the same time, the improvements in transportation were vastly important to the intensification of agriculture for the area. The Japanese also created more farmland by converting grave sites. One K'ung Liao villager recalled that officials made people take the bones out of graves and move them to temples in order to create more farmland.

In the Chia-nan plain, agriculture developed in response to important environmental conditions. The first was the dry climate. Until an irrigation system could be developed to supply water, the growing of wet rice was impossible. The only kind of rice grown was dryland rice and the production was small. One 68-year old villager recalled,

"In my youth the first irrigated water became available here and one neighbor who was about 40 at that time was able to harvest about as much rice in one harvest as his land had yielded over his whole life. Even so he harvested only several hundred catties from more than ten pieces of land."\(^1\)

Another physical constraint was the type of soil. As a coastal area, the salt content of the soil was always high and until recently, parts of

\(^1\) 1 catty = 1.3575 pounds.
the area west of K'ung Liao village could not be cultivated. Along the
coast, fish ponds and salt fields have been developed to make the best
use of the soil. Typhoon, flooding, and drought also provide constraints
not necessarily unique to this area.

Colonial Agricultural Policies

Japanese administrators were concerned not only with Taiwan, but
with the role Taiwan could play in the eventual establishment of a
Japanese-dominated empire in the Pacific. Toward that end, it was
necessary that all Taiwan's potential resources be apprehended and
regulated. In so doing, Japan began predatory expansion, first over the
territory of Taiwan, and later over its internal workings. This expan­
sion and domination re-ordered priorities down to the lowest level so
that people would respond to needs other than their own, that is, to
needs emanating from Japan.

In order to achieve their goals, Japanese administrators began by
surveying all agricultural and forest lands. This provided a basis for
establishing property rights, standardizing land measurements, and
collecting taxes. The survey disclosed that approximately twice as much
land was being cultivated as had been reported in the earlier Chinese
records. The improvement in record-keeping provided an increased tax
base. Money and measures were also standardized, and the first popula­
tion census was taken in 1905. A further step toward regulating the
economy and establishing control was the formation of government
monopolies for several important products. These products were salt,
tobacco, alcohol, opium, and camphor. Important revenues for Japan were
generated through these state monopolies.
In addition to these early measures, transportation projects were begun which added greatly to the potential for economic development. Harbors were improved, and highways built. The previous Chinese administration had constructed a 62-mile railroad in the north of Taiwan, and the Japanese administrators built many new lines including one connecting Kaohsiung and Taipei, the two major cities north and south. Private lines were also developed, especially for transporting sugarcane.

Late in the Japanese period an effort was made to develop more industry in Taiwan. Industrial potential was increased by several hydroelectric projects, bringing power to the west coast. This allowed some strategic industries to be developed in Taiwan. A large part of this development was financed by internal revenues. A heavy share of the burden was carried by the Taiwanese farmer and consumer (Ho 1978:38, 39). Agriculture financed the development of industry and continued to carry a major tax burden for a long time afterward. All foreign trade was handled by the Japanese. The Chinese were the workers in the factories; the Japanese were the technicians. The Chinese were involved in domestic trade; the Japanese handled all international trade. The development of a Taiwanese managerial class was discouraged by government policy.

It is obvious that the intention was to build an infrastructure oriented toward the needs of Japan and its war effort, completely run by Japanese. The Taiwanese were neither educated nor trained as administrators. Although at the end of World War II, Taiwan was more industrialized than China, it had not been built on a firm internal foundation. Thus the postwar departure of Japanese administrators from Taiwan was a severe economic blow.
Throughout its administration of Taiwan, Japan was able to influence the agricultural system and level of food production in a very effective manner. As we shall see, several programs made major contributions to this success: first, the pao-chia system was utilized in extension work at the local level; second, the irrigation system allowed control of the cropping pattern; third, the Farmers' Association provided information on technological improvements to all farmers and fourth, as we shall see, police were used to force reluctant farmers to adopt new seeds and techniques.

In 1898 the Japanese instigated the pao-chia (保家) system in Taiwan which became one of their most important means of controlling the population and making their policies effective down to the lowest level. Each community was divided into units, pao (保), made up of several families, chia (家), bound together by collective responsibility for the actions of each member. The pao-chia system was soon found appropriate for administrative functions and was used to collect taxes, transmit regulations and information, make sanitary improvements, and administer agricultural improvement programs (see Chen 1975:391-416).

Before the Chia-nan irrigation system was built, the fields were called "k'an t'ien t'ien (看天田)" fields which look to the skies." That is, the farmers were dependent on the weather. Since 70 percent of the yearly rainfall occurred between June and September, the water supply was often insufficient and floods were common (Djang 1953:1).

\footnote{For a description of the cropping system in the Chia-nan area, see Chen (1977).}
Because of its desire to develop export-oriented agriculture in Taiwan, Japan sought to improve the production of this area. For this reason, the Chia-nan irrigation system was built. Previously, all irrigation facilities had been privately owned and maintained, either by individuals, or groups including lineages (Wang 1972:175, 176). With the Chia-nan irrigation system Japan created one of the largest reservoirs in Asia and greatly improved food production in the area. According to one geographer, the rice-growing area increased by 74 percent and the sugar-cane area by 30 percent (Hsieh 1964:170). This was the result both of bringing dry land into production and of changing from dryland to irrigated crops. The Chia-nan irrigation system also gave Japan more control over its colonists. By controlling access to water, the Japanese administrators could manipulate the cropping pattern in the Chia-nan area. The irrigation system would provide enough water to suit only the requirements of one crop at a time. If farmer X planted rice and there was only enough water for sugarcane, his crop would fail. Knowing that, he and other farmers were forced to plant according to the irrigation schedule. In this way irrigation required that crops be coordinated and allowed the government to control access to water.

The government also reached individual farmers through the Farmers' Association which was organized around 1900. Membership was compulsory. "FAs eventually took charge of such important functions as the improvement and extension of seeds, the maintenance of a seed multiplication system, the prevention and control of animal and plant diseases, the training of agricultural technicians, the execution of agricultural surveys, the purchase of fertilizer, seeds, and equipment needed by members, and the
management of warehouses" (Ho 1978:63). The Farmers' Association was supported by credit cooperatives which made money available to farmers enabling them to adopt this new technology.

The fourth program which contributed to the successful administrative penetration of the local system was the extension of agricultural information. New seed varieties were introduced and the police were called on to ensure that the new seeds were planted.

The type of rice which came to dominate production in Taiwan was ponlai rice, which had a higher yield and was preferred by Japanese consumers. Although originally from China where it had been known since the first century A.D. (Chandler 1979:13), it was introduced in Taiwan as part of the rice improvement campaign by the Japanese who had grown it in northern Honshu (Myers and Ching 1964:556). Ponlai was first grown in Taiwan in the early 1920s and by 1935 was being raised on 305,000 hectares, more than any other variety (Grajdanzev 1941:54). The area devoted to native rice varieties quickly decreased (see Figure 4).

In 1903 there were supposedly 1,325 native varieties. In 1906 the government decided to allow the use of only 375 of them and the farmers of each village were further told to grow only 3 varieties which they could select from the 375. Meanwhile the government began producing and multiplying seeds of the 3 varieties, the work requiring 4 years to produce the seed needed by the farmers. After the seed was secured, the farmers were required to plant any one of the 3 varieties. No other varieties were allowed. The increase in yield reportedly due to replacement of inferior native with superior native varieties was 10-30%. (Chen 1963:287)

While the adoption of new varieties would seem to indicate that the Taiwanese farmer was ready to respond to any improvement in farming techniques, such was not the case. Ponlai rice might never have become
FIG. 4: RICE AREA PRODUCTION BY VARIETY

popular had its use not been backed by force. One drawback was that it was more costly to grow, requiring expensive commercial fertilizers. As a result, production costs were greater for the farmer.

The exchange of low yielding native rice seeds for high yielding ones in the early decades of the 20th century was conducted under such police supervision. This may explain why the exchange was completed so quickly. Even after they were removed from formal extension work, police were occasionally called on to persuade reluctant farmers to adopt new farming techniques. (Ho 1978:63)

Although the production of rice increased greatly at a national level, this did not mean that farmers consumed more. Between 1915 and 1926 the population of Taiwan grew by 15 percent while per capita rice consumption remained constant. At the same time exports increased three-fold (Myers and Ching 1964:567). Later the situation worsened. From 1925 until 1940 per capita rice consumption decreased by nearly one-quarter (see Table 1).

Table 1
Annual Consumption of Rice*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (m.t.)</th>
<th>Per Capita (kg.)</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>631,343</td>
<td>158.15</td>
<td>3,992,000</td>
</tr>
<tr>
<td>1930</td>
<td>683,886</td>
<td>151.77</td>
<td>4,506,000</td>
</tr>
<tr>
<td>1935</td>
<td>576,004</td>
<td>111.95</td>
<td>5,144,000</td>
</tr>
<tr>
<td>1940</td>
<td>719,153</td>
<td>123.97</td>
<td>5,856,000</td>
</tr>
</tbody>
</table>

*Shen 1971:30.

The program of agricultural intensification in Taiwan was the outcome of a number of important events in Japan. A decrease in Japanese rice production and an increase in domestic demand led to the Komo Sodo (rice riot) of 1918. In response, the government quickly took steps to
import rice from its colonies, Korea and Taiwan (forcing Korean farmers to substitute sorghum, a low quality grain, for rice, and forcing Taiwanese farmers to substitute sweet potatoes for rice in their meals) (Hayami and Ruttan 1970:570). At the same time, to ensure adequate rice for its future needs, Japan developed the Sanmai Zoshoku Keikaku (Rice Production Development Program) the methods of which have been covered above and which

... created the tremendous rice surplus that flooded the Japanese market: ... net imports from Taiwan rose from 113 to 705 thousand metric tons ... from 1915 to 1935. (Hayami and Ruttan 1970:571)

Unfortunately for the Japanese farmer, this program was so successful that it resulted in a flood of rice from the colonies and the depression of rice prices in Japan. Many Japanese farmers were forced out of agriculture. For Japan the long-range consequences of these policies shaped history:

The so-called military reformists made this social uneasiness and disorder among farmers the springboard for the invasion of Manchuria in 1931 and the other military adventures that followed ... and [this] had not only economic but also vast social and political implications. (Hayami and Ruttan 1970:585)

There were also immediate ramifications for Taiwan. Japanese administrators reacted by intensifying sugarcane production (see Table 2). They successfully increased sugar output but rice acreage remained constant (Shen 1971:31).

How was this official change from an emphasis on rice to sugar production implemented? No new program was needed:

Since the police penetrated to every village household through the ho-ko (pao-chia) system, it was relatively
Table 2
Sugarcane 1902-1940*

<table>
<thead>
<tr>
<th>Period</th>
<th>Area (Hectares)</th>
<th>Cane Yield Kg.</th>
<th>Cane Production M.T.</th>
<th>Sugar Production M.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1902-10</td>
<td>30,823</td>
<td>31,134</td>
<td>959,653</td>
<td>82,236</td>
</tr>
<tr>
<td>1911-20</td>
<td>100,258</td>
<td>28,149</td>
<td>2,822,156</td>
<td>251,498</td>
</tr>
<tr>
<td>1921-30</td>
<td>115,757</td>
<td>43,836</td>
<td>5,074,342</td>
<td>498,353</td>
</tr>
<tr>
<td>1931-40</td>
<td>119,740</td>
<td>68,206</td>
<td>8,166,994</td>
<td>948,344</td>
</tr>
</tbody>
</table>

*JCRR 1966:47

Easy for them to insist on the adoption of new sugar cane or rice seeds and supervise their use. The early success of large sugar companies in increasing sugar cane cultivation in southern Taiwan was due to the assistance of local police, who compelled villagers to switch from existing food crops to cane. (Myers and Ching 1964:565)

Almost 95 percent of the sugar produced was exported. Individual farmers sold their crop to large Japanese-owned mills where it was processed. The milling of cane was strictly controlled.

No sugar mill [can] be established without official permission. Simultaneously with licensing, the area from which the new mill may buy sugar is allocated. It is not permitted to buy outside this area, and the farmers are obliged to sell their sugar to this mill only. For each mill there are on the average 3,000 farmers and thus there is competition between farmers inside the area but a monopoly for the buyer. (Grajdanzev 1942: 62)

By the end of the Japanese colonial period, Taiwan had been completely taken over by Japan's predatory expansion. As the short history I have provided shows, Taiwan no longer had autonomous decision-making powers. Such powers had been usurped by Japan so completely that all activities had come to be motivated by Japan's needs. That such a
development was not an independent process can be seen by the military and police force used to ensure the success of colonial programs. Japan's needs had immediate impact on the individual Taiwanese: the average farmer was growing food for export which he could not afford to eat himself. The trend toward manipulating agricultural production and resources was an important characteristic of Japan's predator-prey relationship with Taiwan. It is also characteristic, as we shall see later, of the entire development process.

Agriculture in the Village

Changes in K'ung Liao paralleled changes nationally under the Japanese. Electricity came early to this area, sometime before 1925. An elementary school was built more than fifty years ago in a nearby village and served a total of fifteen villages. It was only for Taiwanese students; there was a school for Japanese children in the town. In any event, there do not seem to have been any Japanese families living in K'ung Liao. Transportation within and between villages was on foot, although by the 1930s two families owned bicycles.

Most of the women in K'ung Liao worked in the fields. If they were born into a rich family and brought a maid with them when they married, they did not work outside in the fields. Those who did work wore bamboo shoes to prevent the wrappings on their bound feet from getting wet. Thus when it rained they were not able to work.

The history of agriculture in K'ung Liao has been much affected by its coastal location. A large part of the land was saline which influenced cropping patterns and overall production. Before the Japanese completed the Chia-nan irrigation system the fields to the west
of the village were covered with grass. Nothing could be grown there because the land was too salty. In general, crops such as garlic, wheat, and barley which would tolerate the salty soil were grown. Salty land was also worth less. For approximately one-tenth of a hectare, the price averaged about 20-30,000 NT ($556-834) but could go as low as 4-5,000 NT ($111-139).¹ Land that was not sufficiently improved later by irrigation was converted to fish ponds, while improved land was used to raise crops.

The earliest method of planting dryland varieties of rice had been by hand, broadcasting the seeds out in an arc directly into the field. Later, people planted by using the water buffalo to turn over the land by plow, and the farmer followed, dropping in the seeds. With the completion of the irrigation system, wet rice was possible. After about 1935 transplanting from a seed bed became more common. As mentioned, the only varieties planted up into the 1920s were "indicas," nonglutinous native rice (稈米). One hectare yielded 2-3,000 catties (2,700-4,000 lb.). Until about fifty years ago, the lack of rice-processing facilities was a problem. The whole process from harvesting to removing the outer layers was up to each farmer. With the native variety of rice, the grains can be easily removed from the stalk. Villagers could even use their hands to scrape the grains off. More commonly, the stalks were beaten to release the grains. Houses were generally equipped with a very large wooden tub hung from the roof by an iron chain. The farmer would stand on a ladder and beat the rice

¹At current rate of change ($1 = 35.95 NT).
against the inside of the tub and the grains would fall into the tub. The days after the rice harvest were full of the sounds of the grains hitting the sides of the tubs. Later women shelled the rice using a mortar and pestle. The earliest machine available to the farmers for removing the shell was powered by foot, a job that could employ the labor of blind people.

Even after completion of the Chia-nan irrigation system, irrigation water was still not sufficient for converting fields solely to wet rice cultivation, so a system was devised by the government which would maximize the production potential of the area by systematizing the cropping pattern. Thus began the "three-year crop rotation system." Through it, farmers were able to grow one rice crop every three years, and alternate rice with sugarcane and mixed crops (see Figure 5). In using this cropping pattern, farmers in the irrigated areas were not all allowed to grow the same crops simultaneously. Instead, the area was divided into irrigation units of 150 hectares each, which were further subdivided into three subunits of 50 hectares each. In any one season each of the three subunits had a different crop growing on it in order to maximize the use of the water supply. For example, the first year one subunit received enough irrigation water to grow a rice crop while another subunit received less, but sufficient for sugarcane. At the same time, the third subunit was left unirrigated and used to grow dryland crops. So all the farmers were able to grow one rice crop every three years, but they grew it at different times during that period.

Sugarcane is indigenous to Taiwan. Its growth for export was encouraged first by the Dutch, and later by the Japanese. According to
local memory it is an old crop in K'ung Liao. About fifty years ago the Japanese tried to improve production by working on the method of growing and the variety used. The Japanese extended the "chung hsing" (中興) variety during this period. From about one hectare the farmer harvested 70-80,000 catties (93,000-107,000 lb.). Today he gets 200-300,000 catties (263,000-395,000 lb.) from the same amount of land. At that time the method of planting was to plant the top of the old harvested shoot. Sugarcane was known as an "iron crop" because no matter how bad the weather had been or the environment it was grown in, the majority of the crop could be harvested. Farmers reported that even in a typhoon, at most 20-30 percent of the crop would be lost.

The sugar refinery for K'ung Liao and the surrounding area was in the town of Hsin Ying. People had been in the habit of making the sugar themselves in earlier times but did not do so again until the refinery burned after bombing in World War II. Sugarcane had multiple uses. The leaves could be mixed with pig manure for soil fertilizer. The leaves could also be used for fuel. The sugarcane, which grew quite high, also provided hiding places for those practicing tactics of guerrilla warfare on the Japanese, so the planting of sugarcane within 70 meters of all roads was forbidden (Chen 1955:4). Later it also provided refuge from bombing during World War II.
During the Japanese period, the third major crop was any one of several dryland crops: sweet potatoes, corn, jute, soybeans, peanuts, and beans. Many villagers planted corn, often between the rows of sugarcane. However during this period a disease appeared in the corn which adversely affected the sugarcane, so this kind of interplanting was forbidden. A type of bean known as "black pearl bean" (hei chu tou) was grown by many. Jute and peanuts are two crops suited to the soil that were much more popular then than now. All harvests were fraught with uncertainty because of pests and plant diseases. Much time was expended in weeding. The heavy use of pesticides and herbicides is a characteristic only of very recent times. During the Japanese period these were still unknown and risks were greater.

The staple food during this period was not rice, but sweet potato. It was cut into strips and eaten by both humans and farm animals. Before the Japanese came, there was not enough water to grow wet rice. With the completion of the irrigation system, wet rice could be grown. But only on special days or for special festivities would villagers eat rice, and then it was generally consumed in the form of gruel in order to stretch it. Since rice was, and is, a high status food, people felt that it was a hard life to subsist on such a poor food as sweet potatoes.

Even dead ancestors and spirits had to make do with offerings of potatoes. Villagers who could afford it ate more rice. Thus there was a different staple food for the rich and poor.

The diet of the villagers also contained very little meat. Chickens and ducks were raised not to eat but to sell. Businessmen
came to the village and bought the animals, paying by weight. Pigs were also raised and were very popular since their manure was an important fertilizer. Although it is not commonly relied on as such today, it is believed to be superior to chemical fertilizers since it improves the quality of the soil. Pigs were raised for a year before being sold. They fed on sweet potato strips, cooked sweet potato leaves, and bean cakes. One farmer, commenting on earlier days, reported,

"Compared to humans, pigs ate pretty well in the Japanese period, because man can suffer from hunger but pigs can't."

Conclusion

In summary, the economy was progressively more closely regulated by the national administration. Areas previously isolated were opened up to trade with other areas and the interdependence of different geographical sections of the island increased. At the same time the interdependence of Taiwan with the outside world, specifically Japan, became a dominant feature of life. There is no question that these measures were taken by the Japanese administration in order to utilize Taiwan as its colony in the most effective manner.

During this colonial period, the diet of the majority of K'ung Liao residents was poor and lacked variety. The staple food for pigs and humans was the same. The biggest factor in increasing crop production in the area was the building of the Chia-nan irrigation system. However, the two main crops that benefited were rice and sugarcane, neither of which contributed much to the local diet.

According to Ho, development in the Japanese period was beneficial to both the Taiwanese farmer and the colonial government. Land
ownership was left in private hands; agriculture was modernized; food production and exports increased; health, education, security and sanitation improved (Ho 1978:40). If we compare Taiwan's experience with that of many colonial nations in which plantation systems are made out of expropriated land, this viewpoint is justified. However, it does not take into account the sacrifices at the local level that such development demanded. As pointed out, the Chia-nan plain originally imposed environmental constraints on farming such as weather and type of soil. The colonial administrators of Taiwan overcame these natural constraints in order to develop agriculture. As Wilkinson has pointed out:

the main features of longterm economic development, including changes in the resource base, the division of labor, the development of trade and industry, increasingly intensive agricultural methods and many other aspects of a society's changing productive activity, are all predictable responses to the growth of need. (Wilkinson 1973:90)

The "need" which stimulated Taiwan's development was artificially induced. As shown earlier, the Japanese created a need for cash by the Taiwanese farmer. For this period, the two main sources of revenue to the Japanese were land tax and income tax. In terms of total government revenue the land tax paid by farmers decreased from 27 percent in 1928 to 9 percent in 1941, but in absolute terms it was almost constantly increasing (Kao 1965:561). There was also a per capita tax for each male and female. In addition, there were school expenses, religious costs, wedding and funeral costs, and tobacco and opium expenses. As one villager said,

"In the old days people had to pay "opera money" (hei chin), no matter whether you had money or not. Everyone had to pay whatever the Japanese wanted."
The farmers' need for cash, imposed by the colonial administration, forced them to sell much of their produce rather than consume it. The villagers sold their sugarcane, most of their rice, and domestic animals. The farmer was transformed from a self-sufficient to a cash-crop growing worker, responding to instructions from decision makers outside of the local level.

Such a trend can also be seen throughout the Japanese period in the overall economy of Taiwan. The Japanese wanted Taiwan to be a market for their industrial products and a source of their food. Therefore they expended great effort in increasing rice and sugarcane production island-wide. In the area of rice production, the greatest success was achieved with the introduction of the "ponlai" variety of rice. This had a much higher yield than the native variety but also some serious drawbacks for the individual farmer. For example, his production costs increased by more than one-third because of the need to purchase commercial fertilizers. Although the actual profit may have been lower, because it was the most popular variety for consumption in Japan, and because of his need for cash, he had to plant the new variety in order to be able to sell his crop.

The expansion of area under horai (ponlai) is therefore not so much a sign of prosperity, as it would at first appear, as a sign of the growing need of the farmer for money to pay for irrigation and to pay for the tobacco which he formerly produced himself (and is now a state monopoly). (Grajdanzev 1941:55)

With the development of the Chia-nan irrigation system, farmers were drawn into a group organized not for personal convenience or profit, but for public good, in particular the good of the non-farmer who consumed their products. The decision-making process passed
entirely out of the hands of the farmers and they were reduced to growing crops at the direction of the irrigation system officials who were government employees. Each farmer was directed in what crop to grow and when to plant. The Taiwanese farmer and villager was no longer an independent producer, but part of a larger system organized around the goal of maximizing total production. Agriculture had become export-oriented.
CHAPTER III

DEMOGRAPHIC HISTORY

Demographic data for Taiwan have an enviable historical depth. The first census was taken in 1905, the next in 1915, with censuses every five years thereafter until 1940 (Barclay 1954:10). Since the end of World War II, island-wide censuses have been conducted in 1956, 1966, 1970, and 1975. In addition, a household registration system was set up under the Japanese for the purpose of strengthening their administrative effectiveness. It collects such data as household size and composition, educational levels, marriages, births, deaths, and moves. The censuses and household registers provide the basic data for population figures.

According to these figures, Taiwan currently has one of the highest population densities in the world. As of the end of 1977, there were nearly 470 people per square kilometer, or 1,210 people for each square mile (Council for Economic Planning and Development [CEPD] 1978:5).\(^1\) In 1905, the earliest year for census figures, the population stood at about three million. After 36 years it had doubled to six million. In another 23 years it doubled again to twelve million. At the end of 1977 the population totaled 16,813,000 and was growing at an annual rate of 1.8 percent. The government projects a total of 24 million people by 1989 (JCRR 1975:19).

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\(^1\)At the end of 1977 there were 305 people per square kilometer in Japan. The corresponding figure for the United States was 23 (CEPD 1978:283).
What factors were involved in the tremendous growth in population from three million at the beginning of this century to 24 million by 1989?

At the beginning of this century there was a high birth rate, 41.7 per 1,000 people, counterbalanced by a high death rate of 33.4 per 1,000. In 1943, at the end of the Japanese colonial period, the birth rate had risen slightly to 42.1 per 1,000 while the death rate had dropped nearly in half to 18.5 per 1,000. The development of this trend toward high birth and low death rates is characteristic of mid-century population figures. More recently, with an active family planning program, the birth rate has been falling, accompanied by an ever-decreasing death rate. In 1977 the birth rate was 23.8 per 1,000 and the death rate was 4.8 per 1,000. As a result, in spite of the declining birth rate, the rate of natural increase is not far from the 1940 figures (23.6 vs. 19 in 1977) (see Figure 6).

This century of population increase is responsible for the high population density today. Such density is even more striking in relation to arable land. In 1977 there were 1,822 people per square kilometer of cultivated land (CEPD 1978:5). Population pressure in rural areas has contributed to a stream of migrants who have sought their livelihood outside of their home villages. With rapid industrialization, rural to urban migration has become common and is of great importance both in the receiving and the sending areas.

Cultural Patterns and Demographic Behavior

In order to understand the demographic history both of Taiwan and K'ung Liao it is important to go beyond statistics to the beliefs that
motivate demographic behavior both at an individual and at a cultural level. The importance of reproduction and son preference are the most important of these beliefs.

Traditional thought relating to family life has a consistent theme: children, especially sons, are necessary. Some proverbs state it plainly. According to Mencius, "There are three things which are unfilial and to have no posterity is the greatest of them" (Liu 1976:54). The importance of children lay in providing for the continuity of the family and for ancestor worship. Since sons would carry on the family line, they were preferred. As a patrilineal, virilocal society, sons were critical. Daughters moved out upon marriage, supported their parents-in-law, and worshipped their husbands' ancestors. Sons were looked on as a blessing and daughters a burden; the more sons one had, the more blessed one was.

Historically, the variety of marriages and family types in Taiwan falls within the range of variation for mainland China. The variety can be understood best in terms of strong pressure to have sons. It was natural that each person should eventually marry.

When a son is born, what is desired for him is that he may have a wife; when a daughter is born, what is desired for her is that she may have a husband. (Liu 1976:54)

The purpose of marriage was to ensure continuation of the family into the next generation. It was not primarily for love or companionship. The bride moved into her husband's family's home, served his parents, and bore children. Her relationship with her husband was unimportant compared to her relationship with her parents-in-law. Thus two rules can be seen to apply: everyone must marry, and everyone must reproduce.
Under normal conditions, marriage was monogamous, virilocal, and resulted in the birth of children, particularly sons. However, in the real world problems arise. Young people die before marriage. Children die. Spouses die. The wide varieties of marriages and families were attempts to deal with reality and satisfy rules for ideal behavior at the same time. The histories of many families in K'ung Liao reveal deviations arising from such conflicts. A few examples are given below.

Based on informal discussions, interviews and observations in K'ung Liao, I have analyzed variations in behavior and suggest that there is a hierarchy of choices available to those for whom ideal patterns are not possible. I have arranged this material into cases which while hypothetical represent real behavior in the village. The solutions also represent choices made by actual village families.

Case A: A man and woman marry but no children are born. Possible solutions: (1) adoption of a daughter; (2) marriage to a secondary wife; (3) adoption of a son. The adoption of a daughter would be the first choice because it is believed that she will "lead in a brother." A natural son is always preferred over an adopted son as a solution to this problem. Consequently, adoption of a boy would be the third choice. The second solution would also result in natural rather than adopted children.

Case B: A man and woman marry and have only daughters. Possible solutions: (1) continue reproduction; (2) marriage to a secondary wife; (3) adoption of a son. The adoption of a daughter would be the first choice because it is believed that she will "lead in a brother." A natural son is always preferred over an adopted son as a solution to this problem. Consequently, adoption of a boy would be the third choice. The second solution would also result in natural rather than adopted children.

2For a description of male adoption in rural Hong Kong see Watson (1975:293-306). There, among members of a "powerful" Chinese lineage, adoption of boys from outside the lineage was preferred over insiders because they had greater reason to be loyal to their new fathers.
(3) arrangement of a uxorilocal marriage for one of the daughters; (4) adoption of a son. The first choice would clearly be to keep trying. The only problem with this course of action is the possibility that more girls will be born, a not uncommon experience. One famous short story, "A Posthumous Son" by Yeh Shao-chun (遠腹子 by 葉召鈞) details one couple's reaction to the birth of daughters which was to continue reproduction. For such parents, a common response was to give daughters away in adoption if the family could not afford to raise them. One young K'ung Liao wife sadly told me that since their second child was another girl they would have to have another child, although she had hoped the second would be her last. An alternative to more children was to marry a secondary wife. The third solution seems to have been preferred over the fourth. There were always families blessed with many sons who could not afford such blessings and these children were generally the ones available for uxorilocal matches. As a form of marriage, it had less status than virilocal forms, but filled a need for both families. Usually one of the sons of a uxorilocal marriage would carry his mother's maiden name and be considered the successor to that line. The last solution was to adopt a son.

Case C: A husband dies before he has a son. Possible solutions: (1) uxorilocal remarriage of the widow; (2) adoption of a son; (3) inheritance of the duties and rights of a son by the husband's brother's son.

Case D: A young man dies before marriage. Possible solutions: (1) uxorilocal remarriage of an adopted daughter-in-law (hsì fu ts'ai)
(媳婦仔);³ (2) adoption of and inheritance by a descendant of a close relative of the deceased. This adopted son then assumes responsibility for the spirit tablet (a procedure called kuo fang [過房]).⁴

Thus some of the possible solutions seen in K'ung Liao to the lack of a male heir are: (1) adoption of a son; (2) kuo fang; (3) adoption of a daughter; (4) marriage of the sonless father to a secondary wife; (5) uxorilocal marriage; and (6) adoption of a daughter-in-law. For a description of the forms of marriage and adoption in northern Taiwan before World War II, see Wolf (1975).

The ultimate purpose of these variations to the norm is to provide each man with a descendant. It is not enough to marry, one must reproduce. It is not enough to reproduce, one must have a son. Therefore, under these circumstances, it is not accurate to speak of "ideal family size." As I will show, the size depends on achieving an ideal number of sons. Notice that the death of a daughter before marriage is not as serious a problem as the death of her brother would be (see Jordan 1972). The birth of sons and not of daughters does not require adoption or remarriage. The solution for the death of a wife, also, is simple: the husband will remarry. So it can be seen that the provision of sons in the male line is a central motivation for demographic behavior at the individual and family level.

³ A hsi fu tsai was adopted as soon as possible after birth with the expectation that she would marry a son of the family upon her maturity.

⁴ For a more complete description of kuo fang, see Yuan (1973: 15-38, in Chinese).
It is possible to confirm the continued existence of these cultural rules relating to reproduction and son preference through an examination of K'ung Liao families. In general, the size of village families shows a relationship to the number and birth order of sons. Larger families tend to have more daughters than sons and a majority of families complete reproduction with a son as youngest child. That is, after the desired number of sons has been achieved, parents are likely to stop reproducing, so that in the larger families daughters exceed sons.\(^5\)

During the research period in K'ung Liao, my assistants and I conducted a house-to-house census of every family in the village. Care was taken to note correct sibling order and deceased offspring. We were struck by the predominance of daughters in large families and the son preference. Parents freely discussed with us their decisions concerning family size and composition.

Altogether we collected information on 194 sibling sets from the village. While information was collected on sibling sets whose parents either live in the village or have moved out, for purposes of the following analysis those who moved out have been dropped. Consequently, the families referred to are all rural. In order to illustrate differences in reproductive behavior, I have selected 27 sibling sets with mothers between the ages of 30-39 in 1978 to compare with 43 sets whose mothers were aged 50-59. The first group began reproducing about 1968. The second group was reproducing during the period 1948-68. While the

birth rate in 1948 was 39 births per thousand nationally (Lu 1967:2), it had dropped to 29 per thousand by 1968 (CEPD 1978:5). By examining these two groups we can see the extent to which population trends in the village mirror national trends, and identify important differences. Although the younger group of mothers is not past the age of reproduction, Taiwanese women today have easy access to birth control information. They tend to use it after achieving their desired family rather than for spacing births (Lu 1967:4-6; JCRR 1975:24; Sun and Freedman 1970:359-368). This suggests that Taiwanese mothers achieve their completed family size earlier than mothers in the West and that the cohort aged 30-39 contains many mothers who have completed reproduction. Therefore, while the two cohorts used are not strictly comparable, they are not as far apart as the same cohorts in the West. In addition, information from interviews with village mothers agrees with their general behavior.

The younger mothers have produced 27 sibling sets containing from one to seven offspring (see Figure 7). There are a total of 95 siblings represented and the sets average 3.5 children per set. I identified 15 types of birth orders (such as F-M-M, F-M-F, etc.). A majority (69 percent) display birth orders which fit the goal of a two-son family. Common patterns of this type are: F-M-M, M-F-M, and M-F-F-M. Sets with four or more siblings tend to have more females (M-F-F-F-M, F-F-F-F-F-M, etc.). In addition, 59 percent of the sets stop after the birth of a boy while 41 percent stop after the birth of a daughter. Families are likely to keep trying until the second son is born which

\[ \text{M = male; F = female.} \]
FIG. 7: BIRTH ORDER OF YOUNGER SIBLING SETS (MOTHERS AGED 30–39)
explains why larger families have more females. Indeed, the average number of sons per set is 1.9. In order to understand the completed family size it is necessary to examine the number of sons and the birth order of the sibling set. This information goes a long way toward explaining the size of the set and thus the completed family size. As Wu has pointed out,

Son preference is by far the most important cause of continued high fertility and is deeply rooted in Chinese culture. (Wu 1977:3)

Mothers who are aged 50-59 have reproductive histories which differ from the younger groups in some important respects. K'ung Liao has produced 43 sibling sets containing 261 children whose mothers were within this older age limit (see Figure 8). The sets have a maximum of eleven children and thus are larger in size. The average size is 6.0 children compared with 3.5 for the younger sets. These larger sibling sets display more variety, having 43 different combinations of birth orders. It is evident from a study of these sibling sets that the desired number of sons is not two as with the younger sets. Instead three sons are preferred. Such birth orders as M-M-F-M, M-F-F-M-M, and F-M-F-F-M-M are examples of this preference. The number of sons per set averages 2.9. Wanting three sons does not necessarily produce three sons, but it seems clear that if reproduction is continued after two sons, more sons were desired (for example, M-F-F-M-F-F, or F-F-M-M-F-F-F).\footnote{An exception was pointed out to us by one father in the 30-39 age group who had three sons. He and his wife had hoped for a daughter rather than the third son. "If you eat too much meat, you want to have some vegetables," he explained.} Again, as with the younger group, a majority of sets
FIG. 8:
BIRTH ORDER OF OLDER SIBLING SETS [MOTHERS AGED 50–59]
end with the birth of a male rather than female. In terms of the emphasis on sons, this group is similar to the younger group. However, the larger number of sons required may be due to another difference between the two groups, the rate of mortality. Sibling sets born to mothers between 50-59 years old show a much greater number of children who died or suffered brain damage. Twenty-two children (13 males and 9 females) in this group did not survive to a normal adulthood. This represents 8 percent of the total number of children born to this group of mothers. In the younger group, there was only one child who did not survive. Thus, for mothers 50-59 the expectation of death for some of their offspring caused them to produce more children in order to guarantee continuation of the family line. Figure 6 shows the national population trend for this period. The early high death rate was declining throughout this time. However, the birth rate remained high until the mid-point (about 1958) when it began dropping sharply. The same trend is present in the village as exemplified by the older sibling sets. There is a high mortality rate and high birth rate. Such patterns as F-F-M^X-M^X-M-F-F-M show a mother producing eight children of whom two died and only two remained.

To illustrate the different beliefs and patterns of reproductive behavior over time in the village, a neighbor of mine in the younger cohort said,

"I have four children, two girls and two boys. I think that's too many but nowadays there are many traffic accidents. If I had only one son and something were to happen to him then I would be left without a son. So two sons is a suitable number for a family."

This clearly shows that the concern in planning family size lies in the number of sons. Having one son, although it satisfies the need for a
male descendant, is too risky. It is better to have at least two sons, so that the family may be assured of descendants in the next generation.

The quote above is also interesting in that it came from a woman whose 72-year-old mother-in-law had twelve children, six sons and six daughters. Three children died before attaining adulthood and the surviving sibling set consisted of four sons and five daughters. That is, the mother-in-law had successfully raised 75 percent of the children she produced while her daughter-in-law raised 100 percent of her offspring. It would seem that the mortality rate has long been a consideration in having a family. As one 46-year-old man said, "I thought it best to have two sons and one daughter, so I let my wife bear children continuously." The sibling set he and his wife produced is: F-F-F-M-F^x-M. That is, the set contained three surviving daughters out of four and two sons. The set was completed with the birth of the second son.

In examining data from families whose mothers are of an older cohort, we can see many differences with the younger cohort discussed earlier. Mothers who in 1978 were aged 50-59 had larger families containing more sons, and a wider variety of birth orders. For the older cohort an appropriate proverb admonished,

"One son is no son, two sons are an undependable son, and only three can be counted as a real son." (Chen, Wang and Foley 1963:60)

Today, as more people survive to old age, the number of sons desired has decreased but the death of sons is still a concern in having a family.

\[F^x = \text{deceased female and } M^x = \text{deceased male.}\]
As was seen from the comparison of the sibling sets of the two cohorts of K'ung Liao women, the social pressures to have many children are not unremitting and arbitrary. The need for a son has not changed, but recently, as the mortality rate has declined, it has become more evident to parents that each child has a better likelihood of surviving to reproductive age, and thus the number considered necessary has declined.

A correspondingly strong argument explaining the larger size of the older sibling sets may be made on the basis of agricultural labor requirements. As we have seen in Chapter II, agriculture was progressively intensified during the Japanese colonial period. This meant a parallel increase in the labor inputs per hectare. Under such conditions a large family makes sense. As the labor requirements increased, farm families responded by increasing the pool of available labor through natural increase. It is interesting, however, that the natural increase was due very little to an increase in the birth rate, but rather to a sharp decline in the death rate engineered by the Japanese administrators. For this reason, I suspect that both factors played a part in the growth of population. Families produced many children, particularly sons, because they knew several would not survive to a healthy adulthood. As the mortality rate declined and more children survived, the high birth rate continued and was tolerated because of an increasing need for human labor in agriculture.

Pre-World War II National Population Trends

There are no earlier figures to compare to the Japanese records, for the Chinese administration did not have an accurate census count.
The first collection of information related to vital statistics was conducted after ten years of Japanese rule. Therefore, the picture it presents may not accurately reflect earlier conditions for the Taiwanese people.

In the period covered by the censuses of 1905-40, two trends are evident: a small increase in the birth rate, and a decrease in the death rate. According to comparisons made by Barclay, the birth rate in Taiwan earlier in this century was among the highest on record for any group in the world (Barclay 1954:246). It was also fairly equally high all over the island, without great distinctions between urban and rural areas. While the Japanese control over the island does not seem to have had a strong impact on the birth rate, this is not true of the death rate. Here the Japanese public health measures had a clear and sustained impact on the number dying each year. Plague was nearly eradicated, cholera contained by strong quarantine measures, inoculations became standard preventive procedure, water supplies improved, and waste disposal was supervised. As Barclay notes, the techniques used were not sophisticated for their day, but the comprehensive character of the measures gained substantial results (see Figure 6).

Population History of K'ung Liao Village

For K'ung Liao it is not possible to go back prior to 1947 in the population records. Because it was previously administered as part of a larger political unit, separate records do not exist for its earlier history. It can be presumed that many of the same trends affecting the entire population in the first half of this century were in operation
in K'ung Liao. Such trends as a decrease in the mortality rate, an increase in the size of population, and a high rate of reproduction continue into the existing household registration records. Many of the beliefs behind demographic behavior as explained above continue to have their effect. I will briefly summarize the trends shown in the registration records over the last 30 years: 1947-77. I will subsequently discuss the findings of my own village census taken in 1978 and compare it with official data available for the same time. For a discussion of the method of the collection and quality of household registration data, see Sando (1980).

1947

According to the official 1947 household registration statistics, the village then contained a total of 801 residents in 113 households. Of these, 395 were males and 406 were females, indicating 11 more females than males. These figures give us an average of seven people per household, which was high compared to the national average of six shown on the 1940 census (Hsieh 1964:206).

1957

Using these figures as a baseline, the next ten years saw increases in almost all categories. It was, evidently, a period of uninterrupted population growth. According to the records for 1957, the village contained 1,016 residents in 159 households. There were 114 additional males and 101 additional females (see Table 3). This means there were 215 more people, or a total increase of 27 percent over the ten-year period. The number of households had increased at an even
greater rate: 41 percent. The explanation for this discrepancy may be in the custom of fen chia (分家) in which an extended family is divided into several nuclear families, the final number dependent on the number of sons in the extended family. Therefore one family with five sons would become five nuclear families. For a good description of fen chia in Taiwan, see Cohen (1976). The greater increase in the number of households than in the total number of residents led to a decline in the average number of residents per household to 6.4 (a decrease of .6 person per household). The sex ratio also changed from 97 in 1947 to 100 in 1957 indicating a balance of the sexes. By looking at the figures we can see that the number of males grew slightly faster than the number of females: 29 percent versus 25 percent (see Table 4).

### Table 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Households</th>
<th>+/-</th>
<th>Population</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947</td>
<td>113</td>
<td>-</td>
<td>801</td>
<td>-</td>
</tr>
<tr>
<td>1957</td>
<td>159</td>
<td>+41%</td>
<td>1,016</td>
<td>+27%</td>
</tr>
<tr>
<td>1967</td>
<td>184</td>
<td>+16%</td>
<td>1,085</td>
<td>+7%</td>
</tr>
<tr>
<td>1977</td>
<td>184</td>
<td>0%</td>
<td>966</td>
<td>-11%</td>
</tr>
<tr>
<td>1978</td>
<td>149</td>
<td>-19%</td>
<td>633</td>
<td>-34%</td>
</tr>
</tbody>
</table>

9 Pasternak (1972:78-81) wrote that the population of a village he studied on the Chia-nan Plain increased 97.3 percent between 1935 and 1968. At the same time the number of households increased by 122.9 percent. He is unable to account for the more rapid rate of increase for households. I suggest that after about 1936 when those born during a period of high birth and low death rates began reaching maturity, the size of completed families increased rapidly and led to greater pressures to divide the house into several nuclear families.
The population pyramids for these two periods make these trends even more evident (see Figure 9).

It would seem that the outlook for survival had increased both for young and old during this period. The records indicate that the growth of population was due to an increasing number of children between the ages of 0-9 (52 percent). The number of older residents was increasing also, although not nearly as fast as the children. There were 33 percent more people aged 50 and above than there had been in 1947. Higher fertility and lower mortality, then, are largely responsible for the changes of this decade.

1967

In 1967 the figures in the household registers show further increase, but indicate that the increase was beginning to taper off. Over this ten year period, the population had grown to a total of 1,085 and the number of households stood at 184 (see Table 3). However, a closer examination shows that the rate of increase was less than one-half of that in the previous decade. The population had expanded 7 percent and the number of households 16 percent. The cause of this change in rate
FIG. 9: COMPARISON OF 1947 AND 1957 POPULATION PYRAMIDS
becomes clear if we look at the figures for children under ten. Here is strong evidence that the high rate of increase had indeed peaked and that the birth rate had dropped. The number of children under age ten dropped 17 percent during this period. The number of residents aged 50 and above was still increasing, although at a slower rate than before. There were 31 percent more older males, while the number of older females had risen by 21 percent.

In 1967 the total number of male residents stood at 562. This was an increase of only 10 percent over 1957. The increase in the number of females was even lower, however. There were 523, a growth of only 3 percent. In 1967 the sex ratio stood at 107, continuing the trend of greater male increase (see Table 5). The average number of residents per household in this period had also declined to 5.9 (see Table 5).

Table 5
Village Sex Ratio and Average Household Size

<table>
<thead>
<tr>
<th>Year</th>
<th>Sex Ratio</th>
<th>Average Household Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947</td>
<td>97</td>
<td>7</td>
</tr>
<tr>
<td>1957</td>
<td>100</td>
<td>6.4</td>
</tr>
<tr>
<td>1967</td>
<td>107</td>
<td>5.9</td>
</tr>
<tr>
<td>1977</td>
<td>110</td>
<td>5.2</td>
</tr>
<tr>
<td>1978</td>
<td>96</td>
<td>4.2</td>
</tr>
</tbody>
</table>

1977

This brings us to the official figures for the final period ending in 1977. These official statistics show stability in the number of households since 1967 and a decrease of 11 percent in the total population (see Table 3). In general, from 1947 a rapid population increase changed to a small increase, then by 1977 to a small decrease.
The 1977 population stood at 966 of which 506 were male and 460 were female (see Table 4). This represents a decrease of 10 percent for the males and 12 percent for the females. Again, the sex ratio continued to favor males. In 1977 it reached 110. The average size of village households had also declined from 5.9 in 1967 to 5.2 in 1977 (see Table 5).

Two other trends are evident in the period 1967-77. First, a decrease in the birth rate. The number of males under age ten decreased 10 percent and the number of females declined by 12 percent. Second, the number of older residents, that is age 50 and above, was increasing, but only for females (27 percent).

All this adds up to a slowly decreasing population with a lower birth rate and a greater number of old people (see Figure 10). The causes of this declining population were reduced fertility and out-migration.

1978: Out-Migration

Interviews and censuses revealed that the earliest migrants from the village to urban residence and employment left about twenty years ago. However, villagers clearly identify the last ten years (1968-1978) as the period in which migration became important. Therefore it is to be expected that out-migration would only affect population statistics to any important extent after 1970. A test of the figures any time after 1970 should provide information which would allow us to conclude whether the rate of migration is being accurately reflected in the official figures. My field census conducted in 1978 can serve as such a test. Because the household registers include some categories of
FIG. 10: COMPARISON OF 1967 AND 1977 POPULATION PYRAMIDS
residents who are not actually present in the village, such as those in military service and students living in dormitories, it is to be expected that those figures would be slightly higher than the field census. However, for several reasons the comparison is still a valid one. First, the number of villagers absent for reasons such as attending school or military service is not a significant one. For example, if those in military service were included it would increase the total figures by 4 percent. Additionally, it is not to be expected that these two categories will cease to exist in the near future. A small number of villagers will always be absent for these purposes. Finally, they do not commute, but spend most of their time in activities outside the village and so are not available to participate in the social and economic life of K'ung Liao. For these reasons I think it is best not to include them in the village population count.

The field census revealed a total of 633 villagers residing in 149 households (see Table 3). There is a discrepancy of 34 percent with the official census figures available at the same time for the 1978 population. The number of households also deviates by 19 percent. Since the number of residents was decreasing at a faster rate than the number of households, it would seem that individual households were losing some, but not all of their members. Household censuses showed this to be the case.

In addition, 503 males and 454 females were officially registered as residing in the village. In fact, there were only 311 males and 322 females according to my census. It appears that fewer males are registering their moves than females. While on paper the population decline
does not seem so steep, in reality there are only 62 percent of the registered males and 71 percent of the registered females actually present. This difference has enormous implications for the village, not the least of which is the labor supply. There are now only 4.2 people per household. Among many consequences, these figures suggest that it is becoming more difficult to mobilize labor within the household. The sex ratio of those actually present in the village has also dropped to a figure lower than 1947: 96. This sex ratio reflects the greater number of resident females. Figure 11, comparing the registered population of the village with those actually present in 1978 is a more graphic representation of these trends.

The official household registers count 34 percent more people as resident in the village than were actually resident. Thus by 1977 the discrepancy is marked (see Figure 11). However, if one looks at the older age cohorts, the official figures are quite accurate. In the cohort of those age 50 and above counted in the field census, there were 66 males and 86 females. These numbers were only 7 percent below the figures of the household registers for males and 3 percent less for females. In contrast, there is a much greater discrepancy in the figures for young people. For example, the household registration figures show 213 people (143 males and 70 females) between the ages of 20-29 in the village. My census revealed only 59 residents in that age

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10 Buck's survey in China, published in 1930, revealed an average of 5.65 people per household (p. 326). In Japan in 1975 Smith found an average of 3.7 people per household in a depopulated rural town (1978:21). The average for farm families in Taiwan for 1977 was 7.2 with the Chia-nan sugar and rice area a little lower at 6.65 (Department of Agriculture and Forestry 1978:11).
FIG. 11: REGISTERED VS ACTUAL POPULATION 1978
group (26 males and 33 females). This is an overall discrepancy of 72 percent for the two sets of figures. There are, therefore, significantly fewer young people than official statistics would indicate. As we shall see later, this is an enormously important factor in the economic and social activities of the village.

**Depopulation**

The term "depopulation" generally refers to a net decrease in population between two censuses. See Slocum (1976:8-12) for a review of the historical usages of the term and the current definitions. It is clear from the above comparison of my field census with concurrent household registration data that migration has drained the village of residents, especially those below the age of 40. Interviewing revealed the time period in which migration became popular and allows us to assume much greater accuracy for the official statistics from 1970 and earlier.

By comparing several of the cohorts living in K'ung Liao today with the earliest records, those of 1947, I have calculated the approximate percentage of people born in the village who are still there today: an average of 30 percent. Figure 12 demonstrates the relation of these numbers of current village residents to their original cohort sizes.\[11\]

In addition to previously mentioned problems of data collection for periods earlier than 1947, I did not have access to any information

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\[11\] As mentioned earlier, there are no figures for the village dating back earlier than 1947. Therefore the first five cohorts are based on figures from the 1947 household registers. The next two cohorts, those born in 1948-52 and 1953-57 are based on 1957 figures. The final cohort, 1958-62 is based on 1967 data.
FIG. 12: MIGRATION BY COHORT - 1978
concerning local mortality. Clearly, some of the discrepancy between figures for those born into a cohort and those present in 1978 is due to mortality. However, if mortality were the major factor, the trend would be in the opposite direction, with older cohorts showing fewer members still alive. Thus migration is undoubtedly the more important factor.

As can be seen, the greatest divergence is in the cohort born between 1953-57 who were age 25-29 in 1978. Cohorts older or younger than these shown are presumed to be less affected by migration as their members would be older than 50 or younger than 16 in 1978. Figure 12, then, demonstrates the general decline in the number electing to remain in K'ung Liao. According to the 1947 registration figures, of those born in 1928-32 only 35 percent were still living in the village in 1978. The highest percentage of out-migrants is in the cohort born in 1953-57: 88 percent are no longer residing in the village.

To what extent is the population history, particularly the recent development of depopulation, characteristic of Taiwan in general? It is my belief that K'ung Liao is representative of demographic changes taking place in most agricultural villages in recent years. The ability of industry to pull labor from agricultural into industrial occupations is an important characteristic of the process of economic development. K'ung Liao, because of its distance from urban and industrial centers, experienced out-migration later and more intensely than did more suburban villages. K'ung Liao, for the same reason, does not have many commuting residents. I would not expect migration to result in depopulation in villages where commuting is possible. At the same time, such villages would be undergoing other changes as they shift into "bedroom
communities" dependent on non-agricultural income generated outside the village.

As a test of K'ung Liao's representativeness, I have calculated net migration figures for all counties in Taiwan, and all townships in Tainan County. The statistics these figures are based on may be suspected of being deceptively low as I have shown through my examination of current household registration figures for K'ung Liao. In the light of my findings, we can conclude that official net migration rates are low due to migrants neglecting to register their moves. If we assume under-registration affects all areas equally, we can expect net migration rates to be more extreme than shown, so that areas receiving migrants would have more than it appears and areas of out-migration would be more severely depopulated. Figure 13 represents the 1978 net migration rate for each county in Taiwan, including Tainan County. By examining this figure, we can see the levels of migration island-wide and can place Tainan County, where K'ung Liao village is located, in a larger context. Not included in the figure are the five major cities: Taipei, Keelung, Taichung, Tainan, and Kaohsiung which are indicated by blank areas. As can be seen from the map, there are several counties with higher rates of out-migration than Tainan County, and several with lower rates. Therefore Tainan County does not represent an extreme case of rapid out-migration, and its population figures can be taken as typical of a large part of the island.

12 Both the county-level and national-level figures represent my calculations based on year-end annual data available for 1978 from the Ministry of the Interior. The figures are from household registers. The equation I used is: (total males)/(total population) X male net
### Migration Rate Category

<table>
<thead>
<tr>
<th>Category Range</th>
<th>OUT</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;-20</td>
<td>-25</td>
<td>-29</td>
</tr>
<tr>
<td>-19</td>
<td>-18</td>
<td>-16</td>
</tr>
<tr>
<td>0</td>
<td>-12</td>
<td>-11</td>
</tr>
<tr>
<td>19</td>
<td>-11</td>
<td>-16</td>
</tr>
<tr>
<td>20+</td>
<td>-8</td>
<td>-14</td>
</tr>
</tbody>
</table>

### Net Migration Map - Taiwan

#### County Migration Rates

<table>
<thead>
<tr>
<th>County</th>
<th>Migration Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penghu</td>
<td>-29</td>
</tr>
<tr>
<td>Yunlin</td>
<td>-25</td>
</tr>
<tr>
<td>Taitung</td>
<td>-24</td>
</tr>
<tr>
<td>Chiayi</td>
<td>-23</td>
</tr>
<tr>
<td>Miaoli</td>
<td>-18</td>
</tr>
<tr>
<td>Tainan</td>
<td>-16</td>
</tr>
<tr>
<td>Nantou</td>
<td>-16</td>
</tr>
<tr>
<td>Ilan</td>
<td>-12</td>
</tr>
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<td>Pingtung</td>
<td>-11</td>
</tr>
<tr>
<td>Changhua</td>
<td>-11</td>
</tr>
<tr>
<td>Hualien</td>
<td>-8</td>
</tr>
<tr>
<td>Kaohsiung</td>
<td>6</td>
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<td>Taichung</td>
<td>7</td>
</tr>
<tr>
<td>Hsinchu</td>
<td>14</td>
</tr>
<tr>
<td>Taoyuan</td>
<td>18</td>
</tr>
<tr>
<td>Taipei</td>
<td>45</td>
</tr>
</tbody>
</table>

#### Research Location

- Tainan County
- Tainan City
- Yenshui
Moving to a lower level of comparison, net migration rates for all the townships in Tainan County are shown in Figure 14. In 1978 the net migration rate for Yenshui township, in which K'ung Liao village is located, was -35. That is, in 1978 for every 1,000 residents, there were 35 who migrated out of another township, county, or to a city. If this out-migration rate were to hold steady, the township would be without residents in about 29 years. Although high, there are other townships within Tainan County with higher net out-migration rates. For example, Lungchi township, to the south of Yenshui has a net migration rate of -63 which means that at the current rate it would be completely depopulated in approximately 16 years. In fact, there are seven townships with significantly higher net rates of out-migration than Yenshui township. Therefore, as Figure 14 shows, Yenshui township, which contains K'ung Liao village, may be taken as representative of a township experiencing a mid-level rate of migration in terms of Tainan County as a whole.

Migrants from K'ung Liao

K'ung Liao village is in a rural area, one hour by bus from Tainan city. The nearest industrial center is Kaohsiung city, which is too far away for daily visits. Therefore commuting is not an important pattern of migration in K'ung Liao. Also as a result of its location this village, and the area in general, was late in feeling the effects

migration rate + (total females)/(total population) X female net migration rate = net migration rate. I am grateful to Dr. Tsai Hong-chin of the Department of Agricultural Extension, National Taiwan University for his assistance.
<table>
<thead>
<tr>
<th>TOWNSHIP</th>
<th>MIGRATION RATE</th>
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<tbody>
<tr>
<td>1 LUNGC'I</td>
<td>63</td>
</tr>
<tr>
<td>2 TSOCHEN</td>
<td>58</td>
</tr>
<tr>
<td>3 CHIANGCHUN</td>
<td>40</td>
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<td>4 TANEI</td>
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<td>5 CH'IKU</td>
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<tr>
<td>8 NANHSI</td>
<td>35</td>
</tr>
<tr>
<td>9 YENSHUI</td>
<td>35</td>
</tr>
<tr>
<td>10 LIUYING</td>
<td>31</td>
</tr>
<tr>
<td>11 TUNGSHEAN</td>
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</tr>
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</tr>
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<td>18 HSIAYING</td>
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<tr>
<td>19 LIUCHIA</td>
<td>20</td>
</tr>
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<td>20 ANTING</td>
<td>19</td>
</tr>
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<td>21 HSIKANG</td>
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<td>31 KUEIJEN</td>
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</tr>
</tbody>
</table>

**Comparison of Taiwan County Net Migration Rates**
of the rapid industrialization and urbanization in Taiwan. Not until the last decade was much labor from K'ung Liao drawn to outside employment. When migration began, however, it quickly assumed great consequence for every family in the village.

The earliest migrants moved out because the land could not support them. There had been a rapid increase in population in the 1950s and 1960s. The out-migration which followed is a defining characteristic of the 1960s and 1970s. One 51 year-old migrant, home from Taipei for the anniversary of his mother's death, described his experience as an early migrant:

"My father had seven sons. After land reform only a little over 1 chia (畝) was left to my father. Because there were so many brothers, it was almost impossible for us to make a living relying on the land. At that time parents wanted children to stay at home. My older brother and I were victims of our parents' conservative ideas. Because they wanted us to stay home we never studied and had no skills. I realized that it was impossible for me to be a farmer. So even though my parents were against it, I left home. I was the first in my family to move out. This was in 1959 when I was 32. Both my brother and I had a very difficult time when we left home. I worked in Hsinying, Tainan, Kaohsiung, and finally in Taipei. The only thing I earned during those years was my children. When I got a job in Taipei, I came back and got my wife and children and we all moved to Taipei. In the old days it was very difficult to find a job because there were few factories. The oldest of my six brothers is now living in Kaohsiung, I am the second, the third lives here, the fourth and fifth are in Hsinying, the sixth and seventh are both in Taipei."

This migrant's account illustrates several important characteristics of the history of migration in K'ung Liao. Early migrants were: (1) responding to population pressure, (2) unskilled, and (3) unaccompanied by families. Recently this pattern has changed. Current migration is more a result of previous migration and the developing
expectation of moving out, than population pressure. Migrants today are also more skilled, and if married, are likely to be accompanied by families. They do not intend to return.

In order to profile the absent migrants, I collected information on 225 villagers who had moved out of the village. These consisted of 179 males and 46 females. However, while nearly 80 percent of the migrants were male, this imbalance is more a problem of data collection than an indication of a pattern of male-dominant migration. For women, marriage almost invariably involves migration out of the village into her new husband's home. Therefore I will include more information on females in Chapter V when I discuss marriage migration patterns. However, the sample of 46 females can represent single female migration.

One important characteristic of the migration pattern is destination. Forty-one percent of the females and 33 percent of the males went to Taipei. An additional 17 percent of the females and 32 percent of the males moved to Kaohsiung. These cities are not only farthest from the village, they also have the largest populations and the greatest number of job opportunities. The number of male migrants is almost evenly divided between those who have moved north and those who have moved south. However this is not the case with female migrants of whom the number moving north is twice as great as the number moving south (see Table 6).

Another important characteristic of the migration pattern is the educational level of the migrant. The largest number of migrants had a minimal education: elementary school. Thirty-two percent of all male migrants had attended or completed only elementary school. An even
Table 6

Destination of K'ung Liao Migrants

<table>
<thead>
<tr>
<th>Destination</th>
<th>Male No.</th>
<th>Male %</th>
<th>Female No.</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taipei</td>
<td>59</td>
<td>33</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td>Kaohsiung</td>
<td>57</td>
<td>32</td>
<td>8</td>
<td>17</td>
</tr>
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</tr>
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<td>Taichung</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Yenshui</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hsinchu</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>7</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

T = 179 100 46 100

larger percentage of female migrants were not educated beyond the elementary school level (39 percent) (see Table 7).

The number of those completely uneducated was low for both males and females: two of each. Beyond elementary school, the percentage of females receiving higher education was equal to the percentage of males: 57 percent. This is impressive in view of the fact that until 1968 only six years of elementary school was compulsory. But at the highest levels of education, a difference between males and females emerges. Seven percent of the males and only 2 percent of the females attended college.
A third characteristic of the migration pattern is occupation. There seems to be no concentration in any one line of employment. I identified 30 different types of jobs held by men who have left K'ung Liao, ranging from judge to construction worker. To simplify matters, I have divided migrants into manual laborers and office workers. Some migrants are not working but are students, or are job hunting. Of a total of 179 male migrants, the occupations of 131 were given during interviews with their village relatives (see Table 8). The occupations of the other 48 (27 percent) are not known. Manual labor positions

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predominate among male migrants, with 40 percent holding such jobs. However, a sizable percentage (23 percent) are engaged in office work. The diversity and scope of employment seems to reflect the great number of opportunities for employment in urban Taiwan. Such diversity is not as strongly reflected in female migrants' employment. I gathered information on 46 female migrants. I was not able to discover the occupations of only four of these. Among females, the percentage in manual labor positions (69 percent) is significantly higher than the percentage engaged in any other activity. Only 13 percent of female migrants were working in offices.\footnote{Office worker: accountant, businesswoman, nurse. Manual laborer: factory worker, beautician, tailor.}

Table 8
Occupations of K'ung Liao Migrants

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Male No.</th>
<th>Male %</th>
<th>Female No.</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office worker</td>
<td>42</td>
<td>23</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Manual laborer</td>
<td>72</td>
<td>40</td>
<td>32</td>
<td>69</td>
</tr>
<tr>
<td>Student</td>
<td>14</td>
<td>8</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Job Hunting</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unknown</td>
<td>48</td>
<td>27</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

T = 179 100 46 100

There may be several factors involved in the occupational differences between males and females who have migrated from K'ung Liao. One factor is the level of education and skill preparation which, for females, is lower than that of male migrants. Another factor involves the work pattern of women in Taiwan. Generally young women work before marriage,
a period which usually involves movement to an urban area and the opportunity to attend school at night. Unless she has a good professional job, however, a woman is not likely to keep working after marriage.\footnote{For similar comments on Taiwanese women's occupational status, see Norma Diamond (1973:211-242).}

The factory work which attracts many young women does not pay very well (part of the salary being in the form of room, board, and unreliable bonuses). Because they are seen as temporary workers, they are not given the chance to advance in their employment so they frequently change jobs and quit upon marriage. Such behavior also ensures that they will not advance through experience. In a way it is a self-fulfilling prophecy. This work pattern is clearly reflected among K'ung Liao female migrants. Even the low total number under discussion is a result of the fact that these are mainly younger, unmarried women.

One young neighbor in the village went off to Taipei to work in a relative's factory. On a visit home she described her experience:

"I work in a small factory which makes sweaters. There are 11 or 12 girls there, most from central Taiwan. I'm the only one from Tainan County. We work from 8 a.m. to 5 p.m. every day with lunch from 12 to 1. After dinner we go back to work from 6 to 11 p.m. every night except Sunday and Wednesday. Sometimes we even work as late as 1 a.m. Our salary is counted by the piece. A good worker can make 40-50 sweaters a day, and gets about 200 NT ($5.56) a day. I work as an apprentice and so my salary is 2,000 NT ($55.63) a month. The factory has a dormitory and there is no charge to stay there. They also provide food for which we pay 300 NT ($8.34) per month. A few girls have worked there for a long time, but most of them stay only a short time, then they go home for several months, and then return to work at this factory or another one."

Her description of female factory work is representative of the experience of many young women from the village. Long hours, low pay, and
Infrequent opportunities to visit their homes are common, as is the short length of employment.

A final characteristic of the migration pattern is age. The youthful ages of the migrants reflect the recent development of migration (see Table 9). The largest percentage of migrants, both male and female, is in the age group 20-29. Migration is now part of the life cycle of younger villagers. Upon completion of middle school, the average boy moves out of the village to work in a fairly unskilled job or continues his education while living in a school dormitory. Later he returns to await his induction into the military. After his service is completed, he leaves for urban employment again. Returning home with his bride for the wedding ceremony, the couple remains for approximately one month. They then go back to the city to start a family and will only be seen again in the village on short holiday visits.

Table 9

Current Age of K'ung Liao Migrants (1978)

<table>
<thead>
<tr>
<th>Age</th>
<th>Male No.</th>
<th>%</th>
<th>Female No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 20</td>
<td>33</td>
<td>19</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>20-29</td>
<td>72</td>
<td>40</td>
<td>28</td>
<td>61</td>
</tr>
<tr>
<td>30-39</td>
<td>51</td>
<td>29</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>40-49</td>
<td>15</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50-59</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>60+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

T = 179 100 46 100
The experience of female migrants is somewhat different. Although they also leave the village upon completion of their education, their migration is not wholly a matter of urban employment. As I have pointed out, marriage usually involves movement out of the natal village for women and so as wives they can be considered passive migrants. There is also a difference in the age of male and female migrants. A larger percentage of female migrants (33 percent) are below 20 than are male migrants (19 percent). Again, as an example of this difference in age between the male and female migrants, only 6 percent of the females are above age 29, while 41 percent of the males are 30 and older.

As we saw in Figure 12, there are more people absent than present in most of the village cohorts. How do these migrants move out? What contacts and opportunities do they have outside? In general, migration operates through networks and contacts. In interviewing villagers about migrants in their families, it was clear that earlier migrants went against popular opinion in leaving the village. One of the few acceptable reasons for migrating in previous times was career failure. If a farmer failed at his work, he might have to give up his land and move out. In contrast, migration today is accepted as ordinary behavior. Young people can move in with relatives in the city, accompany classmates, or be sent by their teachers or schools.

Even if a student may not feel a strong desire to move out himself, the school is one of the vehicles for mobility. There are several methods available for young people who are interested in urban employment, some of which may sweep up even the most apathetic youngster. The most common methods are introductions: (1) through the school, (2) through
individual teachers, (3) through the relatives or friends of classmates, and (4) individual application or use of an employment agency. Using the first method, a representative of a company will come to the school and show slides introducing the kind of work and the organization of the company to the graduating class. Schools want their students to find employment and welcome this kind of activity. Therefore it is not necessary that the company representative have any previous relationship with the school or principal. Students who are interested can then go and apply for employment.

One recent graduate described her introduction to a job:

"I graduated from middle school in June. Before graduation my classmates and I were introduced by the school to jobs at a textile factory in Hsinchu for two weeks. People came from the factory and took all of us there. Then we returned for the commencement exercises, but afterward no one went back to that factory because it had three shifts a day. Now I work in Taipei. Only one of my classmates is still living in this village. Most of the others are in Taipei or Kaohsiung."

If a student is introduced to employment via the second method, the teacher may get a commission from the company. Some companies do not like to hire students without an introduction and count on teachers' recommendations. With the third method the student goes to a company owned by his or his classmate's relative or friend. The student quoted above, for example, was employed in her aunt's factory. Sometimes four or five students may go out together to work.

Yet another popular method is by individual application. There are public and private employment services which can help in the application process and sometimes charge the applicant a fee.
Conclusion

K'ung Liao village has been shown to be fairly typical in terms of twentieth century population trends in Taiwan. Japanese administrative penetration of local areas was reflected in population trends nationally and locally. The death rate dropped sharply and, as the birth rate remained high, the size of the population grew creating more labor for what was predominately an agricultural economy. Cultural preferences for the security of several sons combined with the intensification of agriculture under Japanese administration explain the persistence of the high birth rate before World War II. That the benefits of agricultural intensification during the colonial period went directly to Japan was seen in Chapter II. The population dynamics of the colonial administration are now clear.

Later, in the post-colonial period, a combination of the effects arising from the high birth rate, growing survival rates, increasing number of family divisions, and land reform (which will be discussed more fully in Chapter IV) conspired to bring the meaning of population pressure home to every farm family. In rural areas this pressure was alleviated somewhat by migration to cities where early industrial employment opportunities were available. In K'ung Liao, hours from any industrial center, migration developed later but by the early 1970s had become a steady stream. Migration, mainly to Taipei and Kaohsiung, has become part of the life cycle of nearly all the young people in K'ung Liao. Village students are assisted by their school, teachers, parents, relatives, friends, and relatives of friends to find a job outside. Villagers migrate now because they expect to migrate; they
are educated and have the skills for urban employment, and as we shall see, because it is becoming harder to stay while increasingly easy to leave. They do not intend to return. Moreover, as Chapter V will show they are not prepared to return. Migration is now so popular that the village is becoming depopulated.

However, many migrants retain their registration as residents of the village, greatly inflating figures for rural population. The discrepancy for young people is especially impressive. In K'ung Liao there were 72 percent fewer residents between the ages of 20-29 than were officially registered in 1978. Since many economic policies are based on such population figures, over-registration in rural areas has led planners to assume a large work force available in the countryside and, in some cases, even underemployment. The impact of such policies will be seen in the following chapter.

Although it is now against the self-interest of the village in many ways, the exodus of young people is a dominant feature of village life. It has become a vicious circle; it is not caused by population pressure but by its own effects. Given the comprehensive nature of depopulation in K'ung Liao, it is obvious that effects will be felt throughout the economic and social life of the village. At what point does out-migration shift from providing relief from pressure on resources to become the source of another pressure? How effectively can migrants be replaced by the remittances they send back to their home villages? Because, as I have shown, other parts of the county and island are experiencing depopulation to a greater or lesser extent, an examination of the effects of this population process in K'ung Liao will be instructive of changes many villages throughout Taiwan are undergoing.
CHAPTER IV
THE ECONOMIC IMPACT OF DEPOPULATION

As the number of people per unit of land increased, Taiwanese farmers had more incentive to intensify their work. However, it is clear that by the late 1950s and 1960s the pressure of population had led to a decline in the average size of landholdings. Subsequently off-farm employment grew in economic importance (Ho 1978a:88). Some employment opportunities, as we shall see, did not require a change of residence. However, in the 1970s urban employment and out-migration assumed great importance. In K'ung Liao, out-migration has led to depopulation of the village, and is most serious for younger cohorts. Part of my research was an attempt to answer the question, "To what extent does depopulation affect agricultural communities?" To do this, I followed the cycle of planting and harvesting, testing the impact of demographic change on farmers' ability to continue normal economic activities. My research revealed a number of short-term and long-term changes. Villagers have modified the use and division of labor, mechanized, increased the use of chemicals, paid higher wages for labor, modified the crop cycle, farmed part-time, modified land use, and accepted remittances. However, not all of the pressure comes from demographic change. As we have already seen, past and present government policies have been very strongly felt in the countryside.

At a more general level, farming is becoming capital intensive, more productive and less profitable. Perhaps of greatest importance is the passing of agriculture from a significant role in the overall
economy. This loss is signaled not only in official statistics on contribution to the GNP, but in the fact that neither farmers nor their offspring are planning for another generation of farmers. Farmers are not passing their knowledge on to their children and are making great sacrifices to see that these younger villagers leave both farming and the village behind as soon as they finish school. While villagers continue to wrestle with the problems of contemporary agriculture through their many individual strategies, their ultimate solution is to give up farming as an economic activity. The farmers of K'ung Liao foresee a promising, prosperous future, but not in agriculture.

**Government Programs and Policies**

In describing the current economic position of the villagers it is important to distinguish all the threads that comprise the villagers' economic activities. Some of these are historical, some are political and some are demographic. I would not like to give the impression that all economic decisions are a result of depopulation. However, it is obvious that depopulation is currently playing an important role in shaping economic decisions for farmers. In order to accurately reflect this importance, I will review the history of agricultural practices in the area of K'ung Liao village from World War II to the present and cite important government programs that induced agricultural change during this period. I will then be able to point out constraints which are not demographic, and which in fact, have influenced demographic behavior. The linkage lies in the fact that governmental policy has had two aims: to promote economic development through industrialization; and to increase agricultural productivity. As a result, surplus labor was
being drawn out of rural areas at the same time that government programs encouraged the intensification of agriculture. Today a large portion of the population has left the village. Yet farmers are more in need of labor than ever before. Factories are moving to the countryside in search of labor at the same time that farmers are having to modify their techniques because they cannot find enough help. This pressure on the agricultural system is an important fact of life in rural areas today.

We have seen in Chapter II the impact of the Japanese colonial administration on agriculture in Taiwan. In the microcosm of K'ung Liao village, developments during the Japanese period were of great consequence. The construction of the Chia-nan irrigation system led to a change in the cropping pattern and an increase in rice production. New varieties of crops were introduced. A Farmers' Association served as intermediary between national political policy and individual farmer. Land was surveyed and taxed. Production increased through technical improvements and was consumed in rising exports. All in all, farmers were much more organized and directed by national-level politics than they had been before the Japanese period. And the end of the Japanese administration of Taiwan did not mean the end of the political penetration of agriculture.

During the first few years at the end of World War II agriculture was still severely affected by wartime conditions. Bombing had destroyed sugar refineries, factories, and transportation lines; fertilizer supplies had been cut off; and inflation was a major problem. But by 1953 production was beginning to rise again and farmers slowly recovered from the impact of the war. In the years since, a number of important
programs related to agriculture have been developed and implemented by the Nationalist government. They have played an important role in bringing agriculture to its current position. These programs are: land reform, the rice-fertilizer exchange program, land consolidation, and improvement of water supply. I will review the impact of each of these programs on modern agriculture. For more detailed information, I will refer the reader to the many other studies on this subject.

**Land Reform**

The Land Reform Program was initiated in 1949 through rent reduction, the first step in what was to be a three-step program. The other two steps were the sale of public lands and the land-to-the-tiller act which was completed in 1953. Thus the high points in that four-year-period were the reduction of rent to 37.5 percent of the annual harvest; the sale of a total of 20 percent of the island's arable land which had been owned by the Japanese government or Japanese individuals; and the sale of lands jointly owned or in excess of 3 hectares of paddy land or 6 hectares of dry land. Land purchased from landlords by the government was sold to tenants for 2.5 times the 1953 crop yield. The government compensated the original owners the value of their land 70 percent in commodity bonds and 30 percent in stocks from four government industries (cement; paper; industry and manufacturing; and agriculture and forestry).

The impact of the program on K'ung Liao villagers depended to a large extent on whether they had been landlords or tenants:

"I bought land under the Land Reform program. My father had been a tenant. I bought 1/10 hectare for more than
30,000 NT [approximately $750 US] during the rent reduction program. Then through the sale of public lands, I bought an additional 2/5 hectare. I paid for this land over a ten year period with two annual installments."

"I own over 1/2 hectare. One piece of 1/5 hectare plus I inherited from my father's brother's son who died without descendants. Another 2/5 hectare I bought before the Land Reform program from a Yenshui landlord. This man had heard the news about Land Reform and hurried to sell all his land ahead of time. So my brother and I each bought 2/5 hectare from him."

"My father inherited 2 hectares from his father plus 1 hectare from his deceased uncle to whom he had been adopted. These 3 hectares he used to rent out to others either for a fixed payment in cash, or for half of the harvest. After my father died, my brother and I each farmed 1 hectare and rented the remaining hectare out. Through the Land Reform program, the tenants got that hectare. We were loath to give up land to the tenants, but it was government policy so there was no alternative."

"I inherited 2 hectares from my father. During the Land Reform program it was all sold to the tenants. For one hectare I received 100,000 NT [approximately $2,500 US]. The government gave me stocks but my wife sold them. After my land was sold I never bought any more and never farmed again."

At the end of the Land Reform program the number of owner-operated farms in Taiwan had increased from 36 percent of all farms to 55 percent. Other effects of the Land Reform program that have been cited are: a transfer of investment capital from agriculture to industry, a change in rural power structure, a decrease in average size of land holdings, an intensification of labor use, an increase in multi-cropping, and a reduction in absentee landownership. For more information on this subject see: Chen 1961; Gallen 1966; Kuo 1975; Mao 1976; Pasternak 1968, 1972; Tsai 1967.
The Rice-Fertilizer Exchange Program

In order to expand and regulate the production of rice, a rice-fertilizer exchange program was announced in 1948. The Provincial Food Bureau was made responsible for setting the ratios of exchange and administering the program through local Farmers' Associations. By means of this program, the government monopolized the supply and distribution of fertilizer and set its price through 1972. Therefore, for over 20 years farmers could get fertilizer only by bartering with rice at nationally controlled rates. This program not only stabilized the rice price, but stimulated the growth of a domestic fertilizer industry. Its influence on the rice market was substantial. The program handled nearly 35 percent of the amount of rice going through the market (Lee 1975:141). Thus the government was able to dictate the rice price and to collect a hidden rice tax. Because the fertilizers bought on the international market by the government were cheaper than the domestic rice being bartered for them, the government was making a substantial profit on the exchange.

Total profit from the fertilizer barter program roughly amounted to 423 million NT dollars (equivalent to ten and one-half million U.S. dollars) each year, of which 388 million was earned from domestic production. The above analysis discloses the fact that the primary purpose of the government's rice collection through the fertilizer barter program was that of obtaining a high profit in order to meet budget deficits." (Lee 1975:50)

Rice was also collected from farmers through several other programs: land taxes, rent and sale of public lands, loan repayments, and compulsory rice purchases. The rice collected was used in four ways: (1) rationed to the armed forces, (2) rationed to government

Land Consolidation

The land consolidation program was implemented in the recent past beginning in Tachia township in Tainan County in 1959. Farm land in K'ung Liao was consolidated in 1971. Figure 15 illustrates the regularity of the fields after consolidation. I was unable to obtain a map of the area before consolidation for purposes of comparison. Some of the announced objectives of the program were to: (1) improve irrigation, drainage, and transportation; (2) reduce the number of footpaths and boundaries; and (3) improve conditions for farm mechanization. The farmers paid for the program by giving up .14 hectare per hectare owned, plus an equal amount in cash. Farmers who were unable to pay could get 3-year low-interest loans from the Land Bank. In addition to land received by the government from individual farmers, the more efficient organization of plots resulted in extra land and individual farmers were able to buy these lands from the government at (in the case of K'ung Liao) 170,000 - 200,000 NT per hectare ($4,728 - $5,563 at the current exchange rate), depending on the quality.

"During the land consolidation program I lost about 3/10 hectare. So I bought 3/10. First, I paid 40 percent of the price in cash, then the rest I paid through installments."

1Tainan County government 1968:7, 8.
FIG. 15:
VILLAGE FIELDS AFTER CONSOLIDATION
"There were advantages and disadvantages. The paths are good and now we don't have to walk on other people's land. But I did lose some land."

"Through land consolidation my land of 1.65 hectare was reduced to 1.32 hectare. It was all in one piece. My parents' graves were in the middle of a field which became part of another person's land so he returned it to me."

"We lost more than 1/10 hectare because of land consolidation. The government gave us some flour in return—not much, just symbolic. At that time most people lost land plus they had to pay for the program. Areas that were consolidated later didn't have to pay for the program."

Many farmers found their fields flooding when there was much rain. A number of areas were left with problems with irrigation outflow. For more information on the land consolidation program, see: Huang 1977, Vander Meer 1976.

Water Supply

The completion of the Tseng Wen Reservoir in 1974 increased the water supply for a large area, including K'ung Liao village. While there was then enough drinking water, the biggest impact was on the crop cycle. Previously one rice crop was grown every three years, but after 1974 there was enough water for two crops of rice every three years. In all, the Tseng Wen Reservoir permitted one crop of sugarcane, two of rice, and two mixed crops within a three-year period. Shown in Figure 16 is the new crop cycle. The fields surrounding the village are divided into three areas, each of which has its own irrigation schedule permitting different crops (see Figure 17). Thus any farmer with plots of land in all three areas must diversify his planting according to the schedule for each area as seen in Figure 16. In addition to diversifying crop output, this arrangement also results in a diversity of labor
**FIG. 15: THREE YEAR CROP CYCLE WITH IRRIGATION PERIODS**

Based on information provided by the local Irrigation Association station.
FIG. 17: THREE SMALL AREA IRRIGATION PATTERN WITH TYPICAL FIELD DISTRIBUTION
requirements. Labor is most critical at times of planting and harvesting. As this schedule shows, planting and harvesting are spread throughout the year as different crops complete their cycles. When the farmers receive the notices sent out by the Irrigation Association, they are given a certain number of days in which to plant the next crop. If a farmer wants to change crops, he can appeal to the Irrigation Association, but due to the fact that the water from the surrounding fields will affect his crop, such appeals are rarely made. He also knows that unplanted fields are taxed at triple the rate of planted fields so there is no point in letting fields lie fallow.

One effect of this "three year-two rice crop" system is that schedules are highly individualized; some are free while others may have a heavy workload depending on each family's land ownership and the position of their fields. According to Chen (1977:51, 52), this functions to prevent seasonal unemployment in that those who are free may assist others. He found that it became a push factor for migration because farmers were more able to help each other in planting and harvesting. How this has changed will be seen below.

Many K'ung Liao farmers felt that the completion of the Tseng Wen Reservoir in 1974 had the unexpected result of creating more work for them than ever before. The period of growth for the sugarcane was shortened and the second rice crop was added. However, because of out-migration, fewer people were available to work. Thus, while the production of rice increased, the burden on the farmers became heavier. One villager discussed his experience with the new cropping schedule.

"Before the improvement in irrigation, I could harvest about 300,000 tons of sugarcane per hectare [about
226,797 lb.]. Also there was more leisure time. Now the schedule is very tight and because the cane is not given a year and a half in the ground as it previously was, the harvest is down to 200,000 - 240,000 \( \text{hs} \) per hectare [about 151,196 - 181,435 lb.]. The addition of one more rice crop is not profitable enough to compensate for the loss of 60,000 \( \text{hs} \) of sugarcane [45,358 lb.]. Plus I must employ workers for the rice crop and now wages are so high and labor is hard to find. It would be better to have the sugarcane which has a high export price and can be interplanted with mixed crops."

Through land reform and the rice-fertilizer exchange programs the government generated a great deal of capital which it channeled into industrialization. By taxing farmers and breaking up large estates, it provided a motivation for out-migration. Thus the agricultural sector lost both labor and capital to the industrial sector. These two programs and the following two, land consolidation and improved irrigation, all promoted agricultural intensification. More crops could be grown on more land, more efficiently by more individual landowners. This created a heavier demand for labor at the same time that the agricultural sector was unable to compete with industry for profits and wages. Thus workers were lost to industrial jobs and rural areas became depopulated.

**Economic Profile of the Village**

The labor shortage in agriculture has developed from out-migration and agricultural intensification. It also stems from the wide variety of non-agricultural income available to the villagers. They can earn money inside the village through such activities as hawking food, running a small store, or doing piece work for outside companies. There are more opportunities outside the village in construction work, nearby stores and small factories, or government jobs. Thus not all residents who could be are engaged in full-time agriculture. There are a total of 368
residents aged 20 and above. Of these, 93 or 25 percent were earning some income from activities other than farming. The largest group, 22, work in factories or shops in two nearby towns, while a smaller number, 16, work in shops in or near the village. Factories near the village employ 11 residents, while six work at government-related jobs, and nine are itinerant hawkers. The remainder engage in a variety of work, from cottage industries to construction work (see Table 10).

The income these employment opportunities provide plays an important role in the village. For a farming family, one member's income from hawking or construction work supplies needed cash between harvests. Additionally, in spite of recent increases, wages for farm labor are not competitive. The salary a girl can earn in the small village sweater factory is greater than that earned by her mother working as a female laborer in the fields. Many residents have both agricultural and non-agricultural income and it is common for families to have one member farming full-time, one member running a shop or hawking, and one or more members working in factory jobs in urban areas.

Another source of income for village residents is remittances from migrants. As might be expected, the money remitted from relatives in the cities has become important. Forty-eight percent of the households receive remittances, some regularly and some irregularly.² Unlike other income, remittances are not tied to work done by residents and can supplement agricultural and non-agricultural income. In fact, some residents

²For an excellent description of a Hong Kong community completely dependent on remittances, see Watson (1975).
Table 10
Sources of Non-Agricultural Income in K'ung Liao

<table>
<thead>
<tr>
<th>Employment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction work and odd jobs</td>
<td>12</td>
</tr>
<tr>
<td>Paper mill in Hsinying</td>
<td>9</td>
</tr>
<tr>
<td>Factory/store in Hsinying</td>
<td>8</td>
</tr>
<tr>
<td>Government or political job</td>
<td>6</td>
</tr>
<tr>
<td>Village grocery store</td>
<td>5</td>
</tr>
<tr>
<td>Hawking food</td>
<td>5</td>
</tr>
<tr>
<td>Village sweater factory</td>
<td>5</td>
</tr>
<tr>
<td>Factory/store in Yenshui</td>
<td>5</td>
</tr>
<tr>
<td>Lumber mill</td>
<td>3</td>
</tr>
<tr>
<td>Clothing factory</td>
<td>3</td>
</tr>
<tr>
<td>Junk dealer</td>
<td>3</td>
</tr>
<tr>
<td>Sugar company employee</td>
<td>3</td>
</tr>
<tr>
<td>Truck driver</td>
<td>2</td>
</tr>
<tr>
<td>Selling paper money</td>
<td>2</td>
</tr>
<tr>
<td>Recycling toothpaste tubes</td>
<td>2</td>
</tr>
<tr>
<td>Irrigation Association</td>
<td>1</td>
</tr>
<tr>
<td>Owner of outside shop</td>
<td>1</td>
</tr>
<tr>
<td>Leather work</td>
<td>1</td>
</tr>
<tr>
<td>Ice seller</td>
<td>1</td>
</tr>
<tr>
<td>Barber shop</td>
<td>1</td>
</tr>
<tr>
<td>Buying and reselling crops</td>
<td>1</td>
</tr>
<tr>
<td>Pesticide store</td>
<td>1</td>
</tr>
<tr>
<td>Copyist</td>
<td>1</td>
</tr>
<tr>
<td>Iron worker</td>
<td>1</td>
</tr>
<tr>
<td>Teacher</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>1</td>
</tr>
<tr>
<td>Photo shop</td>
<td>1</td>
</tr>
<tr>
<td>Village head</td>
<td>1</td>
</tr>
<tr>
<td>Selling cooking gas</td>
<td>1</td>
</tr>
<tr>
<td>Tailor</td>
<td>1</td>
</tr>
<tr>
<td>Pastry shop</td>
<td>1</td>
</tr>
<tr>
<td>Motorcycle repair shop</td>
<td>1</td>
</tr>
<tr>
<td>Making rags</td>
<td>1</td>
</tr>
<tr>
<td>Making coverlets</td>
<td>1</td>
</tr>
<tr>
<td>Post Office and Electrical supplies</td>
<td>1</td>
</tr>
</tbody>
</table>
have a combination of all three. A typical case is a villager in his forties who is a part-time farmer, works in the paper mill, and receives part of his son's salary from Taipei. However, not all income is flowing into the village, part of it is going out. The direction of income flow is often tied to the domestic cycle. For example, a family will support a member who goes to the city to study or work. When that dependent is able, he will begin remitting part of his salary back to his family. If he stops working to enter military service, his family will begin supporting him again. After marriage he may remit money to his parents, although this depends on a combination of his financial success and their need.

Population Constraints in Agriculture

As we saw in Chapter III, the smallest cohorts are those between the ages of 20 to 35. Young people begin to move out after graduating from middle school at about age 15, and by 20 are settled into jobs in Taipei, Kaohsiung, Tainan City and other urban centers. Usually the marriage ceremony brings them back to the village, but after about one month they return to work in the cities and start a family. It is only those above age 35 who may feel hesitant to move out to try to find employment in the city. Members of this age group say they have no skills for occupations other than farming, they have investments and debts making it hard to take such a financial risk, and they are used to farming and knowing all their neighbors. At the same time they hope their children will move out and get good factory jobs, or better yet, office jobs. Then they won't have to work like animals in all kinds of weather and
will have steady, reliable incomes, both of which are seen as important advantages over a farmer's life.

There are 175 males and 198 females between the ages of 15-64. There are 1.17 males and 1.32 females per household in this age group. As a result, it is very difficult to mobilize cooperative farm labor within the household. This problem is also reflected in the decline in the average number of people per household to 4.2.

One reason a young person would still be living in the village is that he is unable to work or to take care of himself. There are a number of such disabled young people in the village. Three males between 20-24 are disabled, as well as two males between 30-34. There are also two disabled females. These seven disabled dependents ranging in age from 17-44 suffer from such problems as blindness and brain damage. Several were unable to go to school. One was in an industrial accident in Taipei several years ago in which he lost a leg. Two are able to work irregularly, one in a lumber mill and one in the fields, but the rest are not employed. Therefore while they live in the village, for the most part their disability has incapacitated them for farm work and prevents them from having the choice of migrating. Consequently, their cohorts which are important for agricultural labor do not even contain as many potential workers as they appear to.

If we look at the village labor pool household by household, the current situation becomes clear. We can see that, on the average, families have a minimum number of people engaged in daily farm work, and rely heavily on female labor. Of 112 households, 93 percent have fewer than three people engaged in day-to-day farm work (see Table 11). These
Table 11

Number of Household Members Involved in Daily Farm Work

<table>
<thead>
<tr>
<th>Members</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 person</td>
<td>37</td>
<td>33</td>
</tr>
<tr>
<td>2 people</td>
<td>67</td>
<td>60</td>
</tr>
<tr>
<td>3 people</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>4 people</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Total 112 100

Workers are more likely to be female than male. For a variety of reasons (death, outside employment of spouses, etc.), 24 percent of the farms are run solely by one woman, while only 9 percent of the farms are run by a single man. A majority (58 percent) of the farms are run by a couple (see Table 12). In spite of the dominance of labor by married

Table 12

Sex of Household Members Involved in Daily Farm Work

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 woman, 1 man</td>
<td>65</td>
<td>58</td>
</tr>
<tr>
<td>1 woman</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>1 man</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>1 woman, 2 men</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2 women</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2 women, 1 man</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2 women, 2 men</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Total 112 100
couples, there are a variety of arrangements within the household found in a smaller number of cases. In some households (32 percent) farm work was performed by only one spouse, usually the wife (23 percent). Less often the work is divided across two generations. There are a few cases of a son working alongside his parents, or a daughter-in-law doing farm labor (see Table 13). All this refers to work done by household members on their own land or on rented land, for which no wage is paid. I found that in many cases farmers who worked for a wage outside of agriculture, although considered "part-time farmers" actually were not involved in agriculture and left all work up to the wife. In other cases, they worked at times of peak labor demands, but were uninvolved in daily tasks.

Table 13

<table>
<thead>
<tr>
<th>Relationship of Household Members Involved in Daily Farm Work</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married couple</td>
<td>64</td>
<td>57</td>
</tr>
<tr>
<td>Wife</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>Husband</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Widow</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Mother and daughter-in-law</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Couple and son</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Daughter-in-law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Husband and 2 wives</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Father and daughter-in-law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Couple and adopted son</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Couple and daughter-in-law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Couple, daughter, and son-in-law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Couple, son, and daughter</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Father, son, and daughter-in-law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>100</td>
</tr>
</tbody>
</table>
As mentioned earlier, a majority of farm households interviewed indicated that none of their members works for a wage as hired labor, in spite of the demand. Of 52 households with at least one member who does work as a farm laborer for others, 37 percent hired out the wife, whereas 35 percent hired out the husband and wife. The husband alone worked outside less frequently: 21 percent. Hiring out a daughter-in-law (2 percent); or a son and daughter constitute the remaining arrangements (see Table 14). It can be seen that these households provide the village with more women for wage labor than men. That is, 58 percent of the available labor was female and 42 percent was male.

Table 14

<table>
<thead>
<tr>
<th>Household Member who Performs Wage Labor for Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member</td>
</tr>
<tr>
<td>Wife</td>
</tr>
<tr>
<td>Husband and wife</td>
</tr>
<tr>
<td>Husband</td>
</tr>
<tr>
<td>Daughter-in-law</td>
</tr>
<tr>
<td>Mother and daughter-in-law</td>
</tr>
<tr>
<td>Son and daughter</td>
</tr>
</tbody>
</table>

Total 52 | 100

A majority of K'ung Liao households (58 percent) have at least one unmarried child living outside the village, and more than 1/4 of all households have no children at all at home. If families with some non-agricultural income are considered part-time farmers, then nearly 2/3 of the K'ung Liao households can be considered part-time farm families. Only 21 percent of the farming households depend solely on
agriculture for income. An additional 17 percent of the households own no land and never do agricultural work. Nationally, the percentage of part-time farm households is 70 percent, showing the same trend around the island (JCRR 1977:117). We can see, then, that a majority of the households in K'ung Liao can be described as part-time farm families, and less than 1/4 can be called full-time farmers. The number of part-time farm households has an economic impact for the farmer. "The proportion of non-agricultural income in farm income was 34.1% in 1964 and 53.7% in 1975" (Fei, Ranis and Kuo 1979:249).

The Labor Shortage

All of this has led to a situation in the village in which each household has a minimum supply of labor, has more adult females than males, and a majority are only part-time farmers. These three factors impose important constraints on agricultural work and production. The labor shortage at the heart of this situation has arisen from the rapid out-migration of villagers and the lack of replacement labor. How the remaining villagers have adapted to this labor loss and how serious a problem it is for agricultural production is the focus of the remainder of this chapter.

Out-migrants are of two kinds: whole families and individuals. As families lost members as well as neighbors, the labor force of each family has come to be composed of fewer people, and at the same time, a declining number of people are available to work for others. In interviewing 128 households, 55 percent said that no one in their family works for others. However, of 114 landowning families, 94 percent said that they do need additional labor and hire wage labor. The conflict
between the demand for labor and the supply is apparent. K'ung Liao villagers attempt to resolve the conflict in several areas: changing types of labor, increasing the wages offered to hired labor, and changing the division of labor. I shall discuss each of these in turn. As we shall also see, they are moving into capital intensive agriculture and changing the use of their land.

Labor Mobilization

One outcome of the conflict between the supply and demand for labor is a change in the manner in which labor is mobilized. Previously, there had been three common types of labor: (1) family; (2) exchange; and (3) hired. During the last decade, as the pool of available domestic labor shrank, K'ung Liao households were increasingly likely to need outside help. Their membership was less capable of performing all tasks. In addition, as labor became scarcer, a closer calculation was kept of how labor was used. Formerly, family labor might be available to a wide range of relatives who did not expect immediate or even equal repayment. The category of family labor has now shrunk to the nuclear family, of whom fewer are present in K'ung Liao, and people are loath to call for help from other relatives who also lack adequate manpower. Since labor is so scarce, villagers feel great reluctance to call on others to help them. They are left with two options: to exchange labor with others, or to pay for it. Thus family labor has constricted in scope, exchange labor has declined in popularity, and wage labor now predominates.

3 This follows the types of labor described by Hsieh (1975) (in Chinese) for the Puli Basin in Taiwan. He contrasted the types of labor needed for rice and sugarcane crops.
The decline of family and exchange labor and the rise of wage labor has led to a division between the way larger and smaller landowners mobilize labor. Villagers with larger amounts of land must always hire labor. Because they do not have enough time to reciprocate, they cannot get others to help them. Those with less land can work for others for cash or on an exchange basis. In this new exchange system, one day's labor is repaid by one day's labor. A woman can repay a man's work but men usually only do women's tasks on their own land so the opposite is not true. In addition, men's labor is more highly paid—I discuss this below. Even the borrowing of an ox or a cart must be repaid. Most villagers recognize that help given, even to close relatives and neighbors is a scarce resource and must be repaid. For larger landowners, labor exchange itself is no longer possible. They are entirely dependent upon hired labor.

Labor Wages

As a direct consequence of the labor shortage, both for domestic and hired labor, wages have risen sharply. Through a series of interviews with villagers, I reconstructed wages in K'ung Liao between 1968 and 1978 for three common types of labor: female, male, and field preparation using an ox. During this period, female labor wages went up 1,500 percent, wages for field preparation increased almost 2,100 percent, and male labor went up slightly over 2,200 percent (see Figure 18). One reason for the discrepancy between the increases for female and male labor may lie in the number of male and female workers available in the village. As we have seen, there were 23 more females in K'ung Liao
LEGEND

- FEMALE
- MALE
- PLOWING COST
- MARKET/FARMER'S PRICE: RICE
- MARKET PRICE: RICE
- FARMER'S PRICE: RICE

FIG. 18: PERCENTAGE INCREASE IN VILLAGE WAGES AND RICE PRICES - 1968-78
between the ages of 15-64 in 1978. There are also more women involved in wage labor: 58 percent of the available hired labor was female. Therefore male vs. female labor wages have risen disproportionately. In 1968 men earned 50 percent more than women for one day's work. Ten years later they commanded 125 percent more.

In order to put the increases in labor wages in a realistic context, changes due to inflation must be discounted. I have done this by collecting the market price of rice and the price the farmer receives for his rice crop for the same ten-year period (see Figure 18). Because these figures all refer to prices within the village, they represent the condition of agriculture and the local economic position of the farmer in K'ung Liao. Between 1968 and 1978 the market price of rice went up nearly 700 percent. During the same period the price the farmer received for his rice rose more than 600 percent. We can see that these two figures are much smaller than the increases in labor wages cited above. By dividing the three kinds of wages: male, female, and plowing, by the market price of rice, the real increase in wages is obtained4 (see Figure 19). As can be seen, female wages went up at a slower rate than male or field preparation wages. Wages for field preparation using the ox increased dramatically and it should be noted that such labor also requires a male driver, so for this kind of labor males received wages which were increasing at an even greater rate than their usual wages. Wages vary from village to village. There is no official mechanism for setting

4As I have shown in this chapter, there is a considerable degree of government interference in the rice price. However, it remains the best indicator available.
FIG. 19: REAL WAGE INCREASES - 1968-78
limits and the market seems to be based on supply and demand. As the demand within the village has increased, the wages have risen. One villager explained to me that those who are short of labor will offer more money. Then when they work for others, they will demand that same higher wage. And so gradually wages go up.

What this means to the farmer is that, in real terms, his costs for labor have been increasing at a faster rate than his income. Nearly every year he has been more likely to be hiring labor, and nearly every year he has had to pay more to get it. Therefore, as a direct result of migration, his economic position has been worsening. One villager expressed vividly the change in the farmers' position:

"Forty years ago, during the Japanese occupation, the wages for field preparation using an ox for three days could buy one peck of rice. Today three days' wages comes to 1,500 NT [$41.72] and one and one-half pecks cost only 100 NT [$2.78]. So if you work for three days you can now buy 22.5 pecks. Labor wages go up but the rice price remains the same."

The Changing Division of Labor

As the pool of domestic labor shrunk, and the increasing demand led to rapidly rising wages for hired labor, the use of labor has shifted to a mounting dependence on women. As a result of the availability of women and the lower wages they receive, women are being called on to do more tasks than ever. In general, work defined as exclusively male is kept to a minimum and involves heavier labor or the use of machines. Currently, the categories of work which can only be done by men have been reduced to four: (1) field preparation; (2) wrapping, bagging and transporting harvested rice; (3) operating a tractor or rice transplanting
machine; and (4) digging up sugarcane roots. Jobs for hired female labor are greater in number and more diverse: (1) transplanting rice; (2) weeding; (3) thinning sugarcane leaves; (4) cutting cane into sections and bundling them; (5) harvesting rice by hand; (6) drying such crops as rice and corn in the sun; (7) planting mixed crops; (8) applying fertilizer, pesticide, and herbicide. Men and women do a greater number of jobs on their own fields and do not rigidly follow this division of labor there. Whether women have always been so heavily involved in farm work was a question answered by one male villager who said,

"When I was young even women with bound feet worked, but women did only simple tasks like weeding, not harvesting or transplanting. Now women do almost all work, even the most exhausting. For example, in harvesting sugarcane they do all the work. One reason is that their wages are cheaper. It helps a little to use women when profits are so low."

Thus, as a result of the current demand for labor, augmented by higher wages, farmers are hiring female laborers to do a greater variety of tasks than ever before. This changing division of labor has aided the search for labor. However, at peak times there is still a problem. As the village is no longer self-sufficient in labor, farmers have had to widen their area of search. Many villagers indicated that labor must be recruited both from inside and outside the village to meet the demand. There are immediately visible limits to this solution, however, since to a greater or lesser extent all the villages in the area have the same problem.

**Capital Intensive Agriculture**

Having described the variety of non-agricultural income in the village and some of the obvious ramifications of the current
agricultural labor shortage, I would like to turn to the more technical aspects of farming. Many mechanical innovations in farming are also attributable to the depopulation of the village. One broad area of change is in the use of energy. Farming in the village is quickly being transformed from labor intensive to capital intensive agriculture. In other words, farmers have responded by replacing human energy with other sources of energy. There are two ways agriculture has become more capital intensive: through mechanization, and by increasing the use of chemicals.

In discussing the first of the capital intensive methods, mechanization, it is important to realize that while mechanical devices are not unknown in the history of the village, up until ten years ago all tasks relied primarily on human labor. Within a very short period, some of the most important and most labor intensive tasks have been mechanized. Three of these tasks are: (1) harvesting rice; (2) transplanting rice; and (3) preparing the fields for planting.

Times of planting and harvesting are the busiest for farmers, and these tasks create the greatest need for labor within fairly restricted periods. An important example is the rice harvest. The rice is all harvested within about one month followed immediately by the planting of sugarcane and mixed crops. Labor for harvesting was always mobilized within teams. There were four teams in the village each made up of fourteen members. The members would harvest the fields of each member in turn, and then do other villagers' land. They received wages divided up and distributed by the team head, and shared the cost of gasoline for the threshing machines which separated the grains from the stalk.
This machine was a motorized version of an earlier one that had been powered by foot. The machines involved were privately owned and the owner did not have to share the cost of gas. The last year these teams were still used for the rice harvest was 1975. After that year the labor in and around the village was insufficient. Even though, as I have shown earlier, the irrigation schedule only allows 1/3 of the village land to be planted in rice at any one time, out-migration had depleted the labor pool. As a result, with the 1976 harvest, teams from outside the village were hired. By the summer of 1978 there were eight of these outside teams employed, each made up of three men or two men and one woman. Each of these three-person teams works with one rice harvesting machine, owned by the team, which reaps, threshes, and bags in one operation. In fact, the machines do most of the tasks formerly accomplished by the labor of the village harvesting teams. All these teams are from outside the village and some from as far away as central Taiwan. They are made up of migrant workers who travel for as long as six months of the year, starting in the south and moving north following the rice harvest. There is also one team which harvested by hand those fields that cannot be done by machine. This is also an outside team. Two villagers who serve as middle men for the teams receive a commission. They line up customers for the teams, arrange a schedule, a place for the workers to stay and lead them to the fields each day. One middle man I interviewed arranged the harvest for 22 families in 1978. He received a little over $8 US per hectare from the team as commission and the team itself took in $125 US per hectare. Owners of rice fields point to the lack of young men and women in the village as the reason for hiring outside teams. In a very short time the
village has become wholly dependent on outside labor to harvest a staple crop.

The time when the rice seedlings are transplanted into the fields also requires a great deal of labor. For this work there are still three to four groups of ten or more members each. The groups are composed of females and the male owner of the field who has hired them comes out and joins them in their work. The average wage for a member of a rice transplanting team is $8-11 US per day. For villagers short of labor, a machine is now available for this work. The first mechanical rice transplanter was bought by a K'ung Liao farmer in 1975. There are now three, the last of which was bought for the 1978 planting.

The cost of planting by hand is $14 US per hectare higher than planting by machine; however, many still consider it better to plant by hand since the seedlings are planted more deeply and securely in the soil. If there is a strong wind, rain, or typhoon the field planted by machine will have to be gone over by hand and the seedlings checked. Those who have transplanting machines work for others in addition to doing their own fields. They receive $83 US per hectare.

The tractor is in the process of taking over the task of land preparation both because of the shortage of men, whose job it is, and oxen. The shortage of oxen is perhaps more critical than the shortage of men. Ten years ago nearly every family had an ox, so there were more than 100 oxen altogether. As expenses for farmers grew, they began to sell their oxen. They explained that oxen eat even when they are not working; some sold an ox and purchased another one when it was needed, thus saving on feed. In 1978 there were only 14 families owning oxen and two were
in the process of selling. Of these 14 owners, only three had little land, allowing them the time to hire out to others for plowing and preparing rice fields. Therefore, these three oxen were the only ones available for hire for those without an ox, even though villagers feel that the machine does not do as good a job of breaking up and smoothing the soil. The cost of an ox is 1/2 to 1/3 what it was ten years ago, but because they are still needed and the demand is, in fact, greater, the cost of hiring one keeps rising.

The rice transplanters and tractors are all privately owned. The Farmers Association subsidizes the purchase of these machines through small grants equal to about 10 percent of the price and by making loans available to cover the rest of the cost. It is felt by the farmers that all these machines will grow in popularity in the future because they are necessary labor-saving devices. Many fields are already prepared by machine, rice fields can be planted by machine, and the whole rice harvest has been given over very recently to teams from outside the village using mechanical harvesters.

The other capital intensive method is the increasing use of chemicals. In this village the newest chemicals are herbicides. They were first adopted in 1974. Villagers are enthusiastic in their use because of the labor they save. Previously weeding was necessary from the time the crops were planted until harvesting. The use of herbicides has reduced the time spent on weeding dramatically. Fertilizers and pesticides have been available for a longer time and are largely responsible for the high level of production characteristic of agriculture in Taiwan.
The increasing mechanization and use of chemicals have helped to replace scarce labor for tasks such as planting and weeding. Similar capitalization of agriculture is becoming common in many parts of the world. There is a question in the literature relating to the process of change: Does mechanization drive farmers out of agriculture or is it a response to an existing labor shortage? In K'ung Liao the latter is clearly the case. As we have seen, out-migration preceded farm mechanization, and the adoption of machines has been a decision farmers have made based on the lack of available labor. At the same time, out-migration which is responsible for the depopulation of the village, is a result of national industrialization. Looking only at the lowest level of the system may provide an incomplete picture. Mechanization of labor in the village was an attempt to adjust to pressure caused by external forces. This external stress is the basic factor causing change.

Until recently the rising labor wages have hit the larger landowners the hardest. Precisely because they had so much land all their labor was hired, whereas the smaller farmer had the time to exchange needed labor with other small farmers. It is the large landowners who have had the motivation, then, to buy the labor-replacing machinery. They were also better able to raise the capital. The machines are now operated on their owners' larger landholdings and then on other fields for a fee. Smaller landholders are in the same position they were earlier. The only change is that while they now hire a machine owner for transplanting or plowing, they formerly hired laborers. The relationship of the two groups is changing, however. Previously the small farmers and the landless provided the labor pool for the village. Now it is the
larger farmer who comes to work on the fields of the small farmer. While there is still a strong demand for hired labor, the machines are designed and used to fill this demand and their eventual replacement of the labor of small farmers and the landless can be projected.

As it is, the use of machines has changed the direction of the cash flow between the small and the large farmer. With his new machine, the large farmer is now earning money from the small farmer rather than paying it out. As a result, capital is no longer being redistributed within the village through the spending of large farmers' revenues on the services of the small farmers and the landless. Although in its first stages, this could lead to a situation in which the large farmer is getting richer while the small farmer becomes poorer and is eventually bought out. This implies an initial change in the power relations in the village and an eventual consolidation of land holdings and change in village class structure. We can see, then, that the capitalization of agriculture can have consequences which are both far-reaching and profound.

Changes in Land Use and Tenure

Another category of change arising out of demographic constraints is land use and tenure. It is to be expected that out-migration would lead to changes in the individual migrant's relation to his land holdings.

5As an example of the redistributive power of the harvest, one villager recounted pre-land reform days, "In the old days, the landlord had to cook snacks and five meals a day for the workers (breakfast, 9:00, 12:00, 3:00, and supper). This usually consumed the profit from the rice harvest. In the next village they didn't have the custom of inviting only certain people to harvest and everyone came to help harvest. The landlord still had to cook for all the people, even if 40 people came to harvest 1/10 of a hectare. At the same time people would bring their
During the course of research I became aware that villagers were modifying their use of land and land tenure in important ways all arising from recent population changes.

In their search for ways to save on hiring labor, farmers have tried changing the crop cycle. To a large extent, because of the irrigation system, it is not possible to substitute one crop for another. However, with mixed crops there is some substitution possible and it is here that farmers do make their decisions on what to grow with labor requirements in mind.

When sugarcane is planted, a crop of vegetables can be planted between the rows. The most common choices are tomatoes or corn. On the basis of income, tomatoes are the logical choice because they can provide up to three times the revenue. However, farmers recognize that the tomato crop requires more labor and families short of labor usually choose to grow corn. In the same way green beans is a crop losing popularity, generally because of the number of people necessary to harvest them. Peanuts are also rarely grown for the same reason. Another of the mixed crops which is still popular is sweet potatoes. The profit margin is low but it continues to be grown because it can be both harvested and cut into strips by machine, so the labor required is small.

It is evident that the flexibility of farmers to respond to local marketing changes has lessened. As a result the variety of mixed crops oxen to graze on the rice stalks. While the oxen ate the stalks, their masters were eating five meals, spread out all over the landlord's yard."

Other possibilities are peanuts, garlic, scallions, eggplant, or multiflora beans.
grown has decreased. Crops most popular are those which can save labor, even if there is less profit in growing them.

In addition to changing crop cycles, farmers' use of land has also changed through fallow land and conversion to fish ponds. Although it is not popular, sometimes land is left fallow. Generally only a part of the land is planted rather than letting it all lie fallow. A major reason for the unpopularity of fallow land is legal restrictions. Unplanted fields are taxed at triple the rate of planted fields. Additionally there are areas which have been left uncultivated due to difficulties with the irrigation system, so labor shortage is only one possible cause but remains a crucial factor.

Until a few years ago it was becoming quite popular to convert fields to large fish ponds. The fish ponds required very little labor and were quite profitable. However, the government became concerned about the alienation of land from agricultural use (which was also a problem near urban areas) and made such conversions illegal. At one village meeting, an official reminded the farmers that conversions to fish ponds are illegal and the land will be taxed at the same rate as unplanted fields. It was argued by some villagers that this limit on land use is unreasonable and makes it more difficult for farmers.

A final effect of the depopulation of the village has been in the area of land tenure. Out of 149 households, 26 (17 percent) own no land. The remaining 83 percent are landowners. Of these, the majority (64 percent) own less than 1 hectare. And 37 percent own less than half a hectare. Most of the villagers farm only land which they themselves own. Of the approximately 20 percent of the households who are farming
rented land or managing land for others, the owner is most likely to be a migrant. Unlike land rented under the land reform law which allocates approximately 1/3 of the harvest to the landlord and 2/3 to the tenant, there are now a great variety of rental or managing agreements.

1) Land rented under the Land Reform Law.
2) The renter or manager keeps all the profit.
3) The renter or manager pays a flat fee varying according to the acreage (usually about 15,000 NT per hectare - $415/hectare).
4) The owner pays some expenses (usually the land tax and irrigation fee) and receives a percentage of the profits varying from 30-100 percent.
5) The owner keeps the profit from the first season crop and the renter keeps the profit from the second season crop.
6) The renter or manager gives approximately 3,000 catties (3,947 lb.) of rice per hectare to the owner.
7) The owner and renter split all costs and profits for dryland crops.

A tenant or manager may use a combination of these methods, such as method #6 for the rice crop and method #4 for such crops as sugarcane and dryland crops. As can be seen, these arrangements allow a great deal of individuality. No one of them is overwhelmingly popular, although #3, #4, and #6 are used by a slightly greater number of farmers than the others. 7

Eventually land changes hands, most often through inheritance. However, according to the law, if a non-farmer inherits land, he must

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7 The term used for numbers 3-7 is pang (撉) meaning "to tie or bind." It is found not only in reference to farming, but here it can be used in the sense of associating a person or an amount of money with a piece of land.
begin to farm within one year or sell it. If neither is done, it must be given up to the government. Therefore the children of farmers who have moved out to careers other than agriculture will one day be facing this problem. Farmers continue to work until about age 60 and at this point they can either give their lands to their children or sell them.

The idea of selling land has become more popular recently. It is no longer felt that ancestral land cannot be sold. Land is not offered to other relatives first, either, as is often described as customary. By law the buyer must be a farmer, living within 10 kilometers of the land. Usually it is only the fields that are sold, not the house. The house is just locked up and left to fall down. Already there are a number of these abandoned houses in the village.

I found 50 households which had a plan in mind for the future disposition of their land and of these, 44 percent indicated they would sell. Twenty percent had plans to divide it equally among sons which is the usual method; 12 percent would leave the decision up to their children; and 10 percent planned to keep it for themselves which would result in the same thing. The few remaining planned to leave their land to a crippled son, and so forth. Interestingly, plans to buy land were not nearly as common. Only 5 percent of the households indicated that buying was a possibility for them. One farmer described his position,

"I own more than 2 hectares. I was going to sell my land but the price is only 500,000 NT per hectare [$13,908 US]. But I will sell it one day because my sons have all moved out. The reason the price is so low now is that the income from the land is the same as the expense—there is no profit."
Conclusion

Migration has fundamental and far-reaching consequences for agriculture. Heavy out-migration has drained rural areas of labor, creating a labor shortage which villagers have adjusted to in a variety of ways. One method has been to replace labor with capital. This can be achieved through the increased use of chemicals which, in turn, raises production. Mechanization has also been a solution to the problem of scarce labor, with the same result for production. However, an increase in the supply of food may result in lower prices for consumers and lower profits for producers. Additional costs for chemicals and machines also cut into profit. The crucial factor currently, however, may be the increasing cost of hired labor which, unless it rises to a level competitive with urban wages, still will not discourage laborers from migrating. Then, as farmers' profits decrease, out-migration increases. Depopulation becomes a cause of further migration. In this way K'ung Lião village has developed a vicious circle. Changes such as mechanization are short-term changes. More importantly, the depopulation of the village has already begun to lead to long-term change. The larger implications of this long-term change will be seen in Chapter V.

Since the end of World War II, Taiwan itself has undergone many changes, including a change in government. But for the local community, postwar changes were a continuation of prewar trends. The major trend was still the increasing control of the local level through predatory expansion of extralocal influences. In order to achieve this control, new programs were implemented. Among the national-level programs discussed in this chapter which attempted to modify agriculture, two of
them, land reform and the rice-fertilizer exchange programs, resulted in the transfer of capital and labor to industry. The main objective of policy during this period has been national industrialization. As Ho states,

The Taiwan experience strongly reinforces the view that government often plays the crucial role in development. (1978:250)

Agriculture is now a specialized sector of the economy, dependent on resources and information from outside. However, information from villages does not always flow back in a complementary fashion.

The development literature now contains a dozen or so models of early economic development. These invariably contain an agricultural sector; but the internal structure of agriculture remains shadowy. . . . This doubtless stems from the fact that industry tends to be regarded as the focal point of economic development, with agriculture playing the role of a resource reservoir. (Reynolds 1975:1)

The out-migration of one of its most important resources, labor, is responsible for the depopulation of the village. This movement of labor has been a result of national industrialization. Subsequently, attempts such as mechanization to replace human labor in the village were an attempt to adjust to pressure caused by external factors. It is this external stress which is the real causal factor of change.
CHAPTER V
THE SOCIAL IMPACT OF DEPOPULATION

The political, economic, and as I shall show, social penetration of K'ung Liao by outside influences is proceeding rapidly. Out-migration of large numbers of villagers in recent years has played an important role in the changing social life of the village. Both within and outside the family, adjustments have resulted from the stresses caused by depopulation. A proper starting point, then, would be the impact on the social institutions in K'ung Liao: the filling of positions of leadership, the effect on schools, the role of religion, and the development of political factions. From there I will look at the impact of depopulation on the domestic life of villagers. I will review marriage; the availability of domestic labor; changing residence, property, and offspring. Finally, I will review the more elusive effects on social values. Villagers have evolved new attitudes toward urban and rural life and toward being identified as urban or rural; they have developed new expectations of social mobility; and they have redefined the occupational goals of their children in light of changing self-perceptions. If, as I have attempted to demonstrate, depopulation has had a clear and sustained impact on the economic life of K'ung Liao villagers, their social life has also been affected in ways which would have been difficult to predict earlier.

Political Change

The highest political position in the village is that of village headman, 生長 (里長). During the Japanese period, K'ung Liao was
part of a larger administrative category called a pao (保). One older villager was a pao headman, called pao chang (保長), late in the Japanese period. According to him, the pao headman was the most powerful man in the pao—all the pao villages were under his control. His main duty was arbitration and he was always called on to solve disputes.

After the change of government following World War II, K'ung Liao became a separate village with a headman called the li chang. For the first term, chieh (族), two candidates declared themselves. Each was from a smaller lineage in the village ( and ). The idea of competition for a political position was a new and uncomfortable one for the villagers. They called on a wealthy landlord who was a member of the largest lineage to assume the position. He stayed in office for four terms.

Initially each term was for a period of two years. The fifth and sixth terms were filled by another wealthy member of the largest lineage who decided he was not interested in being the headman for the seventh term so it then passed back to the original headman. He filled the position for two terms and then the present headman, again a member of the largest lineage, was chosen. The position is now for four years.

During my research an election was held which provoked a great deal of interest. It seemed to be the first one in which the winner was not actually chosen beforehand. The village split into factions and feelings ran quite high immediately prior to election day. It was rumored that votes were being bought for 200 NT ($5.56) apiece.¹ I watched the votes tallied after the polling place closed. The character 正 reappeared

¹A vote which has been bought is called a "bomb" (炸彈).
time after time indicating five more votes, each stroke of the character representing one vote. Finally the vote stood at 163 to 241. The incumbent headman was re-elected. His competitor had been the same lineage member to hold the position several terms previously. He was 62 and the headman was 34. It is indicative of important changes in the political life of the village that the village headman's election was more than a symbolic competition. It is also striking that a 34-year-old man was chosen over the one aged 62.

Factions

The oldest living former headman said that he believes the position of headman has lost power over time. According to his viewpoint, as a result of the democratization of political life, the headman became more a servant than a head. People did not listen to him as much and cliques formed. In the last few years several factions (派系) have become important. Although the factions are headed by members of different lineages, the membership is not based on kinship. Representatives of each of the three major lineages in the village can be found in the two basic factions. The dividing line between factions is wealth. The opposing faction which organized the competition in the last election is made up of wealthier, larger landowners. This faction is allied with the township Farmers' Association, the Mayor's office, and the formal power structure outside the village. These factions, then, represent a power struggle between the rich landholders and the poorer but more numerous villagers. Fueling the antagonism dividing the village is the money which has poured into the village in the last several years through national-level community development projects. These projects represent
a government effort to equalize some of the economic disparity between urban and rural areas. The heavy flow of migrants out of rural areas has also alarmed those who had to provide urban services. They reason that villagers are more likely to stay where they are if their environment is improved, the urban view of the countryside being that it is dirty, unhygienic, backward, and unpleasant. Therefore, money has been made available to improve the homes and communities of villagers all over the country. All a village needs to do is to tap into these financial sources. The availability of money from outside was probably a major motivation for the selection of the present young headman, who was under 30 when he began his first term. An older, poorly educated, Taiwanese-speaking villager would not have been able to hold his own with township- and county-level officials. So a younger, Mandarin-speaking villager who was a former teacher was chosen. His selection represents an active recognition of the widening influence of the government and the decreasing importance of village boundaries.

As a strategy to tap into government funding for villages, the choice of the present headman was a great success. In 1975 the model village program\(^2\) began with the paving of the main village road. A brick wall at the edge of courtyards fronting on the road went up the same year. Also in 1975 the Farmers' Association oversaw the improvement of kitchen and bathroom facilities. Many people put in flush toilets and new bathtubs, had their kitchens tiled, and replaced their wood-burning stoves with gas-fueled ones. In 1976, 27 public toilets were built, 150 tree pots

\(^2\)The information about this program is from the township Public Office.
and 200 trees purchased for roadside beautification, three pig houses built, and three old ones rebuilt. Eleven trash cans were placed in public areas. Another addition was street lights, the absence of which in some areas became an issue in the last election. Also as part of the community improvement project, 40 families received from 800 to 2,000 NT ($22.37 to $55.63) to make home improvements. Three of the very poorest families were able to rebuild their houses and for a while received a monthly subsidy of 600 NT ($16.68). The support for rebuilding houses ran from 38,000 to 48,000 NT ($1,057 to $1,335). To qualify for this assistance poor villagers had to meet the requirements of having more than four children under age 16 and no more than 1/5 hectare of owned land. There is now no one eligible for this program. An additional project was the construction of a community center.

These improvements were to be funded by money from both the national government and the villagers themselves. Each person, young or old, would be assessed 300 NT ($8.34). Landowners would also contribute 3,000 NT ($83.44) per hectare owned. K'ung Liao was required to supply 300,000 NT ($8,344) and the national government would match it with 600,000 NT ($16,689). Therefore the villagers could receive all of these improvements and pay only 1/3 the cost.

Through contributions and borrowing, a fund of 590,000 NT ($16,411.68) was collected. After the program was completed there was still 500,000 NT ($13,908.20) left unspent. By giving an official about 100,000 NT ($2,782.00) to keep up their "good relationship," the village headman was able to get most of the program for free. Therefore, feeling that he had helped the village to get all these improvements for virtually
nothing, the headman was particularly incensed by his opposition's talk that he had made a profit.

In the 1978 election, the village headman campaigned on his ability to improve the village, particularly through obtaining outside money. The opponent campaigned on his own honesty and the headman's suspiciously sudden improvement in economic status. Whether or not the headman had diverted some of the public money became a frequent topic of the late-night, outdoor gossip groups. The headman's supporters in these groups, upon hearing such criticism, would promptly disparage his opponent's ability to keep the money flowing in if, as they pointed out, he couldn't even speak Mandarin to the local officials. Judging from the final vote the issues were never resolved and the polarization of the village did not end with the election.

While migration is indirectly responsible for the flow of public money into the village and the associated development of factions, it has also had more direct political consequences. The migration of young, well-educated people out of the village constitutes a "brain drain." In the 1978 election the headman, it was rumored, had sworn that if he were defeated he would move out of the village. A replacement with his qualifications would have been hard to find and therefore his threat was regarded by many as a serious problem. The nine neighborhood heads, who are under the village headman, have an average age of approximately 55. These nine, the headman, and five others make up the community committee which is the other major political group. Most of the positions of responsibility in the village are filled by elderly men with little
education who, despite their desire to incorporate a younger generation, find their resources depleted.

**Religion**

In addition to his political functions, the headman also performs religious functions such as organizing religious activities, collecting money for the construction of a new temple, and so forth. And, in the same way that migration has affected the political activities of the village, religious activities have also been influenced. Depopulation is most apparent in the recruiting of members for the religious groups. For example, there is a group of young men called the Sungchiang troupe (宋江). This troupe performs a display of stylized sword fighting and kung fu on major religious occasions, especially when the village god goes to visit other temples or receives gods and villagers from outside.

The training of members in the martial arts would have been important in earlier years for village defense. Today it has a purely religious function. Traditionally troupes have 108, 72, 36, or 24 members. K'ung Liao's troupe of 24 is the smallest possible. Ideally it was age-graded, i.e., composed of members of the same generation of young men. Now both young and old men compose the troupe and replacements for the old men are nearly impossible to find. One of the religious leaders complained,

"Membership in the Sungchiang troupe is lower than before and getting lower. The kung fu is also simpler and easier to learn. In my time if there were a ceremony needing the troupe we would practice for a month. Now they practice for only a few nights."

I observed the practice for a trip to another temple and, indeed, it was only for three evenings, and the movements were uncomplicated.
There are seven religious associations in the village (妈祖会, 求江会, 三王爺會, 子龍會, 太子爺會, 大公生會, 地藏王会). All of these associations are composed solely of men. Two are limited to members of individual lineages: the 子龍会 is for lineage members and the 太子爺会 is only for men surnamed 求. The major overt functions of these organizations are to sponsor religious activity, to lend money, and to hold an annual feast for members.

By sponsoring religious activities, the groups benefit the whole community in providing religious services and entertainment for members and non-members alike. They also organize religious events on an inter-village level which serves to promote and reinforce ties within the local area.

Money lent by associations, their second function, is considered "lucky money." For example, to borrow a little money to use purchasing seed will help the borrower to ensure a successful crop. This is one reason why many people borrow money from an association although the interest on the loans is generally higher than on a bank loan. In addition, it is easier to get such a loan. No collateral is required, and the money can be had immediately. The Matsu association (妈祖会) has the largest amount of money available for loans. Usually it has over 10,000 NT ($278). In 1978 it had 13,680 NT ($380). If all the money is not being used for loans, the association will require all members to borrow equally. The interest earned on the loans goes toward the cost of the annual feast. The Matsu association has about forty members. Membership is passed from father to son and if more than one son wants to join, he can pay a membership fee.
The third function, holding a feast for members, is carried out by six of the seven associations, usually annually. Members contribute a fee in money or rice toward the expenses of the feast with the pot master, or head, required to donate more. A new pot master is chosen at the conclusion of the feast. Members who have moved out of the village usually return for the feast. Since it is possible for migrants to keep up their membership, out-migration has not had a great effect on these associations.

Shamans are an important part of Taiwanese village life. For fifteen years K'ung Liao had no shaman. Then, seven years ago, at the age of thirty, the present shaman went through a seven-day period of deprivation as a test, and became a shaman for the god 代天府呪府千成 (see Jordan 1972:107). This is a popular god in the area of K'ung Liao and this shaman's grandfather had been an earlier village shaman for the same god. The god speaks through the shaman. Although he requires an interpreter, the messages are verbal. In addition, the goddess Matsu communicates with the village through spirit writing. There are two villagers, aged 51 and 42 who each can deliver messages from Matsu while in trance. One of them goes into a trance and holds one side of a small child-sized chair which the invisible goddess is sitting in. A layman grasps the opposite side. The two men hold onto the chair as it swings wildly, hitting a block of wood on the altar. Each time it strikes characters are traced on the wood and gradually a message is deciphered by another villager serving as the god's interpreter. ³

³Jordan (1972:57, 64-67, 77-78) describes them as supporters of the klo-ş or "divination chair." Although he states that anyone can do this and trance is not involved, K'ung Liao villagers believed these two men to be in trance during the spirit writing. Furthermore, spirit writing never occurred without one of these men being involved.
The age of a shaman is not important. A neighboring village has two shamans who are pre-teenage boys. Each shaman is associated with the image of the god who speaks through him. There can be as many shamans for a god as there are images. If a shaman moves out of the village, he continues to worship in his new home.

Villagers who have migrated out have been asked to donate to the village's newest project, the new temple. For the last few years, an impressive new temple for Matsu has been going up in one corner of the village. The headman is in charge of fund raising. During part of the time I was there, construction was halted due to lack of funds. The total cost is estimated at between three and four million Taiwan dollars ($83,449 - $111,266). Donations have been raised using a variety of methods. Generous villagers have been encouraged by having their names engraved in stone in the temple, and migrants have sent back between 40,000 - 50,000 NT ($1,112 - $1,390). One successful fund raising method has been renting out, for one-year periods, sections along the sides of the recently-paved road for the purpose of drying crops. The road was divided into thirteen sections and included the courtyard in front of the community center. Villagers submitted sealed bids and the highest bid won. The money went into the temple fund.

Presumably the surplus funds from the community development project have already gone into the construction of the temple. This would be ironic in view of the statement of one government official at a village meeting that,

"People should improve their religious worship. They should save money from worshipping for their children's educational fee and the community development fee."
K'ung Liao villagers are quite religious. They are certain of the power of their gods and the gods' ability to protect the village from evil. When a three-year-old boy fell into a fishpond and drowned one morning, the whole village felt immediately exposed to the danger of his ghost pulling in another victim. Within days the village had rallied and the shaman performed an exorcism of the pond and all parts of the village (see Jordan 1972:56-69 for a description of a similar event).

Gods' birthdays are frequently celebrated with puppet shows performed by professional puppeteers. Religion unites the village internally, guides it, entertains it, and protects it; and establishes relationships with other villages through ties between temples. The construction of a new temple is a source of pride for K'ung Liao, probably more so than the new community center or other projects. Such benefits are not cheap and for villagers, religion is a constant expense. The following is a summary of one village family's annual domestic expenses for religious worship:

1) Regular offerings for worship.
   pai pai (拜拜).
   Lunar 1st, 2nd, 15th, 16th of each month = 48 times a year.
   Cost = 60 NT each time.

2) Offerings for death anniversaries.
   9 times a year.
   Cost = 60 NT each time.

3) God's birthdays.
   Lunar calendar:
   1st month, 9th day
   3rd " 25th "
   5th " 5th "
   7th " 29th "
   9th " 9th "
   Winter solstice (冬至)
   12th month, 30th day
   Cost = 380 NT each time.

   Total: 2,880 NT

   Cost for death anniversaries: 540 NT

   God's birthdays: 2,660 NT
4) Gods' birthdays which fall on days of regular worship (see #1).

Lunar calendar:
1st month, 15th day
4th " 15th "
6th " 15th "
7th " 1st "
7th " 15th "
8th " 15th "
9th " 15th "
10th " 15th "

Cost = 320 NT each time
(60 NT normally spent subtracted)

Annual total = 8,640 NT
($240.33)

Over the course of a year, this family spent 8,640 NT worshipping 64 times. That is, there was a religious occasion on an average of more than once a week. Since the major expense involved in worshipping is food, which is eaten by the worshippers afterward, this does not seem to constitute a major waste. In fact, days of worship have traditionally represented the only days on which there was meat in the diet. Of course, the above figures do not include expenses for temple donations (direct or indirect), donations for such entertainment for the gods as puppet shows, fees for religious association memberships, or expenses connected with visiting other temples or hosting the visit of a god from another village. Therefore, while in any one year total expenses may end up higher than 8,640 NT, such a figure is an appropriate estimate of domestic religious expenses.

In summary, unlike politics, religion continues to unite the village. There are few active groups in the village not organized on a religious basis; the village shaman represents an important leader; religious associations provide loans for sudden needs as well as social activity
for their members; and religious feast days often represent holidays complete with public entertainment and feasting. It is instructive that the only donations I heard of from out-migrants were to the new temple, a source of pride in a pressured community.

Education

Schools play a key role in the process of migration to urban areas. At the northwest corner of the village is an elementary school. It was built nearly sixty years ago by the Japanese for the education of Taiwanese children. Under the Japanese administration, a total of 1,084 students, the majority of whom (83 percent) were male, received their early education. The school served 15 villages in the area, including K'ung Liao, but attendance was not mandatory. After the Nationalists assumed control of the islands, elementary education consisting of grades 1-6 was made compulsory. In the years since 1945 nearly 5,000 students have graduated. In 1968 an additional three years of middle school were added to the required education. Gradually more girls have been sent to school. Between 1945 and 1977 there were an average of 1.5 boys for each girl graduating. Previous to 1945 this ratio was 4.5.

Today, due to the construction of other elementary schools in the township, the school serves only four villages. There are a total of 11 elementary schools in Yenshui township now and this increase has been partly responsible for a drop in enrollment at K'ung Liao's elementary school. School officials themselves also attribute the decreased number of students to two important factors: increased use of birth control and out-migration. The school currently enrolls about 500 students in 12 classes (two classes for each of the six grades). As a public school
receiving government funding, the school finds itself at the top of the smaller of two categories of schools. Those schools with 13 or more classes receive more money than those with 12 or less. The principal watches the enrollment of the first grade drop each year and does not expect that the school will be able to move into the larger category, although the money would be welcome. The fifth grade now has about 55 students which is considered a normal number. But the first grade has only about 35. The principal observed,

"Every year the enrollment gets smaller and smaller. Schools in suburban areas, in contrast, have more students in each class and there are new schools being built all the time."

In addition to seeing educational funds being diverted from rural areas, teachers must face the consequences of dropping enrollments for their jobs. As depopulation increases in severity, there are too many teachers in the countryside and those who have worked the shortest length of time are dismissed first. As a result, the average age of teachers in the countryside now tends to be higher than those in the cities.

In some areas migrants have contributed to new or improved educational facilities, but the principal of the elementary school bordering K'ung Liao feels that migrants from this area have not been sufficiently successful to do so. Donations are voluntary and not much has been sent back. Therefore migrants' remittances to the school have not been able to compensate for the loss of public funding due to decreasing enrollments.

In 1978, 89 students graduated from this school. Of these, four (three girls and one boy) indicated that they would begin work rather than go on. The other 85 planned to go on to middle school. These
students can live at home and commute daily by public buses to and from school in town. There are two middle schools in the district. The tuition for public schools runs about 1,000 NT ($28) per semester. However, private schools may be as much as three times higher. The tuition at one private middle school in the nearby town is 3,500 NT ($97) per semester. One teacher explained that because the tuition is higher, people think private schools are better. She felt that the teachers in private schools were required to work harder as a result, in order to satisfy parents' expectations. After middle school, students who continue their education usually live in a dormitory at the school which admits them on the basis of a competitive exam. Some students are then, in a sense, migrants at age 15, living as far away as Taipei and only returning on holidays and vacations.

With higher levels of education becoming more popular, a greater number of students commute to school each day. Those who go on to high school or vocational school are introduced to urban life and begin to make comparisons in which the village does not fare too well.

"After middle school people should move out because this place is too small. There are no activities, no knowledge. You can't meet many people or talk to different people. If young people wait too long to move out it will be difficult for them to adjust in making friends, in school, in competition, and in common knowledge."

This high school student quoted above was already a seasoned urbanite with three years in a high school in Tainan City behind her.

As I have shown in Chapter III, schools form an important vehicle for the migration of their students. Educators find that the migration of so many families and unmarried adults who later begin raising their
families in urban areas has resulted in declining enrollments, loss of funding, and loss of younger staff. In turn, parents consider the quality of public education in the countryside poor and this belief has become yet another motive for migrating.

Household Level Changes

Turning from the village institutions of leadership, religion, and education, another area which has felt the impact of migration is domestic. Families have had to deal with the loss of domestic labor, support many migrants, find candidates for marriages, and are now concerned about their future in the village.

Marriage

The ideal type of marriage is one in which the adult bride marries out of her own family, surname, and village into her new husband's family, name and village. According to villagers, she should marry sufficiently far away to discourage her from running home with every difficulty. Variations on this ideal pattern present in the population of K'ung Liao village are: marriages of adopted daughters-in-law (hsi fu ts'ai 媳婦), uxorilocal marriages, and marriages within the village. Of a total of 233 women villagers recall marrying into the village, eight have been adopted daughters-in-law. That is, the girl was given to her husband's family as a child and raised with him until, upon maturity, the two were married. As others have noted, this form of marriage was not popular with the participants and it is interesting that in nearly all of these marriages, the husband lives outside the village while the wife
continues to reside in K'ung Liao. Evidently it was more popular previously than at present. Only two of the eight women are below the age of 40 and four are above age 60.

There are even fewer uxorilocal marriages—four. Only one of the four husbands is below the age of 40. A uxorilocal marriage is a solution to the lack of a male heir. Another possible solution is the adoption of a son. Informants suggested that for poor people, uxorilocal marriage is the common solution, while those with more money tended to adopt a son.

The other variation from ideal marriage patterns was marriage between villagers. Of 233 women married to villagers (living both inside and outside K'ung Liao), 21 were themselves born in the village. This represents 9 percent of village marriages. Unlike the two previous variations, intra-village marriage is roughly as popular with younger villagers as with old. The general dislike for marriages between fellow villagers is still strong. My landlady in the village was, for a long time, very upset with her youngest son, a boy of 16. He was interested in a young girl who lived in the neighborhood behind us. What most upset his mother was that she was a village girl and, "It's not good to marry within the village." Interestingly, she herself had grown up in K'ung Liao.

Families with unmarried sons whom they expect to continue farming are finding that it is becoming very difficult to locate brides for these young men. The problem is that people prefer to marry their daughters to young men who have urban jobs. One villager explained:

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4 See Wolf 1966:883-898.
"In my father's time the best criterion for a husband was to have a lot of land. In my time it was best that he have a job and land. Today people prefer a husband with a job but no land at all."

The parents of one 26-year-old villager explained to me why he was still unmarried. He lives at home with his parents, and his mother works the land while his father has a job. Although their income makes them fairly well-off, any girl who married him would have to work on the land, therefore everyone so far has refused. It seems that when given a choice, girls and their parents would prefer that they avoid the physical demands of farming, thus leaving young men who will inherit the land in the category of undesirable partners.

A final change in marriage in K'ung Liao is the destinations for marrying daughters and the places of origin of village wives. The most popular villages for marriage connections have always been those within a fairly small radius of the village. Some villages have many connections with K'ung Liao while others send daughters to, or receive wives from K'ung Liao only infrequently. One important development in recent years has been the increase in the distances involved. The traditional area included villages in northeastern Tainan and southeastern Chiayi counties. While there is still a core of villages around northern Tainan and southern Chiayi counties which remain an important area of origin and destination for K'ung Liao women, there is an increasing tendency to marry outside this area. In other words, any community in the country is now a possible point of origin or destination for K'ung Liao women. The trend is most pronounced among young women who are marrying out (see Table 15). Broken into two cohorts, 20-39 and 40-59, it becomes apparent
that the marriage of daughters to distant points is a recent phenomenon. Not one marriage outside of the traditional area occurred among those aged 40-59. However, in the younger cohort, 27 percent of the marriages were outside the traditional area. These marriages were to men in Taipei, the far south of the island, and other points with which K'ung Liao had no previous connection (see Figure 20).

Table 15

Marriage Distances—K'ung Liao Daughters

<table>
<thead>
<tr>
<th>Age 20–39</th>
<th>Age 40–59</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Inside village</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Inside township</td>
<td>31 (21)</td>
</tr>
<tr>
<td>Neighboring township</td>
<td>42 (29)</td>
</tr>
<tr>
<td>Tainan &amp; S. Chiayi</td>
<td>24 (17)</td>
</tr>
<tr>
<td>Distant points</td>
<td>40 (27)</td>
</tr>
<tr>
<td>Total</td>
<td>146 (100)</td>
</tr>
</tbody>
</table>

The marriage of women into K'ung Liao also has followed this new pattern, although not to the same extent as the daughters (see Table 16). While 4 percent of the older (40-59) wives came from outside the traditional area, 15 percent of the younger wives can now be so described.

I believe the reason that the marriage pattern of daughters has changed more radically than that of wives relates back to the criteria, discussed above, for selecting sons- and daughters-in-law. Assuming spouses are coming from the same population pool, there is an inherent conflict.

Data for the older women came from their brothers who were asked for the names of the villages all sisters had married into. Parents provided information concerning daughters in the younger cohort.
FIG. 20: MARRIAGE DISTANCE PERIMETERS FOR K'UNG LIAO DAUGHTERS

AGE GROUP LEGEND

- 20-29
- 40-49
between wanting a son-in-law who has a job and no land, and wanting a
daughter-in-law who is willing to marry a farmer. If everyone holds these
views, then the criteria cannot be satisfied and the pool of candidates
must be enlarged. This enlargement is precisely what has occurred.
Daughters are now marrying not the local candidates in agriculture, but
spouses from more distant points where candidates are available with non-
agricultural jobs. Because of the preference for non-farmers as husbands,
village daughters have had to marry out to urban areas which are outside
the traditional area. Because daughters-in-law who will marry farmers
are preferred, their potential pool still comes mainly from the traditional
area. Therefore, while the marriage patterns of women 40-59 are fairly
uniform whether the individual is a daughter marrying out or a wife
marrying in, the younger cohort, those 20-39, shows important differences.
These differences are a decrease in marriages within the traditional
radius and an increase in marriages outside.
It is instructive to divide women who marry into the village not only by age, but by post-marital residence. Rather than all virilocal, contemporary marriages are nearly as likely to be neolocal. Of 233 women who married to K'ung Liao men, nearly half now reside outside the village: 98 (42 percent) are outside and 135 (58 percent) are inside. As Table 17 shows, 77 percent of those living outside the village are in the age range 20-39. The remaining 23 percent are 40-59 years old. Therefore, residing outside the village after marriage is a recent phenomenon mainly involving younger couples.

Table 17
Post-Marital Residence of K'ung Liao Wives

<table>
<thead>
<tr>
<th>Residence</th>
<th>Age</th>
<th>20-39</th>
<th>40-59</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>In village</td>
<td>59</td>
<td>44</td>
<td>76</td>
<td>56</td>
</tr>
<tr>
<td>Outside</td>
<td>75</td>
<td>77</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

Wives who live outside the village, especially the younger ones, are more likely to have originally come from outside the traditional marriage area than those who stayed in the village. A total of 21 percent of these younger wives living outside the village were from the traditional marriage area. Among the same cohort (20-39) living in the village, this area accounts for 49 percent of the wives. Therefore marriage to a K'ung Liao male increasingly involves residence outside of the village. Many wives have never really lived in the village. They may have spent a short period of a few weeks or a month there after the
wedding and subsequently only visited. Often women worked in the city before their marriage and met their husbands there. They were not selected by their parents-in-law but had a "love match." I will go into the impact this type of marriage and residence pattern has on their relationship with their mothers-in-law in the next section.

In summary, there are many changes taking place in the marriages of K'ung Liao villagers arising out of the rapid depopulation of the village. First, there has been a decline in the varieties of marriages. Adopted daughters-in-law are all above 35, and no uxorilocal husband is younger than 34. The disappearance of these two marriage types is probably due to increasing prosperity. Off-farm income has raised the standard of living for many of the poorer families and they can now have their children follow the ideal pattern of marriage rather than resorting to these low-status variations. As Watson (1975:199-218) has pointed out in his study of emigration from Hong Kong, remittances can be used to insure that a greater number of people participate in traditional behavior patterns than ever before. As I have shown, such "conservative change," as he calls it, is not common in the economic activities of K'ung Liao villagers, but it does seem to be occurring in marriage patterns.

Second, the criteria used in selecting potential spouses have changed, leading to difficulty in achieving success, especially in finding wives for villagers. Villagers prefer to marry their daughters to non-farmers and, not unexpectedly, experience greater and greater difficulty finding wives for their sons. This has led to a breakdown in the boundaries of the traditional area within which wives were found. Today the pool of potential spouses for villagers is the entire island. The marriages of
daughters outside the village shows the same trend in an even more exaggerated form. Residence after marriage is now just as likely to be neolocal as virilocal, and many wives have spent no appreciable time in the village.

Domestic Rules

If the customs, practices and beliefs concerning marriage have been so deeply affected by migration, it is to be expected that there will also be repercussions in the area of domestic activities and roles. One important change has been in the relationship between mother-in-law and daughter-in-law. It is perhaps the daughter-in-law who has changed the most. Parents are demanding well-educated young women with some working experience as wives for their sons. Therefore the age at marriage is now higher, the level of educational achievement is higher, and the girls are more worldly and self-sufficient. The traditional role of mother-in-law has always been to instruct her daughter-in-law in the domestic arts and to mold her into a responsible family member using whatever means necessary, including physical punishment. Today the mother-in-law is faced with a young woman in her twenties who is fairly well-educated (in contrast to her own illiteracy), used to earning and handling money, and who already has a good relationship with her new husband. In short, she is no longer the immature, tractable bride of old. Many older women can recount with gusto the suffering they went through at the hands of their mothers-in-law. The heavy household work involved in maintaining a large family fell mainly on the shoulders of the daughter-in-law who also had to do field work. They would arise at 2:00 a.m. to begin cooking breakfast and work straight through until about midnight. Criticism by these
"fierce" mothers-in-law usually took the form of hair-pulling and beating. The current generation of daughters-in-law have an entirely different experience. They are, for the most part, living apart from their mothers-in-law. The length of time they spend in each others' company, usually in visits, is not sufficiently long to establish the mother-in-law's unquestioned dominance. In fact, it is she who is frequently visiting her daughter-in-law. For the few young daughters-in-law in the village, times have also changed. In one case there was a pre-marital agreement between the two families that the future daughter-in-law would live in the village with her husband's family only for the length of his stay in the military. During this time it was agreed that she would not be expected to do any farm work and she and her husband would move out to the city when his period of service was over. Others often commented to her mother-in-law, "Even though you have a daughter-in-law, she's useless." Although the daughter-in-law took care of all the household tasks, her mother-in-law who did all the farm work in the family still felt that she had been cheated. She would urge her daughter-in-law to help with the farm work and complain about her laziness but the daughter-in-law knew that she was protected by the agreement and did not let the criticism bother her.

The perspective of another older woman was revealing. She had begun working in the fields as a young daughter-in-law and at the same time managed most of the domestic tasks. With the acquisition of a daughter-in-law at about the age of 40 a woman could retire from farm work and substitute her new daughter-in-law in the fields. So upon the marriage of her sons, the work load of a mother-in-law decreased greatly. In
contrast, today's young people do not stay home, but go to school and then get a job. So this woman has had to continue working to her present age of 60, long past the time she should have expected to retire. With a sense of injustice she said, "I have done the work of two generations." As yet there is still no one prepared to replace her, and in spite of the large family she bore and raised, she lives alone. As this example shows, the cycle of generations whose work compensates the previous generation has been broken. When there is no following generation in the village there is no compensation for the older villagers. This kind of indirect reciprocity was an important part of the life cycle and its disappearance is a striking feature of life in K'ung Liao. Although villagers realize that it arises out of decisions which they themselves have made, it still seems unfair to them that their work should go on and on with no respite in sight. The fact that it will only be through their own decision or death that it comes to a halt is not an agreeable prospect.

In contrast to these effects on the mother-in-law, there have been recent changes for the daughter-in-law. An important one is a consequence of the expanding marriage distances. If a daughter-in-law residing in the village comes from outside the traditional marriage area, it may have a detrimental effect on her position within her new family. Since most of a married woman's difficulties are expressed in her relationship with her mother-in-law, her important allies are outside the family, i.e., her own parents and the matchmaker. If there is serious trouble, they will come to give her support and help work out a resolution. A bride
from far away cannot count on their coming to her aid. As a consequence, her bargaining power is less.

**Domestic Labor**

Depopulation has had other consequences for village daughters-in-law. One area is in the availability of domestic labor. Just as the pool of labor for agricultural work has shrunk, so has the domestic labor pool. This development is felt most strongly by married women since unmarried women do not have important domestic responsibilities. There are mothers-in-law without daughters-in-law, and daughters-in-law without sisters-in-law. It is only possible now for one woman to handle all domestic tasks alone because there are no longer the large numbers of people in each household there once were. In earlier times there would be several daughters-in-law available to do the domestic and agricultural work necessary for the family. Women's tasks involved washing clothes, cooking, carrying water from the well, collecting fuel for the stove, cutting sweet potato strips, cooking sweet potato leaves as pig food, child care, and working in the fields. Often sisters-in-law would take turns, each handling all domestic work for one month while the others worked in the fields. Parents were reluctant to marry their daughter to an eldest son because she would be the only daughter-in-law for a period of time and would not have the cooperative labor of sisters-in-law.

With the number of people per household declining, the work load of daughters-in-law has declined, also freeing them to move out. Other developments have played a part, too. There is now running water to
each house, commercial feed is often used for pigs and poultry, sweet potatoes are no longer a staple food and can be cut into strips by machine, and most houses have gas-fueled stoves freeing women from gathering fuel. Therefore, while the supply of cooperative domestic labor has declined, it has only been able to do so as the population per household declined and tasks were simplified.

Child care is one task, however, which cannot be simplified. An extreme example of the effect of out-migration is the presence of children being raised only by one parent or by grandparents. In all cases the parents are living outside the village. There are eight children being raised by grandparents and 11 being raised solely by their mothers (see Table 18). The largest percentage by cohort and sex is girls aged 0-4. Twenty-one percent of this pre-school cohort in K'ung Liao are children whose parents have migrated out. The largest percentage of boys (13 percent) is in the cohort 10-14. Of those being raised by grandparents,

Table 18

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Total</td>
<td>%</td>
</tr>
<tr>
<td>0-4</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>5-9</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>10-14</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>15-19</td>
<td>1</td>
<td>30</td>
</tr>
</tbody>
</table>

some children are separated from siblings in addition to being separated from parents. That is, the parents may split up the children and keep one
or two, particularly the youngest, and send the others back to the village. Not included in these figures are children who are sent by their parents from the city to the village temporarily. There are some children who go back and forth regularly. Usually the reason for their being sent to the village is lack of child care in the city. One seasoned five-year-old traveller from Taipei told me,

"Originally I didn't want to come back here, but my mother said no one could take care of me and if I didn't come here to stay with my grandparents I'd have to go to my aunt's house in Taipei. So I came here. I like Taipei. If my uncle comes here I'll go back with him in three or four days."

In spite of migrants' perceptions of the availability of child care in the village, some mothers find themselves having to combine field work and child care. Without cooperative domestic labor a woman must take the children with her to the fields where she can watch them as she works. I saw such women planting and harvesting nearly all crops, with children playing to one side or a child carried on the back. Through conversations with village women it was also apparent that some mothers felt there was some disregard shown by others to the duty of child care. They observed that sometimes children were left alone with no caretaker and felt this to be an unhealthy development.

In summary, domestic changes have arisen as adaptations to the severe depopulation of the village. Landowning families are experiencing difficulty in finding spouses for their sons. They are widening the area prospective sons- and daughters-in-law come from in order to meet their changing criteria. At the same time, the varieties of marriage have declined, favoring the traditional ideal type while post-marital residence
is changing from the traditional virilocal to neolocal. In the realm of domestic roles and labor similar processes are at work. The relationship between mother-in-law and daughter-in-law is undergoing modifications due both to the changing qualities of the bride and neolocal residence. The mother-in-law has lost her teaching role and kept other roles such as laborer in the fields which in the past she would have lost with age. The pool of cooperative domestic labor has shrunk as the size of each household has declined, affecting women's ability to perform domestic tasks and child care. There are a number of children in the village being raised by single parents or grandparents as well as children who are shuttled back and forth between urban and rural homes. It would seem that depopulation has affected the ability of villagers to perform their social roles and tasks just as much as it has affected their economic activities.

Changing Values and Attitudes

One final and basic development in the village over recent years is the deterioration of traditional attitudes toward work and achievement and the concurrent growth of new values and perceptions based on villagers' contemporary experiences. Of great importance is the increase in information available to villagers. The impact of radio and TV on audiences' attitudes is a subject of much research. Villagers in K'ung Liao have had radio and, more recently, TV long enough to regard them as commonplace necessities. The news, soap operas, and song contests are viewed and much enjoyed, especially during the winter evenings when it is too cold to be outside. While the majority of the programs are not in the
dialect understood by villagers, the few in Taiwanese are followed faithfully, especially by younger villagers. From these programs villagers learn of events of the day, as well as popular tastes in clothes, music, food, home furnishings, and so forth. Even more important than the development of new consumer needs in villages around the island is the absorption of attitudes and values implicit in the programs. If taken seriously, which it is, the information presented through TV and radio molds villagers into frustrated urbanites mimicking urban consumer patterns and life styles. The conflict, of course, is immediate and, for younger people, reinforces their desire to leave.

In addition to the media of TV and radio, a great deal of information is carried back and forth by migrant and non-migrant villagers. Rural people are very mobile. The transportation system is efficient and villagers are constantly visiting married sons and daughters, important temples, urban migrants, and so forth. Their knowledge of conditions in distant urban areas may be nearly as good as their knowledge of local conditions. They are very accurate, up-to-date, and acute in their assessments of urban living. On the other hand, I found urbanites, particularly those who are not recent migrants, to be walking repositories of misinformation, naïveté, and strongly held stereotypes. I was often told that people in the countryside had to walk everywhere, there were no lights, that everyone lives in ramshackle, mud-floored houses with no conveniences and, while "sincere" and "pure-hearted," villagers were correspondingly unsophisticated and easily duped. It was clearly evident that the flow of information about life styles was one-way.
The urban image of rural life goes uncorrected because few urban residents particularly if they are not recent migrants have reason to visit the countryside. Their image has become part of a shared myth-like view of the rural experience which has a number of important functions. First of all, it provides urbanites with a sense of superiority. Second, it encourages permanent rather than temporary migration because to live in the city is to share the superior sophistication and gratification available there. And finally, it assumes the inferiority, in all areas except the heart, of non-urbanites. Through TV, radio, and personal contact, rural people have become increasingly familiar with this viewpoint and have taken it on themselves. Thus, as the stereotype encourages them to, they see themselves as disadvantaged, inferior, less sophisticated individuals by virtue of their residence. If others look down on them there must be a good reason, and so they look down on themselves. This self-assessment must also be accurate because, indeed, their work is harder and less remunerative than most urban employment. Wage inequality reinforces their perception of themselves as worth less. Therefore it is both through residence and occupation that urbanites derive their sense of superiority; they do not live in the countryside, and they are not farmers. As one farmer said,

"Before almost everyone worked the land. Now they go out to work. Agriculture is not good. Farming villages are backward and cities are progressive."

Another older farmer saw his occupational experience in a similar light:

"I graduated from middle school and had a chance to be a school teacher, but at that time [post World War II] the best profession seemed to be that of farmer, so I ended up working as a farmer ever since. Now I'm sorry and so I try to do whatever I can to send my children to school."
This is a common reaction. There is a sufficient expectation of status mobility in Chinese society that statuses, high or low, can be viewed as temporary. If a farmer feels he himself cannot escape from a life of low status, he can ensure that his children do not share his fate. This explains the great sacrifices so many villagers have made to educate their children far beyond their own level and the subsequent effort to get them into urban jobs. In this way they can escape the negative self-image they have developed. One woman explained her viewpoint:

"My parents-in-law look down on farmers. Because my husband is the only one of their sons who became a farmer, they look down on us and compare us unfavorably to his brothers. I won't let my children become farmers because people look down on farmers and there is no profit in it. I never ask them to help."

The education of their children has replaced land as an investment for modern farmers. In talking to one farmer about buying land, he said, "I don't want to buy land. I only want to raise my children and let them get an education." By investing in his children's education, he can send them out to participate in the wider economy. He can also derive status from his children's accomplishments. Without a negative view of farming and farm life, such efforts would not be necessary. One elderly woman was heard to scold her grandson, "If you don't study hard, you'll have to stay here and be a farmer!"

Since farming is a low status activity, involvement in it is "polluting" to those of high status. This does not affect farmers, but since their plans for their children are to see them working in high status occupations, it is necessary to keep them away from farm work.
This explains a very puzzling phenomenon in the village. I could not reconcile the obvious labor shortage with the teen-agers I saw lounging around, so bored and at loose ends. Middle school and high school students are free half-days on Saturdays and all day on Sunday. They also have winter and summer vacations at which time they are joined in the village by high school and college students who live during the school year in dormitories. These young people would seem to represent an important pool of labor which could be utilized, at least for unskilled tasks, especially during the school vacations. However, a number of times I observed examples of situations in which this labor was not called on, for no apparent reason. For example, I saw a four-person rice team with only three people trying to plant a field while the seventeen-year-old son of the team members listlessly observed them. Finally his grandfather came out to assist the team. Frequently after the rice harvest I would see villagers bagging the rice they had dried far into the night. Inside their houses were their offspring, home on vacation from high school and college, lounging in front of the TV and never called upon to assist. Ignoring the availability of such young people during periods of labor shortage does not make sense unless a status demarcation is involved. Parents invariably expressed the conviction that, "Farming is my job, studying is my children's job." One elderly woman, whose offspring had all moved out, proudly bragged to me that her children do not even know where their fields are. Obviously such separation of children from their parents' work results in the children being unprepared to carry it on. This, of course, is exactly what the parents have in mind. By not transmitting traditional information, parents ensure that their
children are incapable of traditional activities, such as farming. In talking to one migrant in his late twenties, I asked about farming. He laughed and said that I probably knew more about farming than he did.

All this leads to the question of future implications. Given the new attitudes of K'ung Liao villagers toward themselves--their lives, occupation, and worth--will this village with its approximately three-hundred-year history survive? Does it have a future? Like the villagers, I feel that it is easy enough to ask the question but very difficult to answer. People whom I asked about the future of the village would give the intriguing answer, "Life is much better than before, but there is no future." I could not reconcile the internal contradiction of that statement until I understood in some depth the position of agriculture in the village and in the larger economy. I now feel that it is a sophisticated assessment.

When the time of transfer of the role of the currently active generation to the succeeding generation comes, the contradictions will be made explicit. There are those who feel that it is impossible that none of a family's sons would stay in the village to inherit the land. One's house, land, and hometown are one's "Blood career" (血業), hsieh yeh. These cannot be abandoned. Unfortunately this view ignores the evidence of such decisions already made by families who have entirely disappeared from the village. Others lean in the opposite direction. One family was at the critical point:

"I have already split the family for my first son who is in Taipei. But I still work the land because he doesn't want to farm. My second son is also in Taipei. If he wants to come back I'll give him some land. Otherwise we will move to Taipei and sell the land."
Another woman explained,

"After my husband died I hired a copyist (代書) to divide the property for 1,000 NT. Now although the fields and house belong to my sons, I still live in the house and work the land. Whether my son will come back or not is his business."

Although at the actual point of property transfer, these individuals are saying that it could go either way. It is just up to the children to decide. Actually, they themselves decided long ago in training and making migrants of their children. It would be very difficult for such young people to become farmers when they inherit the land even if they had been inculcated with a desire to do so. As one thirty-five-year-old villager observed, "I think those of us born during the Japanese occupation are the last farmers."
CHAPTER VI

CONCLUSION: DEVELOPMENT, DEPOPULATION, AND THEORETICAL IMPLICATIONS

Throughout this century, the growth of both population and agriculture in Taiwan have been entwined. Historical evidence shows the Japanese colonial administration encouraging, providing for, and even forcing higher levels of food production from Taiwanese farmers. At the same time, public health programs resulted in the survival of larger numbers of people and, eventually, in a greater labor force. It may be worthwhile to explore the significance of this case study at a higher level. To what extent are the processes represented in this study unique or universal? Can we identify the nature of these processes? What are the implications for theory building and the study of complex societies?

Turning first to the identification of the nature of the processes underlying this case study, let us recapitulate the sequence of significant developments in the village. One thread running throughout the history of the village and the local area has been the administrative penetration of the local system. In the 1600s when this area was opening up to new settlers, the Dutch encouraged Chinese immigration into Taiwan in order to replace the aborigines. Chinese farmers represented a greater potential for economic trade and taxation than did the aborigines. The Dutch stimulated the cultivation of large areas of land by providing equipment, oxen, and seeds to new settlers. While all land was in the name of the Dutch ruler, use rights were recognized. It was during this period that K'ung Liao was first settled by Chinese. The crops
they brought with them from China are, even today, the staples of the region: sugarcane, sweet potato, and rice.

Production was limited by several environmental conditions. First, the climate provided some difficulties for the farmers. Typhoons were a seasonal risk, and rainfall was insufficient for wet rice production. Floods were also a frequent hazard. Second, the soil was less fertile than in other areas. Because of its proximity to the sea, the salt content of the soil was high. The Dutch did nothing to alleviate these environmental constraints on production, but merely attempted to stimulate production through increased settlement and access to tools.

After the Dutch period, the island came under the administrative control of the Chinese. China was less interested in the productive potential of the island and left it fairly isolated for the next two hundred years. In 1895 it was ceded to Japan which administered thereafter with a strong hand. K'ung Liao was made part of a pao (保) composed of nine villages, supervised by a pao chang (保長). This pao chang was a pao resident chosen by the Japanese and responsible for carrying out official programs at the pao level. It was at this time that administrative control truly penetrated the boundaries of the smallest groups. Families within the pao were made collectively responsible for the actions of all members. If one family did not follow regulations, all could be punished. This type of organization greatly increased the ability of high level administrators to carry out their policies. The smallest local groups were forced to respond to the needs of much higher levels. The Japanese administrators of Taiwan were responding to the needs of Japan itself. Its needs could be quickly
passed down to Taiwanese farm families. Improvements in the Chia-nan area, such as hydroelectric projects, transportation improvements, and irrigation projects benefited areas outside Chia-nan. The forced adoption of new rice and sugarcane varieties resulted in greatly raised levels of production although most of each harvest was exported, leaving K'ung Liao farmers themselves with increasingly inadequate diets. Farmers were not able to operate on the basis of their own self-interest, but on the basis of the self-interest of the Japanese colonial empire.

In the area of population, the same process occurred during the Japanese period. Taiwan's colonial administrators applied the most modern public health measures, which were especially effective because political control reached into every household. The success of these public health measures resulted in a decrease in infant mortality and general morbidity. The birth rate remained high so that with the declining death rate, population rose sharply, providing more workers for agriculture which was increasingly labor intensive.

Pausing for a moment, let us consider what these changes represent. First of all, it is evident that technological change and agricultural intensification preceded population increase, although not by long. However, it is also evident that, while they occurred first, they did not cause population increase. In this case study we can see that the development of these three factors—technological change, agricultural intensification, and population increase—is not due to mutual causation, but to the stimulus of political change and consolidation. Benjamin White, in considering the question, "Why does a society tolerate population growth?" (White 1973:224), points to an important consideration. His
analysis of population growth in colonial Java rests on the assumption that the intensified, export-oriented agriculture demanded by the Dutch created a need for labor which was satisfied by a continued high birth rate among the Indonesians. The drain of resources and productive output from the colony to the rulers was, as I have shown, also the case in Taiwan. There, however, the high population growth rate was less a function of a rising birth rate than of a rapidly declining death rate. In spite of these demographic differences, the result in Taiwan was the same as in Java: more people. In both cases why such growth, whether for one reason or another, is tolerated is a critical question. While White argues that Java's population growth was caused by the demand for labor, I would go no further than to say that the population increase during the colonial period in Taiwan was tolerated because of the demand for labor. The change from dryland crops to irrigated wet rice, the adoption of higher yielding varieties of rice and sugarcane, rice transplanting, and a more closely regulated three-year crop rotation system required more labor from the farmers. Without the Japanese presence, agriculture would not have gone through this intensification, nor would the death rate have dropped so precipitously making more labor available. Thus it is not the elements within the system, but a change of the system which led to the situation described.

What kind of a system do we have in this case? We must define the boundaries of the ecosystem to include all sources of information, stress, pressure, and so forth. Flannery writes:

In an ecosystem approach to the analysis of human societies, everything which transmits information is within the province of ecology. (Flannery 1972: 400)
As Vayda puts it, "The ecosystem is an analytic, not a biological entity" (Vayda and McCay 1975:300). It is increasingly evident that a large ecosystem is necessary to account for behavior within local communities in Taiwan. As a colony, the boundaries, both political and economic, were forcibly enlarged to include all the communities in Taiwan over which the Japanese were able to exercise control; Japan itself; and later parts of the Japanese empire. Gall and Saxe describe the stages of growth of state systems as including: first, increasing complexity and structural diversity; and second, spatial expansion which may involve competition with other sociocultural systems.

Only states are capable of incorporating and reorganizing large amounts of highly organized energy into their metabolism by means of predatory incorporation of other sociocultural systems. (Gall and Saxe 1977:264)

As a mature system, Japan was capable of incorporating Taiwan within its political and economic control. That Taiwan was the "prey" in Gall and Saxe's terms is clear in view of its exploitative use. The benefits of incorporation were always greater for the predator (Japan) than for the prey (Taiwan). As Gall and Saxe point out, incorporation results in "structural simplification and reorganization of the prey" specialized for and dependent on the predator (1977:263). The changes in K'ung Liao and other small farming communities during the Japanese period show evidence of specialization, simplification, and dependency. Agriculture was reorganized along lines of importance to Japan. By providing irrigation, agriculture became more specialized with increased output of a few crops the major goal. Local political reorganization was also specialized to function for colonial purposes.
The process of predation was interrupted by forces outside the system which were responding to the same competitive process. Taiwan was then surrendered by Japan to the Allies who gave its control to China and thus the Nationalist government. For the local community the change was not very great. Administrative organization, economic activities and daily life remained much the same. Local functions were also the same; it has remained a prey of the larger system of which it is a part. It is in no way autonomous, increased crop output is still the major goal forced upon it, and its production serves the interests of the larger society.

Due to the greater data available for this post-World War II period, we can examine changes and processes underlying changes in this period with greater intensity and, perhaps, fruitfulness. As discussed in Chapter IV, one of the first actions of the Nationalist government was to institute a program of land reform. It was felt that such a program, having been unsuccessful on the mainland, needed to succeed in Taiwan as a demonstration of the good faith and intentions of the new government. Between 1949 and 1953, rents were reduced, public lands were sold to farmers, and tenants were given the opportunity to buy the land they farmed. If, as is clear, these measures gave individual farmers more control over the fruits of their labor, what did the government receive in return?

As Ho (1978a:251) has pointed out, there was no overlap between the landowners in Taiwan and members of the newly arrived government. In selling landlords' land, members of the new government not only did not make any personal sacrifices, but in one stroke they wiped out the class
most capable of effectively opposing the government. Compensation given to the landlords was a combination of commodity bonds and government-run industry stocks. It was years before these stocks and bonds were worth the value of the land expropriated as industry was in its infancy. Therefore many former landlords sold their certificates for a small percentage of their value. Others were simply reduced to equality with their former tenants. From the point of view of the new government, the land reform program was based on the self-interest of political security as well as the need for social welfare. A by-product, however, was the destruction of faith in land ownership as a secure form of investment. The Taiwanese farmer has never again looked to the accumulation of land as a proper investment. Because of this, industry, the only other vehicle for the investment of capital, received a great stimulus. Thus land reform was a crucial factor in the development of Taiwan's economy. It provided security for the new government by destroying possible opponents; it won the approval and gratitude of the majority of the Taiwanese who had been landless or tenants; it gave national industrialization an effective start by destroying confidence in investment in land; and it stimulated the transfer of capital and labor out of agriculture into industry.

The land reform program was not the only agricultural program to benefit industry. The rice-fertilizer exchange program provided income which moved from the agricultural to the industrial sector for over twenty years. This hidden tax on farmers subsidized the growth of industry at farmers' expense. The industrialization of Taiwan also benefited from foreign aid. This aid allowed Taiwan to maintain a large military force
ensuring its political survival and was also used to subsidize large public works projects necessary for industrialization.

Thus industrialization was a by-product if not the objective of many of the programs and policies since World War II. How has this state-level impetus been carried out in spite of the fact that at times it was against local self-interest? The trend toward what Flannery (1972:416-417) calls "linearization" was present. Building on the system left by the Japanese, and destroying the economic base of the local level elites (landlords), high level officials were able to force local areas to respond directly to them. Such a trend was especially evident in the actions of the Farmers' Associations, which ran the rice-fertilizer exchange program. But it was crystal-clear in the work of the irrigation associations. The actions of these associations represent

... the linkage between the special-purpose arm (SRH) of a higher level system (the federal government) and an important variable (water) in a lower order system (the local village ecosystem). . ." (Flannery 1972:417)

Wittfogel (1957) was among the first to recognize the importance of water control in providing access to local areas. By gaining control of the water, and thus the ability to control the cropping system, the Japanese, and later the Nationalists, could force the farmers' labor in directions which the administrators deemed desirable. Perhaps because of its evolutionary significance, this phenomenon has been given a number of names: over-segregation, over-centralization (Rappaport 1978), hyper-coherence, hyper-integration (Flannery 1972), and meddling (Rappaport 1969). Its two important characteristics are simplification of structure or activity (such as political reorganization or monocropping) and loss of
local autonomy. The higher level control which replaces local control is both remote and capable of oversimplifying its information from more than one level. As Rappaport writes,

Organization at more inclusive levels seems to be increasing at the expense of organization at local levels. Increasing organization at the world level is based upon decreasingly organized local, regional, and even national social and ecological systems. (Rappaport 1978:61)

However, to discuss change at a world level may not be as profitable at this point as a return to K'ung Liao to describe the significant changes there in recent years. Chapters IV and V have detailed the economic and social impact of the recent depopulation of the village. The immediate causes of this depopulation were the demand for labor in the industrial sector of the economy, population pressure in rural areas, higher urban wages and a tendency toward chain migration. The process underlying these factors has to do with changes in the economic niche of agriculture. The penetration of the local system forcing it to respond to a need for higher levels of food production remained a fact in the post-colonial period. International forces as well as internal ones favored the development of industry and, as the economy was still primarily agricultural, agriculture was squeezed to pay the costs of building industry. In terms of the national economy, the greatest possible economic returns would be from industry but agriculture was also pressured to become as highly productive as possible. In other words, agriculture was forced to compete for the same niche (the economy) as industry. They are, to some extent, drawing on the same sources of energy (at least in terms of labor) and it is from industry that the largest energy returns can be drawn. Where this competition has developed to extreme stages, as in the United States, we have seen how agriculture
will become as much like its competition (industry) as possible in order to survive. Thus agriculture mimics industry, and becomes "agribusiness." This is an example of the operation of "Gause's Principle" (Hardin 1960) which has also been called the "Competitive Exclusion Principle." It states that "complete competition cannot coexist" (Hardin 1960:1290). Agriculture and industry are not, in reality, in complete competition, in that the function of each is toward different purposes and operates in a different manner. However, the system has been simplified by the penetration of the local area and its loss of autonomy. As stated earlier, the higher level operates on simpler information and responds to additional needs. Thus it is possible for the national level system to treat agriculture and industry as if they were in competition for the same niche. This treatment shapes reality; agriculture and industry are now, and have been for some time, in competition in Taiwan.

With this understanding of the ecosystem, we are now closer to being able to conceptualize the forces which have been operating in K'ung Liao to bring it to its present state. The system is clearly not displaying symptoms of homeostasis. However, as Maruyama has shown, a cybernetic system need not be in a state of equilibrium. One which is in a state of equilibrium he calls "deviation-counteracting." However, if it is not, it may be "deviation-amplifying" which he calls "the second cybernetics" (Maruyama 1963). This second cybernetics may assist in the explanation of forces in operation in K'ung Liao. As he describes it, it covers

\[
\ldots \text{all processes of mutual causal relationships that amplify an insignificant or accidental kick, build up deviation and diverge from the initial condition. (Maruyama 1963:164)}
\]
While both the first and second cybernetics are mutual causal systems, "the deviation-amplifying system has mutual negative feedbacks between elements . . ." (Maruyama 1962:164). Because of this such systems often appear to be "vicious circles." To demonstrate the applicability of the deviation-amplifying system to K'ung Liao, I will briefly review the economic consequences of out-migration as presented in Chapter IV.

In very simple terms, out-migration causes a loss of labor which leads to a rise in hired labor wages and causes farmers to adopt capital-intensive farm machinery, pesticides and herbicides. The expenses connected with capital-intensive innovations lead to a decrease in farm revenues and thus lower profits, resulting in land sales, rentals and more migration. Migration, through these "mutual negative feedbacks" has brought the village to more migration. We have seen similar negative feedback also operating in other areas such as political and social activities. Negative feedback is reinforced by pressures originating outside K'ung Liao which are able to penetrate its boundaries. For example, the capitalization of agriculture is subsidized by funds available through the government-sponsored Farmers' Association. The decrease in farm revenues is assisted by government rice purchases and price controls. The ability of farmers to sell land, to convert its use, or to inherit land is defined by national-level laws. These outside forces enable the vicious circle to continue operating in spite of threats to the well-being of the village.

Rappaport has distinguished between short-term changes in a system which do not change its structure, and long-term structural changes which are likely to reduce flexibility (Rappaport 1978:51). Because of the
operation of this process of deviation-amplifying negative feedbacks, K'ung Liao is gradually trading off adaptive flexibility for adaptive efficiency. This can be seen in the adoption of capital-intensive agriculture. If, in the future, migrants were to return to the farms (as in the case of economic depression) the ability of the farms to absorb their labor would be gone. Their work would have been replaced by mechanical labor and chemicals. Perhaps a more serious development is the lack of another generation of farmers. By moving out of the village or sending their children out permanently, villagers have given up a future for the community. It would seem that through the twin mechanisms of higher-level penetration and deviation-amplifying negative feedback, the survival of both K'ung Liao and agriculture itself is in question.

K'ung Liao is in no way unique as an agricultural community whose future is threatened. The same pressures are being felt by farmers in many parts of the world. Is there any explanation for the involvement of so many societies in industrialization at the expense of agriculture?

Rappaport notes:

Increasing industrialization has generally been regarded by members of western society to be the sine qua non of progress, and increase in the amount of energy harnessed per capita of population has been proposed by an anthropologist (White, 1949:368 pp, 1959:144) as the most significant criterion of evolutionary advance. (Rappaport 1973:264)

It is important to give some reflection to the concepts and motivations underlying the popular emphasis on "economic development." Ideologically, economic development fits in nicely with western perception of "progress" as an inevitable or desirable phenomenon. The idea that societies evolve
from simple to complex, from barbaric to civilized, and so forth, is 
embedded in Western philosophical thought. Bock has traced it back to 
Aristotle (Bock 1966:277). While it is no longer popular in anthropology 
to represent non-Western societies as stages in an evolutionary drama 
culminating in contemporary industrial society, such a framework can be 
found in popular ideas about the non-Western world even at the highest 
levels of decision-making, and are particularly strong in shaping our 
political relations with other nations. In the nineteenth century it 
was axiomatic that

... change had followed a course away from what was most 
distinctively non-European toward what was most clearly 
European. (Bock 1966:276)

This ethnocentric viewpoint is far from dead. Other people whether they 
are labeled "third world," "underdeveloped nations," or "LDC's" as they 
are now; or " primitives," "savages," or "uncivilized" as they were until 
fairly recently, are conceptualized in the same way. They represent our 
past and we are capable of assisting them in hastening the arrival of 
their future. Implicit is the idea that we represent the future of 
others, that all change moves in one direction, and that our present state 
was inevitable as is the future development of others.

According to the prevailing viewpoint of authorities within 
industrial civilization, this disappearance or drastic 
modification of these cultures is considered necessary for 
the "progress" of civilization and is thought to be in-
evitable, natural, and in the long run beneficial for the 
peoples involved. (Bodley 1975:vii)

At a conscious level, officials may reject some of these statements, but 
they are implicitly subscribed to in that they underlie our beliefs about 
others, beliefs which have been activated through programs of technical 
assistance, and international development.
Is it then, disinterested good-will that caused the United States and other nations to spend large amounts of capital in assistance programs so that other nations might enjoy the same high standard of living with which we are blessed? On the contrary, such programs are entered into on both sides with calculated self-interest. The political payoffs for each are obvious in that the assister gains a friend, an ally, and a trading partner. The country assisted will achieve greater political stability. This stability is both internal, through higher levels of income, and external, through greater ability to build up national defense. Therefore economic development represents a political as well as an economic program at the national and international levels. As Bennett writes:

... to scientific atomization and to the Cold War, which induced the big nations to compete with each other in the economic aid field, fault is equally present in the eagerness with which the new nations seized on development as a path to power and rivalry among themselves. Once again, ideological and power issues underlie ecological problems. (Bennett 1975:293-294)

Taiwan's development is based on a number of factors. For the United States and other industrialized nations, Taiwan represented an important ally situated invitingly close to mainland China, North Korea, and Russia. The development of Taiwan promised customers for U.S. industries and a cheap source of goods and resources. For Taiwan, foreign assistance guaranteed its political survival and stability. Its development was based on several premises: the existence of (1) underemployment; (2) cheap labor; (3) markets; and (4) political stability or adequate control. Taiwan was developed through the injection of large amounts of outside resources and capital.

The (US) PL 480 program of aid to developing foreign countries was initiated in 1954. Up to the present
time (1964) about 130 million tons of food and fiber have moved abroad through this program—supplies having a value of over 12 billion dollars. Since 1957 the Republic of China has received a total of over two million metric tons of these surplus commodities having a total value of nearly US$142,000,000.00. (Huffman 1965:3)

Taiwan also held the promise of a large pool of cheap labor for foreign companies. Having been attracted to Taiwan by tax incentives and cheap labor, they remained because the government interfered with the system in order to guarantee that cheap labor stayed cheap and labor itself remained available. This was accomplished through government purchases of rice and price controls on farm products so that urban prices remained lower than they should have, allowing urban wages to stay artificially low. In addition, rural-urban migration was allowed and even encouraged by the fact that farming, through government intervention, became less profitable. As labor became scarce in the countryside, companies were encouraged financially to move out into rural areas chasing labor. They brought with them industrial pollution and increased the number of part-time farmers. Rural-urban migration was explained as demonstrating that labor in agriculture was "underemployed." Developers have hidden the cost of development from the people by squeezing the farmers and having access to large amounts of capital from foreign aid and industry.

Business is primarily concerned with "cost-effectiveness." As industry develops in Taiwan, the price of labor gradually rises, decreasing its cost-effectiveness in relation to other less developed countries. As has happened in the West, companies would then have the incentive to move on to other countries where cheaper labor is available. Foreign aid to Taiwan has already been reduced. If industry leaves, the cost of development will quickly become apparent. The gradual deterioration of the
economic position of the farmer and of agriculture in Taiwan has been shown. Agribusiness is not feasible in Taiwan because of an ideological commitment to individual farm families which, fortunately in fact, are actually the most productive. On a large scale, agricultural nations are becoming industrial ones; and their people are becoming producers of manufactured goods and no longer producing food or other raw materials. The demand for food is much less elastic than for other products. A consumer may have the choice of buying a television set or not, but he cannot long forgo dinner. Similarly, industry needs raw materials and with the shortage of petroleum there is a move back to renewable resources for fuel, fertilizer, pesticides, and so forth (see Johnson and Allaby 1977:42-48). Who benefits from the world-wide conversion of farmland to industrial parks? Whether agriculture in the United States should be taken as a model for other nations has not received sufficient debate.

It is really too much to try to state the relevance of U.S. agriculture for developing countries, given that we could not have been more surprised at the outcome of our own agricultural experience. Indeed, we do not fully understand what is happening to ourselves, and some students of American agriculture are far from being reconciled to what they do perceive. Many feel a sense of anxiety and concern about the world impact of U.S. agribusiness. There are those who believe that economic and political necessity may ultimately cause the U.S. to restructure and redirect its own food production/distribution institutions and processes. (Hadwiger and Talbot 1979:21)

The American model of the industrialization of manufacturing and agriculture with high energy inputs (along with high waste and pollution outputs) and low labor absorption may be shown in the near future to have been based on basic misunderstandings of the local, national, and international costs.
Figure 21 provides a model of the stages of economic development based on this discussion. The first stage is a pristine state. In this state social and economic interchanges are carried out inside the local boundaries. It is within this area that marriage partners come, goods are traded, labor moves, defense is organized, social services performed, and information flows. Taiwan, which was a frontier society, was made up of local areas which were, for the most part, self-contained. In the second stage, extra-local influences begin predatory penetration of local boundaries, reorganizing, simplifying and gaining control over local activities. This stage is accompanied by a flow of resources into the local area which may or may not benefit it, but primarily serve to create an infrastructure and conditions favorable to extra-local control. With sufficient internal development, stage three, true predatory expansion, arrives. The extra-local control is able to demand resources and productive output from the local level. The flow tends to be one way. Having been reorganized, the local level can now serve extra-local needs and ignore its own. It is perhaps more accurate to say that it does not have the autonomy to deal with its own needs. At this stage the local level is truly being exploited. Taiwan reached this stage after 1930 as a colony of Japan. Taiwan's local areas now show signs of moving into stage four: symbiosis. While still organized and acting toward the needs of the higher level, the local level has increasing access to outside resources on which it is becoming dependent. At this stage local boundaries are permeable and interactions between levels flow in both directions.
1 ORIGINAL CONDITION

2 FIRST STAGE EXPLOITATION

3 SECOND STAGE EXPLOITATION

4 SYMBIOSIS

FIG. 21: A MODEL OF DEVELOPMENT PROCESS
The outcome of these four stages is structural change: the local area is able to respond with great efficiency to extra-local needs but has less flexibility for dealing with its own needs. As an agricultural community, K'ung Liao's journey through these four stages is also illustrative of the result of economic development for agriculture: specialization and dependency. Whether there is a real future for agriculture given the emphasis on industrialization and the ability to import food is a very real question. Fei and Ranis believe that "... Taiwan will ultimately be an importer of food," and that agriculture "... played its crucial historical role to the hilt... without its central contribution the rest of the success story... would not have been possible" (1975:362). The "success story" is economic development through industrial growth. Its own decline was part of agriculture's contribution. Since Taiwan serves as a model of economic development for other nations, we can expect to see more nations importing food and fewer exporting.¹ Farmers are being lost to the cities and factories, and farmland is lost to urban and industrial use. Industry is dependent on the heavy use of fossil fuels which climatologists tell us are affecting average temperatures. In rural areas human energy is replaced by fossil fuels in an attempt to deal with labor shortages. This further increases pollution. If food were not in adequate supply public health would decline and urban areas would be less habitable. Climatic changes due

¹For an interesting discussion of the problem in Japan, see "Implications of Japan's Declining Food Self-Sufficiency Ratio" (Ogura 1976:419-447).
to pollution could negatively affect food supply, as could the con-
tinuation of this trend away from food production and toward food
importation. The resulting food crisis would shift the balance of power
relations to food surplus nations, ushering in an era of food diplomacy.
In the long run, it appears that this is the ultimate, if unintended,
effect of economic development.
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