AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY
Batch 67

1. SUBJECT CLASSIFICATION

A. PRIMARY: TEMPORARY

B. SECONDARY:

2. TITLE AND SUBTITLE
Strategic intervention in the cultural change process

3. AUTHOR(S)
Dobyns,H.F.; Holmberg,A.R.; Opler,M.E.; Sharp,Lauriston

4. DOCUMENT DATE	5. NUMBER OF PAGES	6. ARC NUMBER
1967	218p.	ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Cornell

8. SUPPLEMENTARY NOTES *(Sponsoring Organization, Publishers, Availability)*
(In Comparative studies of cultural change. Publication)

9. ABSTRACT
(SOCIAL SCIENCES R&D)

10. CONTROL NUMBER
PN-AAE-237

11. PRICE OF DOCUMENT

12. DESCRIPTORS

13. PROJECT NUMBER

14. CONTRACT NUMBER
CSD-296 Res.

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

CSD-296 Pao
Cornell
PN-AAE-257

Strategic Intervention in the Cultural Change Process

A Report to the
Office of Technical Cooperation and Research
U. S. Agency for International Development

by
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Comparative Studies of Cultural Change
DEPARTMENT OF ANTHROPOLOGY
CORNELL UNIVERSITY
ITHACA, NEW YORK
1967

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FOREWORD

This report has been prepared and written under Contract AID-csd-296 between Cornell University and the Office of Technical Cooperation and Research of the Agency for International Development.

Allan R. Holmberg, who died on October 13, 1966, was unable to participate in the preparation of the final draft of this report.

Other reports in this series, completed or in press, include:

a. Recommendations for future research on the processes of cultural change.

This report will set forth recommendations for future social research made by the Comparative Studies of Cultural Change staff. It will include general recommendations for types of social science investigation and specific suggestions for future lines of research in the world areas most familiar to Comparative Studies of Cultural Change personnel. Both basic research and applied social science projects will be analyzed. Special emphasis will be given to those projects thought most likely to increase the efficiency of allocation of United States foreign aid.

b. Report on the principles of social and cultural change.

This report will treat of individual physiological and psychological processes involved in cultural transfer and their relation to biological drives. It will discuss stages of the cultural change process as it affects individuals, and it will analyze social processes of cultural transfer in the light of contact situations, antecedent characteristics of donors and recipients, demographic trends, and social structures. It will also treat of various techniques for cultural transfer, analyzing temporal and technological dimensions of the process.

c. Report on methods of analyzing change.

This report will deal primarily with methodological problems in studying the process of change and techniques for promoting it. A brief exposition of the variety of approaches used in this and other studies will be offered. There will be emphasis on methods which the authors have found particularly helpful in analyzing change. The questions raised in analysis of change which involve value systems will be considered, and the kind of problems met in dealing with comparative rates of change will also be discussed.

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INTRODUCTION

This monograph presents some anthropological perspectives on strategic intervention in the development of unevenly developed nations with large low-income sectors in which the United States Agency for International Development seeks to aid local governments in the improvement of the lot of their populations.

Modern attempts by Western man to change the behaviors of foreigners have necessarily involved direct or indirect intervention by outsiders in the activities of local cultural systems. Such outsiders, whether Roman bureaucrats and businessmen in early Britain, sixteenth-century Spaniards and Portuguese working overseas for God, gold, and glory, missionaries at home or abroad, latter-day agents of technical aid, or middle-class Negroes and Whites now seeking to improve the lot of the other, nonaffluent Americans, all of these interventionists have been influenced by their own cultural values. The more benevolent the modern interventionist, the more his actions may be motivated by his own peculiar and limited value judgments and assumptions, namely, that humanitarianism is a Good Thing, infant mortality is bad, efficiency is essential for economic and political development, and democracy is efficient. Any of our attempts to develop someone else's society or even segments of his society often involve judgments by us, explicit or implicit, that we or our ways are superior and they or theirs are inferior. Western values, or a local version of them, have usually provided the standards for recent development, even in countries such as Thailand, Japan, or many Latin American states which have had considerable control over interventionists, whether these were foreigners from outside or native policy-makers and agents, for most of whom modernization is their conception of Westernization. Even in India the simplistic Gandhian movement was a reaction against aspects of Western civilization.

It can be demonstrated that intervention by outsiders can be damaging to a local cultural system. Cultures can die, and sometimes as rapidly as within three generations (Sharp 1952; Dobyns, Ezell & Ezell 1963). The extent to which a way of life may be destroyed depends on many factors, of course: the geographical and biological situation, the character or structure of the local and of the intervening cultures, and other factors noted in this series of reports.

It is not the business of foreign aid or development programs to preserve inferior ways of life. It is, however, their business (or so they assume) to preserve life or some lives and to help maintain or help to create viable societies

which are self-sustaining, which have moved off their pads of poverty and are better off by our standards, which have been largely accepted by some of them as their standards.

Thus we arrive at the conception of strategic intervention or action designed by advocates of change which effectively introduces innovations into a social system so that behaviors are in fact changed in the direction of planned goals. Apart from new behavior supporting the achievement of conscious objectives, there may also be side effects, but in strategic intervention these at least do not interfere with the plan.

There are numerous examples of interventions which were not strategic in this sense, whatever drastic changes they may have induced. Our task, then, in terms of current cultural systems, is to examine the feasibility of programs of strategic intervention and to outline the kinds of analyses which would be needed if action is to encourage development and not to destroy it, if it is to change the behavior of foreigners so that there will be more of what they and their neighbors really want and less of what they do not want.

To a certain extent, the anthropological perspectives we present have been worked out starting from the point of view of the rural peasant and working on toward the national capital city. We have worked through our data in much the same manner as that which an anthropologist usually employs when conducting research in the field. Rather than starting at the capital and working out to the village, as the government official or USAID officer tends to do, we have worked from rural villages in and up through the provincial cities toward the capital. Thus, our perspectives differ somewhat from those of the urban elite of a developing country or of foreign officials advising such elites (Dobyns, Holmberg, Opler & Sharp 1966:19-22).

Our perspectives have been gained primarily in three nations where we have personally conducted fairly intensive field research on the cultural change process. Most of our illustrations will be drawn, therefore, from these experiences in Thailand, India, and Peru, supplemented by our research findings among Australian aborigines and tribal peoples in the southwestern United States. The discussion, therefore, will draw heavily upon data from the rural settlements that have fundamentally shaped our perspectives on these three countries. These are the rice-growing village of Bang Chan in Thailand, the cereal-growing caste-segmented villages of Senapur and Rankhandi in India, and the potato-producing group of former serfs scattered over the slopes of a former Andean manor called Vicos in Peru. The Appendix contains a brief description of each to give some useful background to the reader unfamiliar with these areas.

I. THE STRATEGY OF CHANGE

Cultural Integration

This discussion starts out from the central premise that a given culture constitutes an integrated system.

In terms of anthropological field procedure, this theorem leads to the concept of functionalism, the idea that one can begin with absolutely no prior knowledge of a given culture and arrive at a complete functional analysis of it. It suggests that one can start from a single object used by members of the society in question and, by observing all its connections with other objects and with people and by questioning them about these connections, develop leads from one interconnection to another until the entire system is understood (Holmberg & Dobyns 1963:1).

This discussion is not the place to undertake any lengthy demonstration of the theorem. It will be enough, we feel, to indicate here that the observation of the events that occur in the process of cultural change in many societies have illustrated many times over the functional interconnections between cultural elements. One very simple illustration of such interconnections is provided by the series of events that occurred in a Papago Indian village in southern Arizona after a horse-drawn wagon was introduced there for the first time.

First of all, of course, horses had to be trained to pull the vehicle. Rather than utilize homemade rawhide tugs such as they had employed for plowing, the Indians purchased manufactured harnesses. Thus, their need for cash was increased.

The villagers added a wooden frame to the wagon to support blankets to shade the riders from the hot desert sun. One villager learned blacksmithing to keep the wagon's metal parts in repair and to shoe the horses.

The Indians put the vehicle to many uses. The men hauled water from the earth tanks to their homes with it. The handmade ceramic vessels the women had carried in woven baskets slung over their shoulders could not resist the jolting of the wagon, so they were quickly replaced by wooden barrels and then metal ones, which did not fall apart when they dried out. The women gained time when the men took over the water-hauling task, and more as other containers replaced ceramics. They made only the clay vessles wanted for storing drinking water, because the porous pots allowed sufficient evaporation to cool the water they held.

Since the villagers moved between valley fields, where they lived during the rainy summer, and mountain springs, where they spent the winter, they had to build a road to use the wagon for moving.

Decisions over the order of moving the various families stimulated increased discussion in the village council. The villagers also employed the wagon for trading journeys into northern Mexico and for hauling firewood and agricultural produce to market, as well as for the purposes already mentioned.

As additional cash was needed, men moved into the mesquite tree groves to fell trees and chop them into salable lengths. This displaced old women and children from collecting deadfalls for domestic fires, as well as augmenting the commercial economy of the village. The use of pack horses declined so that within a few years no more pack saddles and net panniers were made locally. The scale of personal contact with Mexicans declined as fewer men were needed to drive the wagon than to run a pack train (Bliss 1952:28-29).

Another simple example of cultural linkages may be drawn from the Yir Yoront aboriginals on the Cape York Peninsula of Australia. Steel axes were given to these people in numbers by Christain missionaries, replacing polished green stone axes that had been very expensive items previously (Sharp 1952:69). These had to be obtained from quarries four hundred miles away through trading partners. Only adult males engaged in this trade and completed the polishing process. These men retained ownership of the axes, although they often loaned them to women and even children who needed such an implement. Such borrowing took place in terms of prescribed kinship behaviors, which defined the women and children related to an axe-owning male as more or less subordinate to him (Sharp 1952:76). The stone axe understandably constituted a major symbol of Yir Yoront masculinity, along with spears and spear-throwers and fire-making sticks (Sharp 1952:78).

The missionaries gave out steel axes in terms of their own frame of reference. They rewarded aboriginal behavior of which they approved with gifts of steel axes, whether the aboriginal was adult male, female, or child (Sharp 1952:83). Aboriginal social organization and complex religious beliefs associated with the totemic explanation of stone axes were seriously undermined. As equivalent conceptions were not successfully communicated by the missionaries with the same rapidity with which their gift axes spread through the aboriginal population, the latter were left with "a mental and moral void" (Sharp 1952:85).

Strategic Intervention

Our concept of strategic intervention as a central strategy in cultural change efforts derives from the premise of cultural integration. We conclude that intervening directly at key identified points of interconnectedness in a cultural system will achieve maximal results in terms of change in return for minimal inputs.

Intervention as we are using it in this discussion means simply an act or a series of related actions intended to produce innovation in a given culture. The act or actions are supposed to equip the members of a given society with a new conventional understanding (Redfield 1941:132) or modify one they already share. The act or actions are planned by an advocate of cultural change who is not a member by birth of the social system where he seeks to produce innovation.

The act or actions may be carried out by the advocate of change who plans them or by quite another change advocate --an agent--who may also be external to the target system where change is sought or who may form part of it.

The strategic quality of a given intervention can perhaps be discovered only after the event. Some actions that are planned to be strategic fail to become so. That is, they fail to meet the criterion of actually generating consequent cultural change by bringing to bear new influences which further affect the culture where change is sought.

A relatively simple illustration of a Comparative Studies of Cultural Change staff intervention that turned out to have been somewhat strategic may be drawn from Senapur. The strategic intervention was the act of interceding with the Government of India postal department to have a post office established in Senapur.

In interceding with governmental authorities, the Cornell staff acted on the basis of expressed wants of the villagers, which had been ascertained during the social science research under way in the settlement. The Cornell staff itself remained, on the other hand, socially external to the village social system, in terms of ascribed status. Although temporarily resident in Senapur, the Cornell staff members (with one exception) were not born there, and the majority were not even citizens of India. Thus, their intercession constituted intervention as we are conceiving of it in this discussion.

It is worth noting that the Government of India postal department was also external to the village. Its favorable response to the petition presented by representatives of

Senapur with Cornell staff support constituted a consequent intervention, analyzing events from the point of view of the village as a subcultural system within India.

When the postal department set up a post office in Senapur, a number of consequences of the interconnectedness of cultural elements occurred. We mention only illustrative ones here.

Having a local post office opened the village up to receive more publications such as newspapers and magazines printed in India's cities. This significantly increased the influence of urban ideas on the village literate group by establishing a direct urban influence in the village which had not previously existed on any regular schedule or significant scale.

Having a local post office branch brought an increased movement of monetary capital into the village via personal remittances. The residents of the villages and emigrants from it had not previously trusted messengers who traveled between Senapur and other settlements which boasted post offices. So they did not remit funds. They did, however, trust the Government of India postal service with their funds, so capital movement increased very greatly with the establishment of this trusted form of movement of missives. The very significant role of remittances has been emphasized by Manners (1965:185-192), Hopper (1957), and Simon (1966).

Senapur gained prestige relative to other settlements in its area when the post office opened there. Local pride raised local morale and created a psychological set more favorably disposed toward further innovations than had existed previously.

Directed cultural change, such as attempts to accelerate rural development in low-income areas, necessarily involves direct or indirect intervention by outsiders in the activities of local cultural systems and the behavior of local inhabitants.

Outside interference in other people's affairs is a complicated operation at best, however benevolent it may be. At worst, it can be lethal to a social system which is foreign to the interventionists. Difficulties inherent in foreign aid programs can only too readily be illustrated, including failures of educated government elites to understand the rural or other poorer sectors of their own national societies. These failures are more likely to be failures of means rather than of ends. The elites or the foreigners often know what should be done--crops should be diversified, savings should be increased--but not how to do it within the context of available cultural resources.

In dealing with the dangers of interference in cultural systems, anthropologists have arrived at the conception of strategic intervention. This is conscious intervention or action designed by advocates of change which, through selected agents, introduces into a social system innovations which in fact effectively change behaviors in the direction of goals planned by the change advocates.

II. COMMON PROBLEMS OF DEVELOPMENT

Scientists concerned with the nature of mankind have concluded that man constitutes a single interfertile species with a great preponderance of physiological characteristics in common among all known individuals the world over. The fairly uniform physiological make-up of the human race means that the basic requirements of human life also tend to resemble one another quite closely in any human population. The problems men solve by cultural means tend to be similar throughout the world. This means that much of the process of socio-economic development consists of parallel actions in different regions.

Nutrition

One basic requirement for human life is, of course, an adequate and regular supply of food, water, and air. Men must breathe, they must ingest food and drink if they are to survive. These needs give rise to physiological drives perceived by each human being and expressed in terms of his or her set of conventional understandings as to the proper ways to do so (Malinowski 1941:188; Dobyns, Holmberg, Opler & Sharp 1967:18-25). Living in an omnipresent and pervasive gaseous atmosphere, men have had to devote conscious effort to obtaining air to breathe only under exceptional circumstances, such as swimming underwater, created by man himself. Inhabiting a well-watered planet, men have settled nonetheless in many of its drier areas on the 60 per cent of its land surface classified as semi-arid or arid (Roe 1966:126). A number of cultural solutions to the problems of obtaining drinking water have been worked out, ranging from impounding surface flood waters and digging wells to tap subterranean waters (Dobyns 1952b:33-34; McColgan 1966:105; McPhee and Lenard 1966:101) to stream diversion (Wiener 1961:159; Werley 1965:76) and desalinization of salt water (Dumesnil 1961; Roe 1966). As society has become steadily more industrialized and urbanized, its utilization of fresh water has rapidly increased. Water is required to perform a tremendous range of industrial operations from refining petroleum and finishing steel to making glass, rubber, and soap (Lear 1965:24). So per capita water consumption rose six-fold in the most industrialized regions between 1900 and 1960 (Dumesnil 1961: 167). The average man in the U. S. uses fifty gallons of water per day compared to five at the beginning of this century. If domestic and municipal services are counted, he averages 150 gallons (Lee 1966:101). As urbanization proceeds, growing cities must turn from pumping subterranean waters to major surface sources, including lakes stained by high organic content (McColgan 1966:103) or rivers subject

to tidal flooding (McPhee and Lenard 1966:101-103) as well as hostile guerilla actions. Man inhabits, in other words, a steadily more water-shy environment relative to his increasing use of the substance.

As mankind has increased in numbers, he has long since outstripped the capacity of the earth to support him with its wild game and plant foods. Mankind has devoted a great deal of enterprise to devising more efficient means for producing foodstuffs, most of them involving cultivation of domesticated food-yielding plants or caring for domesticated animals (Parker 1961:140). Only a very small proportion of the world's population depends on game and wild plant food.

The very nature of mankind makes improving nutrition one of the common tasks of development the world over (Lowdermilk 1961:128) and the international transfer of surpluses a significant tactic (Meir 1962:145), at least in short range terms. The alternative means of improving human nutrition absolutely are in broad terms relatively finite. More and better food can come from improving agriculture by applying more artificial (Parker 1961:142) and natural (Watanabe 1961: 147-148) fertilizers and by cultivating plant varieties able to make efficient use of increased fertility, as well as by improving pasturage through flood-water control (Dobyns 1952a: 210) and other techniques of better animal husbandry. More food can also come from better game management, by inland fresh-water fish production (Perrin 1961:194) from expansion or improvement of salt-water fisheries and estuary sea food cultivation and collection (Watanabe 1961:144ff). Malnutrition attributed to food shortage may, however, actually result from infections or parasite infestations, from culturally set dietary habits, or even social factors (Williams 1958:9). One cultural factor favoring Japanese development has apparently been a taste for marine algae, consumed in greater quantity in Japan than anywhere else in the world (Watanabe 1961:144).

Well-Being

All normal human beings are concerned with their personal well-being (Lasswell & Kaplan 1950:72). Mankind uniformly shows fright, leading to actions to remove the individual from danger. Men also feel pain and seek to avoid it (Malinowski 1941:188). Every cultural system has, therefore, its conventional understandings as to how to avoid illness and how to cure it. Some form of cleanliness training, healing, surgery, medicine, and obstetrics and pregnancy usages appears to be a functional prerequisite of a human cultural system (Murdock 1945:124).

Not all notions of medical therapy yield equally effective results. Many therapeutic practices accomplish much more for the psychological state of a patient than they do in terms of combatting causes of organic malfunctions (Gruber 1961:ix; Williams 1958:6). A common problem of development the world over, therefore, takes the guise of the diffusion of preventive medical measures and therapeutic techniques that demonstrably improve the well-being of the population. The specific disease agents responsible for severe health threats differ from region to region because of environmental differences, so details vary. Thus, African development has been retarded by the tse-tse fly transmitting trypanosomiasis, mosquitos transmitting malaria, and snails transmitting schistosomiasis (Alder 1961:175-177).

Adequate nutrition itself constitutes one component of improving well-being, of course, so that developing agriculture and fisheries can make direct contributions to well-being in a given population. More specifically, development in this sphere tends to resolve itself into standard components: experimentally verified treatments and pharmaceutical products plus the means for providing these to the populations. The means for disease prevention and therapy include hospital and clinic buildings and equipment and trained medical personnel such as doctors, nurses, midwives, and aids. These specific components operate best in the cultural context of industrialized society, "established law and order," and an "acceptance of social responsibility," all stemming from the long historical tradition (Williams 1958:8) that sharply sets apart literate from nonliterate societies (Wilson & Wilson 1945:25-26).

Nationalism

Although the argument is probably overdrawn, it has been claimed that human beings behave in terms of an innate primate territoriality (Ardrey 1963, 1966). At any rate, a sense of identification with locality often develops, which may end in the use of violence by some individuals against others. As a consequence of this factor, plus the competition for water supplies, food, medical care, etc., mankind has found necessary, or at least functional, the formulation of rules of conduct. Individuals interact with other individuals in terms of regulations aimed toward the minimization of overt physical violence within the organized group. A series of forms of formal organization of interactions have developed over a period of thousands of years.

The forms of formal organization most typical of what is meant by development today have emerged within the past few centuries. One key form of social organization becoming characteristics of societies all over the world is the nation-

state. Development today occurs quite typically in terms of nationalism with elements of legal relations between citizens and state, symbols, ideology, and social value (Silvert 1963: 8, 18). In some cases, national development reacts against former colonial conditions. In other instances, nationalism fosters social integration of former isolates within the boundaries of a state that has long been free from foreign rule, such as Bolivia (Patch 1963:113) and similar Latin American countries. In some instances both kinds of process operate, as in India (Harrison 1963).

If we think back for a moment to our brief summary of the part nutrition plays in development, we may begin to illustrate the interconnectedness of cultural elements once again. Peru can be classified as a relatively weak nation-state, in terms of a criterion of nutritional deficiency. The problem of insufficient food production to meet national demand can be taken as a starting point in discussing development in Peru. The country simply does not produce sufficient food to feed its present population. This is a fundamental paradox, inasmuch as the great majority of the economically active population is engaged in agriculture.

Peru spends more to import wheat and wheat products year after year than on any other single imported item.

Potatoes, a staple and preferred Peruvian food, often cost more in the capital city of Lima, with a metropolitan area population of 2,000,000, than in the city of New York (Holmberg & Dobyns 1963:1).

Such statements begin to imply the kind of thinking that can identify interventions which are likely to become strategic ones. A strategic intervention at the national level in Peru would be one which would increase the national food supply in such a way as to foster further increases in food production. One philosophy for achieving such a change is to concentrate outside efforts on farm units already proved as producing entities (Erasmus 1961:19ff.). Another philosophy for achieving such multiplying effects in change is to concentrate outside effort on the least productive component of the national system of agricultural production.

The scientific staff of the Cornell Peru Project chose the latter alternative. It identified the least productive component of Peruvian agricultural production as the large expanse of land worked by Indian serfs living on manors leased from charitable organizations acting as absentee landlords (Vázquez 1961:20, 24). The scientific staff forecast that a significant experimental achievement in raising agricultural production on such a unit would strike hard at Peruvian stereotypes about the fixity of Andean agricultural productivity and lack of Indian learning capacity, opening the way to a more rational national approach to increasing food production.

Any attempt at augmenting food production necessarily occurs within the context and limitations and advantages of the existing system of rules governing social behavior. In the Peruvian case, the Cornell Peru Project staff had to recognize a series of limitations upon its freedom of action in attempting to increase food production in an Andean manor.

Several temporal limitations were built into Peruvian law and custom, and such limitations are to be found in any nation-state. In Peru, charitable organizations are required by law to rent their properties for a fixed period of years to the highest bidder at a public auction. All permanent improvements made to a rented manor, moreover, revert to the owner at the termination of such a lease period. As a consequence, ordinarily bidders are motivated to take out all possible profit during their tenure, since another lease is not guaranteed. Any outside innovator bent upon development can expect no developmental period longer than one lease period, since local bidders predictably will return to the traditional exploitative system. In the case of Vicos, the manor taken over by the Cornell Peru Project, the lease period was ten years, but in fact the period actually available for an experiment in augmenting national food production was only five years. The Project subleased the manor for the terminal five years of the ten-year lease.

A number of limitations upon the power wielded by an innovator external to the social system also necessarily are found within any developing nation-state. In the Peruvian case, members of the local socio-political elites in the Peruvian Andes who rent manors typically enjoy full support from their peers in exploiting the lands and Indian serfs rented. Such support included in 1951 extralegal manipulation of governmental authority to enforce local social sanctions. An innovator tinkering with a manorial system could expect to encounter automatic opposition from the conservative local power elite (Holmberg & Dobyns 1963: 2).

At the same time, the innovator external to the system but allied with nationalistic elements within it enjoys considerable advantages. The provincial elite in Peru can influence, but cannot control, the national elite. Power is highly centralized in Peru, and the Cornell Peru Project shared that centralized power by virtue of its binational character. The project consisted of Cornell University social scientists--the external innovators--and officials of the Peruvian Indian Institute--the nationalist power-wielders.

The external innovator openly allied with the national government enjoys relative freedom of action in the local arena, wherever the writ of the central government actually runs (Holmberg & Dobyns 1963:2).

Enlightenment

Over the past several centuries, what might be termed mass enlightenment has emerged alongside the nation-state as one of the typical forms of social development in the world (Lasswell & Kaplan 1950:181ff.). Tribal societies enculturate their young through informal teaching techniques. After writing was invented, formal instruction became a necessary part of civilization, on the other hand. Today formal instruction forms a vital component in the development process.

The widespread of the nation-state form of political organization itself fosters the need for formal instruction. The nation-state, whether authoritarian or democratic, requires a body of bureaucrats to man its apparatus. Those bureaucrats must be at least literate so that they can receive and follow instructions from higher authorities. In the democratically governed nations, literacy for all voters becomes a goal, although literacy is not always required for voting. India has conducted several national elections in which illiterate individuals could vote by using ballots on which there were pictures symbolic of various political parties.

The improvement of nutrition in a developing nation also tends to respond to the amount of formal instruction provided the farmers. The serf or peasant cultivator dependent upon oral tradition for his knowledge of cultivation techniques and farm practices in general has a sharply limited fund of knowledge upon which to draw. The farmer who receives sufficient formal instruction to become literate can draw upon a tremendous amount of literature at many levels of sophistication dealing with farm practices and animal husbandry. He can, if he manages to locate books or periodicals devoted to farming, draw not only upon the experiences of a few generations of his ancestors, but upon those of many generations of farmers in many regions. The literate farmer who has read about the deleterious effects of erosion and is seriously interested in the productivity of his own lands becomes a ready candidate to cooperate with the external advocate of soil conservation measures (Erasmus 1961:19ff.). At a greater level of complexity, the discovery and testing of new farm practices and production techniques depends on the formal instruction process, elaborated in special organizations where research becomes institutionalized. Since mankind is currently farming in one way or another a high proportion of the easily cultivated lands of the world, development now must frequently take the form of complex campaigns of reclamation or subjugation.

Modernization of a single watershed area today involves, if it is to be efficiently carried out, numerous scientific and engineering specialists who are highly trained and effectively coordinated. Development means soil conservation, storage of precipitation to limit floods, to generate hydroelectric power, to reduce sedimentation rates, to stabilize stream channels and to lengthen the useful life of natural and artificial reservoirs, to foster water-borne transportation systems, recreational and industrial water use, etc. (Lowdermilk 1961:132). The population occupying and using the watershed needs to be reasonably enlightened in order to cooperate effectively with the highly trained specialists who bring to bear the scientific knowledge required or who acquire it through experimentation and observation, as in sedimentation rate studies (Lowdermilk 1961:135-137).

A situation parallel to this is encountered in trying to insure the well-being of the citizens of the developing nation-state. Modern medical practitioners employ so great a quantity of specialized knowledge that their training necessarily requires a long period of time and highly specialized institutions (Williams 1958:13). Even within the medical professions, the formal training of doctors is separated from that of nurses, and dentists are produced by yet other training organizations.

The efficient utilization of highly trained medical personnel also requires formal instruction of patients. When the physician prescribes an antibiotic or other form of therapy, he may instruct a patient orally as to how to take the prescribed treatment. He relies, however, upon brief written instructions provided with the medicine or treatment to save time. If the patient is not literate, the time of highly trained professionals is inefficiently spent repeating oral instructions, or subprofessionals have to be trained to supervise patients on medication (Adair 1960).

The relationship between enlightenment and well-being appears in other guises. In regions where scientific medicine was first employed for the benefit of an expatriate European population, major epidemic diseases have been the first target of organization to insure prevention of epidemic episodes. Once that goal has been achieved, medical attention has turned to serious endemic diseases. Simple preventive or curative campaigns have been mounted and have achieved measurable success, recruiting local auxiliary staff but applying the same basic techniques to area after area. Such public health campaigns carry with them an inherent danger when carried out in relatively unenlightened

populations. They may give people the impression that a pill, spray, or injection achieves good health. Since the populace is a relatively passive beneficiary of the efforts of the medical staff, people do not necessarily perceive the connections between changing their individual and collective behavior and achieving improved health (Williams 1958:4-5).

All kinds of important messages are conveyed in writing in contemporary urban society. Excavations in the sidewalk are barricaded to keep the unwary from falling in, and the barricades bear the word "Danger."

As a result, the better educated the city dweller is, the more successful he or she tends to be. Researchers have found, for example, that migrants to urban areas succeed economically proportionately to their preparation for an urban way of life. Migrants to the Peruvian metropolis of Lima from other Peruvian cities followed occupations such as businessman, manager, or armed forces officer in 1960 in over one-third of the cases, compared to only about one-tenth of those from a rural mountain department (Stycos y Richards 1963:41). The urban-to-urban migrants were much better educated than the rural-to-urban migrants.

Environmental Limitations

The human organism that demands air, food, and water to survive is an organic system that must maintain a degree of homeostasis. Human beings are subject, therefore, to the biological drives of bladder and colon pressure (Malinowski 1941:188). Man forms one link in a very extensive ecological system that imposes certain limitations upon his cultural solutions to his problems of survival.

As long as men hunted game and collected wild plant food products, the disposal of human wastes probably posed no problems requiring deliberately planned measures. When men undertook the cultivation of domesticated plants and settled into a sedentary way of life in fixed abodes, however, some minimal planning for the disposal of wastes became desirable, if not absolutely necessary. Industrialization has made necessary the planning of water supplies and their protection, the planning of waste disposal, and protection of air purity.

The purification of water bearing human and industrial wastes in one place becomes necessary if downstream areas are to be able to draw potable water from a given stream. Thus, German cities along the Ruhr had installed 102 water purification plants between 1948 and 1965 to keep the river's waters potable (Lear 1965:78). New York City dared not draw

water for domestic uses from the Hudson River to solve its water shortages, however, because parallel measures have not been taken upstream and the Hudson has been too highly polluted for safe use (Bennett 1965:44; White 1966:8-9). Industrial pollution of the Great Lakes of North America, which contain 20 per cent of the earth's "fresh" water, has reached critical levels, especially near the great industrial cities, Detroit, Hammond-Whiting-Gary-Chicago, Cleveland, Toledo, Erie, and Buffalo (Hill 1965:32-33; Glass 1965:35; Seltzer 1965:36).

With the inventions of mechanized means of transportation which burn fossil fuels and of forms of household heating which utilize such fuels, mankind has acquired the capacity to force himself into consciously planning the management of his living arrangements and transportation techniques so as to leave himself adequately pure air to breathe!

The matter of finding fresh and uncontaminated water to drink has become progressively more of a problem as population has shifted from countrysides into cities. The industrial city that must feed its population must also dispose of the human wastes resulting from that feeding, very frequently to the detriment of the drinking water supplies of other urban residents downstream, even on a river carrying as large a volume as the Mississippi (Douglas 1965:13; Dilliard 1965:77-78). The city must also dispose of the garbage produced by the food and goods distribution process--boxes and cans and containers of all kinds, the hulks of worn-out delivery trucks as well as pleasure cars that have been discarded. United States production of solid wastes now averages an estimated 4.3 pounds per person per day. Experience has shown that incinerating this waste seriously impairs the quality of the air people breathe in urban areas. An alternative means of conversion is composting which is employed extensively in Europe (Fife 1966:126).

The natural conservation of energy imposes a very significant requirement upon human cultural solutions to what are perceived as problems. Mankind has demonstrated a great capacity to discover solutions to one perceived problem but an alarming incapacity to perceive the consequent disturbances in the ecological system produced by the very means adopted to solve the perceived problem. For example, a pesticide designed to control sugar cane borers turned out to kill large numbers of fish after a time lag following application to fields as it leached out of the soil into streams, where it is difficult to destroy (Douglas 1965:14).

The moral of the situation for the planner or advocate of cultural change seems to be that the natural environment functions as an integrated system within which transfer can be made but which is not open-ended. Planning or fostering cultural change needs to take into account the integrated nature of both natural and cultural systems.

In sum, one cannot very well obtain something for nothing on this earth. A reforming action aimed at one problem tends to overlook the effects that action will have on other individuals, the "forgotten" men. In terms of civil liberties, the rights of one person affect those of another. In terms of economic rewards, resources channeled into welfare cannot well go to productive laborers. Union limitations on membership which raise wages benefically for those who enjoy the monopoly created penalize would-be unionists who are excluded (Sumner 1918:466, 471-472, 476, 487), as Negroes in U. S. cities are currently emphasizing. Social systems and their exploitation of natural resources are indeed systems, made up of integrated parts so that actions affecting one part inevitably also affect others.

III. FOOD PRODUCTION INTERVENTIONS

The basic types of improvements that can be made in man's food supply are finite. Yet the inventiveness of mankind is so great that the cultural factors that can now enter into food production and distribution and utilization are almost limitless. Thus, the scientific analysis of cultural factors affecting food production could keep the entire existing crops of trained anthropologists busy without leaving any to train replacements and would still demand greater numbers than exist! We shall not attempt, therefore, to analyze any great number of cultural factors in food production. We shall focus upon a list of factors which we have found to be significant during the course of our long-term research in Thailand, India, and Peru. Since we have found that the scale of social organization required to make an effective decision on changing agricultural practices affecting production appears to constitute a very significant variable, we shall couch our discussion in this chapter in terms of the decision-making units we have been able to analyze.

Plantation and Manor

One of the forms of organization of agricultural production that attracts attention from people concerned with increasing it is that of a monolithic power structure. In one guise, this power structure is termed a plantation. What we consider a true plantation is a highly capitalized organization producing crops such as sugar and cotton for the world market on a large acreage, typically with mechanized techniques. Plantations tend to be completely commercialized organizations which employ wage laborers paid in cash, who are typically unionized and form a rural proletariat. They often achieve efficient production, with optimum yields. We have not had the opportunity to study closely a true plantation.

In Peru, we have been able to examine in detail the operation of a similar agricultural production organization, which we term the manor. We wish to draw a clear distinction between the two forms of organization, in part because a single Spanish word (hacienda) is usually applied to both. In the central Andean area, the traditional manor differs from a plantation in having relatively low capitalization, being little mechanized, and being only partially commercialized. The traditional manor also has a labor force bound

to its lands, which must subsist by growing food on plots assigned by the manor. Thus, serious minifundium exists within what is ostensibly a latifundium system. Technical skills and knowledge on the part of the inhabitants of Peruvian manors often are so deficient that the resident labor force cannot in fact feed itself from its own production (Holmberg and Dobyns 1963:10).

At the peak of the pyramid of authority on the central Andean manor is a patron. The power of the patron, whether an owner or a renter, over the population of a manor is nearly absolute, in local social theory and practice if not before national law.

The patron controls, in theory and in at least one sense, the use of all land within the manor. He commands the obligatory labor of the land-bound serfs. He administers his serf labor force through overseers. In Peru, where serfs are typically socially defined as Indians, the patron employs Mestizo overseers. The overseers give orders to Indian straw bosses, selected from the ranks of collaborationist serfs. Patron and overseer alike often behave toward Indian serfs in terms of the dominant group belief that Indians are inferior beings, "the animal next to man."

In practice, the theoretically absolute patronal power within the manor is curbed in a number of ways. On absentee-owned manors which are leased periodically, patrons have usually allowed a system of local customary law to govern most Indian serf use of subsistence plots. The patrons have decided only key issues which periodically reasserted patronal ultimate control over land use within the estate. Absentee owners are numerous in Peru. Many are government agencies. Although the public school system is operated by the central government, many schools are endowed with such properties, including the radical University of San Marcos. The armed forces hold income-producing properties. The Ministry of Public Health and Social Welfare supervises a whole class of charitable organizations of the type that owned Vicos, the Public Charity Societies. Religious organizations also hold title to many such properties, both religious orders and bishops and parish priests.

Roman Catholic Church doctrine and organization interpose a degree of insulation between patronal power and serfs. While the priest counsels serf obedience in his sermons, church doctrine also admonishes patronal responsibility toward serfs in at least doctrinal matters. In terms of manorial social structure, a set of Indian officials sponsoring religious festival celebrations provides a minimal leadership operating in matters not of direct concern to the patron. "Election" to such offices requires the saction of patronal approval, however, and they may even be abolished.

Another practical limitation on patronal authority is the psychological set of the serfs. They employ most available means of weakening patronal authority. Serfs of the "Uncle Tom" type win a measure of patronal protection through their participation in the system of ritual sponsorship. Patronal accumulation of wealth from land exploitation is limited by this psychological set of the serfs. Working land with a large unmechanized hand labor force, little motivated to work either rapidly or effectively, limits productivity.

In addition, the inherent nature of the manorial system contributes to its limited economic return. Subsistence plots assigned to serf household heads cut down the amount of crop land available for commercial purposes. At Vicos, 85 per cent of the latifundium cultivated land was cut up into actual minifundium. Only 15 per cent of cultivated land was or is available for commercial farming. Grazing serf livestock, including the oxen that serf owners are obliged to use when working manorial fields, reduces the pasturage available to manor stock or for rental to outside herds and flocks. Patrons charge serfs cash grazing fees or a share of the offspring of their animals for grazing on manor lands, so Vicos serfs lived under relatively favorable conditions in this respect.

The plantation and the manor are alike in at least two important ways. Both are large-scale production units in terms of land base, although serf subsistence plots markedly diminish the area of the manor available for commercial exploitation. The labor of a number of families is required to carry out the commercial farming tasks on either plantation or manor. The manager of either kind of production unit can, moreover, quickly put into effect any decision he may make with regard to crops to be cultivated and the techniques used to plant, cultivate, and harvest them. He has simply to issue orders for salaried employees or serfs, as the case may be, to carry them out, at least to the best of their understanding. The managerial authority may be diluted on plantations which have unionized workers by union resistances to specific orders, but serf resistances on manors tend to be covert only.

This characteristic decision-making structure constitutes one of the great social and commercial advantages of plantation or manorial organization from the point of view of quantity production and market flexibility. The essential decisions on policy for the entire production unit can be made by a single person, subject to review if the plantation is corporately owned, of course. In the Vicos case, when the Cornell Peru Project scientific staff assumed the direction of the commercial farming enterprise for five years, the

Director decided to plant potatoes instead of flax. He consulted with agricultural technicians in the Interamerican Cooperative Food Production Service as to the probabilities for successful commercial production of potatoes in the area based on experimental plantings. The decision to grow potatoes was, however, entirely his.

The initial intervention in Vicos farming patterns came in the commercial farming operations. This was the area of greatest patronal latitude and control.

While the Peruvian company which subleased the manor to the Cornell Peru Project had been growing flax on the commercial plots at Vicos, this had turned out to be an economically losing proposition. The company's losses in linen production motivated it to offer Cornell University a sublease on the manor it had studied in 1949-50. The prior cropping pattern was simply one factor for the patron (the Cornell Peru Project Director) to take into consideration in deciding what form the Project's exploitation of the commercial fields should take. This situation contrasts with the weight of tradition in determining much of the cropping pattern in peasant agriculture.

Playing the role of patron, the Director of the Cornell Peru Project was able to obtain agricultural extension services from the Interamerican Cooperative Food Production Service when he sought it. Such services seldom crossed the cultural barrier to reach Indian farmers in the Peruvian Andes at that period in the growth of the Service. The technicians suggested that potato production could succeed at Vicos if an entire complex of practices were introduced.

First, selected new seed potatoes from another mountain region should be planted. The seed should be fumigated against rotting in the ground. It should be planted in widely spaced rows with seeds placed at regular intervals in each row. The plants should be fertilized with guano and artificial fertilizers at planting, and again by surface-feeding the sprouting plants. Finally, the plants should be sprayed to control insects and mosaic infection which had virtually ended subsistence cultivation of potatoes by the serfs. They lacked any means of combatting diseases accumulated in the area during centuries of unbroken potato production.

All of the elements in this production complex had to be introduced during a single growing season if the Cornell Peru Project commercial farming operation was to show a profit and serve to demonstrate to the serfs that potatoes could be grown successfully in Vicos soils in quantity. In the role of patron, the Project Director could effectively control the planting

and cultivation of the commercially exploited fields, since these were worked by the obligatory labor of the serfs. The success of the new practices was very marked. It believed the common Peruvian stereotype that agricultural yields in the mountains are fixed, so that the only way to raise total production is by increasing the acreage under cultivation.

No figures on production are offered here for two reasons. Since the commercial fields had been planted to flax, no base-line figures exist on the production of potatoes per hectare before the new technology was introduced. Secondly, the quantity of potatoes harvested and sold commercially was considerably less than the quantity grown. This paradox arose from the nature of manorial labor and the shortage of food among the serfs whose own potato crops had been failures in preceding years.

The manor potato crop was harvested by serfs as part of their obligatory labor. The men working in the harvest plowed the tubers out with their ox-drawn wooden plows, and then collected them in baskets by hand. As the harvesters moved through the commercial fields, they filled their baskets, but they also reburied a considerable proportion of the crop. This behavior stemmed from hunger, manor-serf competition in which serfs defined manorial property as fair game for theft, and the traditional right of the serf women to glean the manorial fields after they had been harvested. There was not much to be gained by gleaning flax fields, but potato fields were a different matter to hungry Indians. So the men simply insured plentiful gleaning for their female relatives.

Family Farm

The family farm unit differs from the plantation or manor in several ways. It is typically smaller in total area, so that it can be worked with the labor of a single family, perhaps supplemented during harvest and other peak labor requirement seasons by hired hands or labor exchange arrangements. In some societies, decisions on cropping policy are individual ones made by the head of the family. In other societies, such decisions reflect one or another sort of group consensus. In any event, tradition is likely to pay a significant role in determining cropping policy.

Since the family farm occupies an area smaller than that of a plantation, an important consequence for development in terms of commercial agricultural production follows. Many more cropping policy decisions are required to attain the same level of commercial production of food or industrial crops from a given area divided into family farm units as that attained from an area of equal size in plantation or commercial manorial fields.

Since most of the world's farmers are still peasants (if they are not serfs farming in essentially the same manner), this decision-making differential constitutes one of the key points in national socio-economic development.

Vicos. The Cornell Peru Project staff considered that its successful production of bumper potato crops on Vicos commercial fields provided the Indian serfs working those fields with an excellent demonstration of scientific potato growing. Since the serfs had dipped, planted, fertilized, weeded, sprayed, and harvested the crop, they had learned how to carry out each of the tasks involved. The Cornell Peru Project staff did not, however, consider such a demonstration and training sufficient to effect any significantly rapid change in serf subsistence farming practices. It did not assume, in other words, that demonstration was a sufficient cause for serf innovation in food production.

The Cornell Peru Project scientific staff was quite aware how frequently administered peoples differentiate between what the government or some other powerful organization or person can do and what they cannot do. Examples of this behavior abound. Papago Indians farming on the San Xavier Indian Reservation in southern Arizona have always been reluctant to pay water assessments because the pumps that lift the underground irrigation water into the surface distribution ditches were installed by the United States government. They are, therefore, government property. The Indians fail to understand why they should pay for the maintenance of pumps that clearly belong to the government.

The Cornell Peru Project scientific staff had abundant evidence of the psychological set of the Vicos serfs against the manorial management. This ranged from the already collected base-line research information to current experience with serf theft of manorial property and skepticism on the part of the serfs about the motives and actions of the strange gringo patrons. Indian women told their daughters, for example, to avoid sexual intercourse with Mestizo men because the latter stank (Vázquez 1955:15). The scientific staff knew that the serfs could easily conclude that anything was possible for the all-powerful patron, even in potato farming, but nothing like this could be done by the powerless serf. The Project staff found as it interviewed serfs during 1952 that the latter indeed were prone to define the innovations introduced on the commercial fields as appropriate to the patrons but not to them (Vázquez 1955:85).

The scientific staff was also very conscious of the strict time limitation that we mentioned earlier as a concomitant of strategic interventions. The staff acted on the assumption that the short time available for achieving significant changes required reinforcement of the demonstration of

technical feasibility of new crops and cultivation techniques, which the serfs had learned on the commercial fields, by urging the serfs to put these innovations into practice on their own subsistence plots. Anthropological theory had until 1952 emphasized that cultural change was a slow process and that gradual change produced fewer deleterious social consequences than did rapid change. The Cornell Peru Project scientific staff distrusted such interpretations of the record and reasoned that rapid change would be less deleterious under the conditions prevailing at Vicos than waiting for the new complex of agricultural practices to diffuse to the serfs.

The Cornell Peru Project scientific staff proceeded with a program designed to become the truly strategic intervention in serf agricultural practices in terms of its knowledge of the level of skills among the serfs. Almost no Vicosino could exercise any occupational specialty when the Cornell Peru Project began. All the Indians were farmers, and relatively inefficient ones at that, although some did have part-time supplemental specialties. The scientific staff concluded that the lack of occupational specialization in a seriously underdeveloped population such as that found in Vicos in 1951 requires beginning development in agriculture.

Other options might have been open to some type of organization other than the Cornell Peru Project. A private investment group possessing large amounts of capital might undertake to initiate cultural change by building a factory and recruiting unskilled farmers to man it, but such a procedure offers obvious economic hazards. Given the relatively small amount of capital available to it and given the omnipresence of the problem of agricultural production throughout Peru, the Cornell Peru Project scientific staff designed a strategic intervention aimed toward changing the family farm unit.

Before we take up the Cornell Peru Project's really strategic intervention in family farm unit agriculture at Vicos, we should amplify somewhat our description of this unit in order to indicate just what intervention entailed. The variety of solutions to the problems of existence worked out by the Vicosinos indicates the degree of social isolation and disintegration the Cornell Peru Project encountered when it subleased the estate. The serfs lived in a constant state of frustration engendered by the problems of subsistence.

Robbery was one solution the serfs employed. It was so general in 1951 and 1952 that Vicos could accurately have been described as an aggregate of thieves. Everyone

save for a few prestigeful men stole, regardless of age or sex. Theft of produce and domestic animals was quite common (Vázquez 1955:56).

When the commercial crops of the manor were harvested, the process turned into a battle between the management trying to save its investment and the serfs trying to make off with the greater part of the production. Thefts of potatoes began with planting in 1952. Serfs assigned to plant seed potatoes remembered where they had buried the seeds, returned to the field the following day, and dug up the seeds for food.

Potato thefts commenced again on a serious scale about four months after planting and continued until the crop was harvested. When the serfs were in a potato field to irrigate or weed it, they stole potatoes. When they pastured oxen on neighboring fields, they stole potatoes. At night, serfs invaded the fields to tear up potato plants and turn the soil in search of edible tubers.

Ingenious thefts occurred during the harvest, as already mentioned. Besides reburing potatoes, the harvesters took advantage of any relaxation of supervisory vigilance to dump their baskets into the brush or to throw tubers like rocks. Thievery went on even after the harvest. Eight storehouse thieves were apprehended from mid-January to mid-March of 1952. When discovered stealing a sack of potatoes, a serf sent his godfather as intermediary (Vázquez 1955:57) to offer the excuse that he was obliged to steal to feed his family. The management had to designate serfs to stand guard over the storehouses.

The most overt theft occurred on December 29, 1952, when the serfs raided the manorial potato fields en masse. Interviewed as to their motives later, they offered a variety of justifications and evasions.

Besides robbing the manor, the serfs worked out other solutions of limited utility. In the agricultural realm, they harvested their own crops permaturely and shifted to planting quick-maturing crops such as barley. Women and children exercised the traditional right to glean manor fields, not only at Vicos, but on nearby manors as well. In the social realm the serfs materially reduced the scale of celebration of religious festivals and family occasions. Only one ceremonial sponsor acted in the 1951 festival for St. Andrew, while the 1949-50 period had seen only two first-haircutting rites carried out. In a more positive manner, men migrated to towns close by in search of work, and some went on to coastal plantations. Children replaced them in subsistence agricultural tasks at an early age (Vázquez 1955:

58). Some of the serfs sold off animals in order to acquire cash with which to purchase food and clothing. Others increased their production of handcrafts such as rope and baskets. Others undertook to haul ore and to cut firewood and ice to take to market. Serfs also sought to exploit the patron, seeking patronal charity.

The Cornell Peru Project scientific staff introduced into this situation a different order of solution. It proceeded on the premise that innovation could not be brought about unless the people understood their problems in a different way. At the same time, the scientific staff acted on the assumption that new ideas and practices which resemble those already known would gain readier acceptance than strange ones.

The Cornell Peru Project offered the serfs two alternative solutions. One was immediate and palliative, the other long-range and corrective. The short-range solution was to purchase foodstuffs from the company from which it subleased Vicos and resell these to the Indians at cost. The entire stock was sold out (Vázquez 1955:60). The long-range solution was to teach the subsistence farmers how to increase their food crop production. At this time, 196 Vicosinos were enrolled (Vázquez 1955:67) as owing the manor three days' labor each week. These were, in theory at least, all adult males. Thus, the ultimate goal of the Cornell Peru Project's strategic intervention in serf farm practices was a total of 196 farm unit decisions to change, plus any new farm units founded before the process was completed.

The cultural change sought by the Cornell Peru Project scientific staff involved a theoretical minimum of 196 farm unit decisions that would have to be obtained by persuasion rather than fiat. The Project Director proceeded with the idea that social science research indicated that generating significant change in the subsistence sector of the economy not subject to control by direct orders required outside capital investment to finance initial efforts by the farmers (Holmberg & Dobyns 1963:4).

In this case, the Cornell Peru Project commanded some, although limited, amounts of capital that could be invested in loan-financing serf farmer efforts to adopt new farm practices. The Project Director assumed that external risk capital investment in initial change efforts most easily enters a social system with strong boundary-maintaining mechanisms such as Vicos exercised in the guise of traditional local credit arrangements.

Having initiated the complex of practices involved in bountiful potato production on the commercial fields, the

Cornell Peru Project staff offered to the Indians the necessary components at cost. It offered to sell to the family subsistence farmers seed potatoes, fertilizer, and insecticide at no increase in price. This offer was acceptable to many Vicosinos, but very few of them felt solvent enough to take advantage of it, and most of the rest were not willing to admit insolvency. Many requested the new elements on credit (Vázquez 1955:59).

Taking into account local customs, the scientific staff also proposed to the serfs a sharecropping system for advancing credit. The plan was understood by the serfs and afforded them all the chance to plant the new seed potatoes. It was a more complicated offer, however, than the straight sale of the new potato complex elements and constituted the real strategic intervention by the Cornell Peru Project in family farm unit production. For an additional theoretical consideration entered into the procedure of the Cornell Peru Project, which felt that external risk capital investment in initial change efforts yields the greatest results when its use is technically supervised by the lender. In this case, an anthropologist visited each participating Indian farmer regularly to check on his compliance with recommended technical farm practices.

The Cornell Peru Project in the role of patron provided the serfs who participated in the sharecropping program with sufficient disinfected seed potatoes to plant whatever sized fields the serf prepared. The Project provided guano in the quantity recommended by the technicians and insecticides to protect the plants until harvest season. The true strategic intervention came in the privilege the staff exacted in return for this advance. It directed the cultivation of the crop from the day the field was prepared to the time it was harvested. In addition, the manor reserved half the crop as repayment. The serfs were expected to provide the land and all the necessary labor and to accept the instructions of the technician in return for a half share of the crop (Vázquez 1955:60).

When the Cornell Peru Project's strategic intervention in Vicos family farm practices began, the Director had already established a routine of manorial management that integrated research findings, leadership training, and week-to-week operation of the farm enterprise. He led a seminar attended by the anthropologists studying Vicos and nearby communities on Monday. He then applied each week's research progress to a Tuesday seminar with the Indian foremen invited to join in discussions of manorial management. The decisions reached in the Tuesday sessions were then announced at the labor shape-up on Wednesday, where each week's serf labor assignments were announced.

The first announcement of the sharecropping program to the Indians occurred, therefore, in one of the weekly seminars with the Indian foremen (mayorales). The scientific staff solicited their opinions and suggestions. Their attitude was unanimous and negative. The Cornell Peru Project staff thanked the foremen for their opinions but informed them that the sharecropping proposal would be presented to the serfs at the labor shape-up the following day. The Project staff stated that it felt the serfs might feel like accepting the offer. This idea amused the foremen, who repeated their arguments and their prediction that no one would be willing to accept the offer. The seminar terminated in a friendly atmosphere (Vázquez 1955:68).

At the labor shape-up, the staff opened the discussion by bringing up the problem of subsistence. The staff advanced the suggestion that the problem could be solved by adopting the new potato-growing practices being used on the commercial field--new seed, fertilizer, and insecticides. The new seed potatoes planted on the commercial fields had already been on sale for two weeks at cost. The staff provoked serf discussion of the price of this seed, expecting complaints that its cost was high. Complaints, indeed, were voiced, along with claims the serfs lacked funds with which to purchase the need.

The staff then offered an explanation for the price of the new seed potatoes and suggested that the serfs could obtain the seed they wanted along with fertilizer and insecticides by farming on shares with a manor crop loan in kind. The anthropologist acting as agricultural extension agent endeavored to set forth the Cornell Peru Project offer in as precise and detailed, yet simple, terms as possible.

The serfs immediately began an excited discussion of the offer, but as they discussed it, they turned skeptical and pessimistic. The foremen present contributed to this skepticism. The most prestigeful of them told the assembly that the foremen had already told the patrons that the idea would not work (Vázquez 1955:69).

The Cornell Peru Project announcement that it would advance the components of the new potato-growing complex under a sharecropping arrangement placed the serfs in the position of having to make a choice. They could ignore this new alternative and continue trying to subsist themselves with the techniques already mentioned, while they cautiously awaited future developments, or they could accept the offer and try a new farming technique. The nature

of the offer was such that every Vicosino had the opportunity to obtain new seed potatoes and technical guidance from the Cornell Peru Project staff. The Indians could also, if they had sufficient economic resources they were willing to risk, purchase seed, fertilizer, and insecticides from the Project.

The significant question in terms of effective economic development within the five-year time limit on intervention became how many serfs farming what area accepted the offer and learned the new farming practices. In slightly different terms, the Cornell Peru Project Director's decision had switched the manor's commercial fields into potato production in 1952. How long would it take for a sufficient number of family farm units to make the decision to adopt the new farm practices in order to subsist themselves and produce a marketable surplus?

The terms of the sharecropping-offer were rather more favorable than any credit arrangement the Vicos serfs had been accorded by previous manor managers. A decision to accept the offer was, however, not an easy one for a serf to make, for a number of reasons.

The first question that arose in the minds of the Indians stemmed from their many years of experience with manorial exploitation. After the sharecropping scheme was announced at a labor shape-up, a prominent theme of serf conversation for a number of weeks was doubt whether the offer was real or not. The Indians knew very well that no previous patron had ever demonstrated the kind of interest in solving their problems that this offer implied and that the Cornell Peru Project scientific staff had announced.

The sharecropping program was not the only Cornell Peru Project activity underway aimed toward rapid innovation. The Director's strategy of integrated community development called for a simultaneous attack on as many problems as possible. When the scientific staff assumed command of the manorial labor force after subleasing the estate, the serfs naturally had to be informed of the change. In addition, the scientific staff undertook to explain at least the practical goals of the Project, if not its full scientific range. The Director promptly diverted a proportion of the serfs' obligatory labor from agricultural tasks to constructing a new school building, which the Indians at the beginning did not really believe would be used as a school. The announcement of the sharecropping credit program followed the previous announcements and actions, so the serfs had adequate cause to be uncertain about Project intentions, in view of their long experience with exploitative patrons and total lack of experience with patronal altruism.

This very pattern was perceived by the Indians as a cause for doubt. After long exploitation, the serfs shared a general conviction that things were worth what one paid for them--goods, cattle, medical therapy, bribes, or whatever. Thus, the very liberality of the terms of the sharecropping offer aroused their suspicions.

Some of the Vicosinos were already familiar with existing credit arrangements in the valley, although the very idea of sharecropping was new to others. The prevailing local arrangement provided that the Mestizo who supplied an Indian with seed--and he supplied no more than that--took from the harvest an amount equivalent to his seed before dividing the remainder of the harvest with the Indian farmer. The Vicosinos tended to assume that the Cornell Peru Project proposal would take the same form.

When the Project's offer was announced at the labor shape-up, it was specified that the total harvest would be divided equally between farmer and manor. After the announcement, however, the Indians interpreted the offer in terms of their previous experience with Mestizo creditors. They distrusted the strange new patrons and remained undecided. The serfs discussed the Project offer with Mestizos in nearby towns. The latter, interpreting it to the Indians either in terms of self-interest or their own previous experience, counseled that the Project Mestizo staff was not likely to behave any differently from other Mestizos. The local Mestizos, as well as the Indians, believed quite firmly that any good in the world is strictly limited, like peasants in a good many other parts of the world (Honigmann 1960:297; Foster 1965). Reasoning in terms of such a fundamental assumption (Holmberg 1958:13), plus their idea that men act in their own self-interest, neither group could conceive that the scientific staff would really give the serfs something which would inevitably diminish the staff's share of what the local inhabitants perceived as limited economic resources. Thus, rumors spread among the serfs that the Cornell Peru Project offer was not genuine. These rumors were compounded by another encouraged by Mestizo townsmen, that the strange new patrons intended to exterminate the Vicos Indians.

The sharecropping offer was made at a labor shape-up attended by 125 persons, of whom nine indicated an immediate interest. For two weeks after the announcement, the scientific staff discussed the plan with Vicosinos who showed interest. Twenty-two individuals requested such personal discussions, and all twenty-two signed up to receive this form of crop loan. Most of them reported that they heard the announcement at the labor shape-up, but others learned of the offer from other serfs who had attended it.

During the third week after the announcement, those who had signed up began to prepare their fields under Cornell Peru Project staff direction. Such work usually requires about a month to complete, beginning late in May and ending in June. A Quechua-speaking member of the scientific staff continued to visit Vicosinos who had not signed up for the program during that period. He sought to contact personally individuals accorded high prestige by other serfs. He managed to persuade four of them to sign up to participate, but only one of this quartet actually followed through.

A significant difference between those who took part in the sharecropping program and those who did not lay in the felt needs indexed by the person who took the initiative in seeking information.

The twenty-two serfs who sought interviews with the scientific staff about the program came to the manor house to discuss the offer. The anthropologist acting as agricultural extension agent interviewed some seventy individuals he sought out in their homes or at work in their fields. Only nine persons in this target group requested manorial credit, even though the majority of those interviewed had already heard about the offer (Vázquez 1955:64). Quite clearly those serfs who felt impelled to seek information about the program were far more motivated to take part in it than those sought out by the anthropological agricultural extension agent. The magnitude of difference is indicated by the figures summarized in Table 1.

TABLE 1. DIFFERENTIAL WILLINGNESS TO ACCEPT A CROP LOAN ON A SHARECROPPING BASIS IN VICOS (Based on Vázquez 1955:65)

Motivational Groups	No. of Persons	No. of Signups	Per Cent
Indians at shape-up when program announced	125	9	7.2%
Serfs who sought information at manor house	22	22	100.0%
Serfs interviewed on advocate's initiative at home or in fields	ca. 70	9	12.9%

With the passage of time which imposed limits on potato-planting in terms of the available growing season, the Cornell Peru Project staff accepted forty as the cut-off point on sign-ups. The anthropologist-extension agent concentrated on the forty plus the six Indian straw bosses (mayorales) being trained in management.

While forty serfs signed up to receive a Cornell Peru Project crop loan, over half of them did not actually follow through during the 1952 season. By planting time, the anthropologist who was acting as agricultural extension agent was actually dealing with only seventeen participants plus the six straw bosses. The reasons given for withdrawing from the sharecropping program are shown in Table 2.

TABLE 2. REPORTED REASONS FOR WITHDRAWAL FROM CORNELL PERU PROJECT INITIAL CROP LOAN PROGRAM AT VICOS (From Vázquez 1955:67, 75)

Stated reason for withdrawal	No.
Made no further move to participate	5
Claimed second variety of seed the Cornell Peru Project acquired was no good	4
Signed up very late and did not prepare fields	3
Dropped out at planting time	2
Wife suggested that he drop out	1
Wife suggested that he drop out (but he acquired new seed and fertilizer handled in traditional manner)	1
Left Vicos	1
Excused self on grounds he was too old	1
Denied participation because field was improperly prepared, and he refused to improve it	1
Not recorded	4
Total withdrawals	23

The seventeen serfs who participated in the 1952 season's sharecropping credit program decided to do so for a combination of reasons. These Indians responded to a questionnaire which yielded the results reported in Table 3.

TABLE 3. SOURCES OF SERF DECISIONS TO PARTICIPATE IN CORNELL PERU PROJECT SHARECROPPING CREDIT PROGRAM (From Vázquez 1955:65)

Types of Decisions	No.
Voluntarily by personal decision	6
Voluntarily by personal decision, but mistrustfully	1
Voluntarily with wife's agreement	3
Voluntarily with wife's mistrustful agreement	1
Wife's suggestion	3
Suggestion from a son working for the manor	2
Suggestion from Cornell Peru Project staff	1
Total	17

Since the sons working for the manor were replacing their fathers and still subject to their authority, those two cases may be considered as voluntary personal decisions. Thus, a bare majority of the participants reportedly made individual decisions, while over one-third acted on the advice of their wives.

The ultimate seventeen participants in the crop loan program first learned about the Cornell Peru Project offer in several ways, illustrating the varied channels of communication operative among the serfs. In order of frequency, seven heard the announcement at the labor shape-up, three learned of the program from neighbors, and three others from members of the Cornell Peru Project staff. Two serfs saw others planting a new type of seed and then asked about it. One participant learned of the program from one of the foremen, and one found out from a serf who was not a neighbor.

Within this participant group some opinion leaders could be identified. One was a former conscript in the Peruvian army and another a carpenter. Both had lived outside Vicos. They spoke out against the anti-Project rumors originating among neighboring Mestizos, particularly the rumor that the Project staff intended to exterminate the Indians. They brought up the fact that Peruvian law punished homicide.

Participants were also reassured by the early allegiance to the program of a man respected as a good farmer, and another individual respected for being a good businessman of whom the Mestizos could not take advantage (Vázquez 1955:74-5).

The seventeen serfs who finally participated in the first Cornell Peru Project sharecropping program reported themselves as acting funamentally from economic motives. When they responded to a Project questionnaire, thirty-one of their thirty-eight responses adduced economic reasons for participation, as indicated in Table 4.

TABLE 4. PARTICIPANT MOTIVES FOR TAKING PART IN CORNELL PERU PROJECT SHARECROPPING PROGRAM (From Vázquez 1955:76)

Stated Motive for Participation	Number of Times Given		
Economic Motives			31
Low standard of living		19	
Failure of maize crop	8		
Lack of potato plantings	5		
Lack of seed	4		
Expecting food shortage	1		
Wanted abundant crop	1		
Increase in farm production		12	
Opportunity to obtain seed, guano	7		
Land available	2		
To improve land by fertilizing	1		
Crop rotation	1		
Unproductive land	1		
Noneconomic Motives			7
Because other serfs were participating	4		
Because of patronal suggestion	2		
To test Cornell Peru Project honesty	1		

The economic motives men reported appear not to have been the entire explanation for participation in the sharecropping program, on the other hand. The Cornell Peru Project scientific staff found that experience outside Vicos made a considerable difference in participation. This difference can be stated in two ways. Eleven of the seventeen ultimate participants had been outside Vicos for significant periods of time, so that 65 per cent of the ultimate participants were recruited from those serfs who knew something of Peru outside the manor, compared to 35 per cent recruited from the serfs with less knowledge of nonmanorial society.

The Cornell Peru Project staff in 1952 rated only forty-six serfs as having had significant experience outside Vicos. Thus, the eleven participants drawn from this group constituted 25 per cent of the total. In contrast, the staff rated eighty serfs as having had little outside experience. This group contributed only two participants, or only 2.5 per cent of its total (Vázquez 1955:80). The proportion of participants recruited from the better-traveled group was much higher.

The bulk of the ultimate participants were between thirty-one and fifty years of age, 70 per cent coming from this age group (Vázquez 1955:82). Apparently younger men lacked the capacity to make the pertinent decision, and most of the men over fifty were simply indifferent to the proposal.

Once the number of participants had screened itself down to seventeen, the supervised crop loan program masquerading under the guise of sharecropping settled down to a relatively routine and unsuccessful operation. The hard-core participants followed instructions from the time they began preparing their fields until harvest. The project provided seed as soon as the participants' fields were ready. The serfs frequently requested advice, particularly about the unfamiliar fertilizer and spraying. Insecticides were applied with the first pieces of mechanical equipment of any complexity ever utilized in the subsistence fields--back-pack hand-powered sprayers manufactured in the Netherlands. The participants also sought counsel about unusual field conditions such as worms.

The anthropologist acting as agricultural extension agent and scientific observer explained procedures to the participants in their fields. This was necessary mostly in the cases of participants who had not taken part in potato cultivation in the commercial fields.

No very significant conflicts arose between the participants and the members of the Cornell Peru Project staff. The nearest thing to discord revealed to the scientific staff something of the strength of the Vicos egalitarian

ethic so far as they were themselves concerned and the respect in which the manorial management was held. After the anthropologist acting as extension agent had supervised the first four plantings, he asked a young veteran to help with the supervision. The participants rejected the role on the grounds that adults knew more about farming than such a youngster. It turned out that no Vicosino would take instruction from another of equal or lower social status. No one wished to appear to be inferior to any other Indian, and each strove to show his superiority by intense competition (Vázquez 1955:87).

The upshot was that the participants insisted upon equal treatment for each one. A participant who did not understand why the program staff paid special attention to another participant's plot exhibited jealousy and sometimes turned aggressive. On one occasion, the anthropologist-extension agent paid a routine visit to all of the participants' fields save one. That very afternoon the owner of the field he had overlooked sought out the anthropologist to complain in a state of great agitation. The social sanctions of his neighbors concerned this participant. He feared that his neighbors would conclude that the anthropologist-extension agent was dissatisfied with the serf because he was not cultivating his field properly (Vázquez 1955:88).

When the sharecropped potatoes were ready for harvesting, the supervisors insisted that the entire crop be harvested at one time. Such an arrangement was, of course, an essential part of a fair division of the crop shares. This requirement was one that the foremen fastened on during the initial discussion of the crop loan idea with them as a cause for failure (Vázquez 1955:71).

The foremen emphasized the Vicos custom of digging tubers as needed during the growing season for food. They predicted that it was not possible to end the season with a crop to be divided. They also disparaged the responsibility of their fellow serfs. They characterized the sharecropping arrangement as one implying great responsibility for the Indian participants and predicted that no serf would be willing to assume so much (Vázquez 1955:76).

Actually, the harvest on the participants' fields was reportedly conducted in a spirit of friendliness and camaraderie. The participants arranged for labor-exchange parties to help them (in the minka institutional form), while the representative of the Project brought serfs fulfilling their labor obligation to help harvest. The serfs carried on a lively conversation during the harvest, discussing the attitude

of the Mestizos, among other subjects. These harvests provided an opportunity for the Mestizo members of the staff to eat together with the serfs, one of the first occasions when this occurred on a manor where social lines between Mestizos and Indians had always been sharply drawn.

When the potatoes were all dug, the entire yield was divided into two piles of equal size. The participant then chose which pile he wished, so that there were no complaints about the division of shares.

The yield of potatoes on the participant's fields was large enough for partial commercialization of the harvest during this first year the crop loan program operated. Five of the participants sold some portion of their harvest on the regional market in Huaraz (Vázquez 1955:71-72).

In dealing with that portion of mankind not yet in effective control of its natural environment, the more technologically competent societies must employ capital in one form or another, whatever their ideological orientations. The amount of developmental risk capital required for this initial Cornell Peru Project strategic intervention in serf farm practices was small. The Project advanced to seventeen participants seed and goods to the value of S/. 3,791.40. This sum was recovered and increased since the Project sold its half of the shared harvest for S/. 5,845.40, thus clearing S/. 2,054.00 (Dobyns 1961:13).

The functional importance of the Project's extending credit in this form lay in enabling a few Vicosinos to begin sharing at once the benefits of scientific agricultural technology. Only those serfs who received credit in kind were able to plant the improved seed potatoes and cultivate them properly (Goldsen and Stein 1956:8-9).

When the technological competence of the modern world had been demonstrated in the Vicos environment both on the commercial fields and on the majority of the fields of the seventeen serfs participating in the crop loan in kind program, demand for this kind of credit increased markedly. The Cornell Peru Project repeated its sharecropping offer during the following potato-growing season, and 118 serfs registered for the program, with 85 actually participating (Holmberg 1953:163), and increase of 400 per cent over the first year.

Participating serfs continued to master the new technology and therefore their environment, so that 180 Indians asked to take part in the program (Blanchard 1953:71), and 146 actually did participate during the third season, an increase of 71.8 per cent over the previous year. Project capital requirements for credit mounted to almost S/. 27,000, for the

serfs planted 141 sacks of seed valued at S/. 19,700, fertilized it with seventy and a half sacks of guano worth S/. 2,538, and protected the plants with S/. 4,512 worth of fungicides and insecticides. The average cost per farmer was still only about S/. 184, or just under ten dollars at 1954 exchange rates.

During these two years, eleven of the initial signers in the first year who dropped out of that program took part (Vázquez 1955:75). Thus, nearly half the first-year drop-outs were instructed in the new potato-growing practices during the next two years. Only one of the six foremen took part in any of the first three annual credit programs. The foremen as a group remained hostile to the Project initiative.

The Indian foremen objected to the sharecropping program on the ground that it damaged their authority over the other serfs. They claimed that participants gained so much confidence that they acted like social equals of the patrons and did not accord them proper respect.

The foremen maintained that participants had not cared for their fields as well as they could have and raised doubts about participant honesty. Finally, they accused the participants of sloth and of taking advantage of the manor. The accusation of laziness referred to the behavior of the participants during their obligatory labor assignments for the manor. The foremen labeled them opportunists for their participation (Vázquez 1955:76).

In this last sense, the conservative foremen, who had made the best adjustments to the manorial system, were correct. The participants were in fact opportunists. The scientific staff o. the Cornell Peru Project was aware that anthropologists had found opportunistic individual adjustment to situations of marked power differentials between two groups to have regularly produced significant cultural changes. Persons not very secure in their native social hierarchies had often risen to positions of power by embracing Christianity, for example (Hallowell 1945:196).

The Cornell Peru Project scientific staff in effect capitalized on its knowledge of this particular regularity in subordinate group behavior in situations of cross-cultural contact. Knowing that such opportunism had been found over and over again in contact situations parallel in many ways to that existing in Vicos under Cornell Peru Project administration, the scientific staff devised a socioeconomic arrangement that permitted would-be native opportunists to be really opportunistic. To do so, the scientific staff modified in a key way, although only slightly,

the sharecropping relationship. Had the staff been doctrinairely liberal in outlook, perhaps it would never even have thought of employing a manager-tenant relationship which has for decades outraged observers of the southern states in the United States. As it was, the staff utilized what was ostensibly a sharecropping relationship to operate a supervised crop loan program that promoted innovation in farm practices.

The Cornell Peru Project scientific staff set up a sharecropping program in Vicos that differed from customary Mestizo sharecropping arrangements in the area in two respects: 1) the Project took its half from the total harvest, whereas Mestizos who advanced seed to serfs demanded an amount equal to their seed investment before the remainder was divided, and 2) the Project insisted upon technical supervision of every stage of the production process and insisted upon the serfs' employing Project-approved practices, whereas Mestizos offered no supervision at all.

The Cornell Peru Project sharecropping program differed from conventional sharecropping in the southern U. S. in perhaps one key respect. The Project insisted on technical supervision of tenant farm practices as has occurred in U. S. sharecropping, where technical improvement of tenant agriculture has been a goal. The Cornell Peru Project supervision occurred within the framework of a finite period of control during which innovation had to be achieved before the land tenancy structure changed. Sharecropping in the U. S. remains in bad odor because technical improvement in tenant farm practices has not often led to tenant acquisition of title to the land, whereas ownership of land by the man who tills it continues to be an American ideal. In the Vicos case, the Cornell Peru Project was not the owner of the land being cultivated and had no interest in keeping the Vicos serfs in a subordinate tenancy relationship. Once the Project's planned program to maximize opportunities for native opportunism proved effective in changing Vicos farm practices and production levels, the staff recommended to the Peruvian government a change in tenure that would give the Vicosinos title to the lands they cultivated, and this recommendation was in time effected.

During the fourth year of the credit-in-kind program at Vicos, 158 serfs participated (Blanchard 1955:281). As participation rose only 8 per cent over the previous year, credit requirements were not much greater, about S/. 30,000. By that time, an important change had occurred in the capital resources of the serfs. Vicosinos not receiving credit in kind followed all the new practices of potato production using their own capital, even banding in groups to purchase guano fertilizer.

With some Vicosinos already independent of the sharecropping system of credit, the Cornell Peru Project terminated that program which had served well as a temporary means of directing technological change. The project advanced credit for a fifth season but required repayment in cash for the value of the products advanced, rather than half the harvest. This change, plus the increasing economic independence of the serfs who had acquired their own operating capital, resulted in a drop to seventy-two participants in that year's credit program. Cash sales of potatoes (virtually unknown when the Project began) were greatly stimulated by this change (Blanchard 1956:208-209), speeding the entry of the former subsistence farmers of Vicos into the modern cash economy and provisioning the urban Peruvian market by Indian farmers formerly incapable of feeding even themselves.

Cornell University's sublease on Vicos expired at the end of 1956, and the manor system terminated with it. Having trained the Indians in local self-government, the Project recommended expropriation of the land in favor of the serfs in order to maintain the social and economic gains achieved during five years of Project stewardship. The Peruvian government accepted the recommendation and decreed expropriation toward the end of the year. Serfdom ceased as an elected council took over de facto direction of the community.

In October of 1956 the Cornell Peru Project provided a final credit stimulus to community modernization, making a cash crop loan to the new council to enable it to continue farming the former manor fields on a commercial and community basis. With this capital assistance, the newly freed community made sufficient profit to lend to individual farmers so they could intensify their food production operations (Vázquez 1957:223). These community funds even enabled the council to make crop loans to farmers from other communities (Vázquez 1959:234) who wished to imitate the successful Vicosinos.

Since then, family farm credits have been incorporated into the community supervised credit program. Fifty Vicos families received crop loans for the 1958-59 season, the largest of these for S/. 2,183.00 (Vázquez 1959:239).

Senapur. The Cornell India Project's scientific staff intervened in a number of ways to aid family production in Senapur. They took farmers of the village to the Allahabad Agricultural Institute to see new implements, new stock, and new methods of cultivation. They persuaded cultivators to allow them to set up demonstration plots where the benefits of improved seed, commercial fertilizer, line sowing, contour ploughing, etc., could easily be observed by comparing

the results with adjoining plots. They brought new and improved agricultural implements to the village and demonstrated their use. They offered technical advice to those who sought or would accept it. They sponsored contests in which the farmers who achieved the highest yields were awarded prizes. At one point, for reasons that will be detailed, they tried to stimulate an interest in the growing of more potatoes. A description of this effort will give some idea of the thinking involved, the methods used, and the results it was possible to achieve through this type of intervention.

The Expansion of Potato Production. The agricultural year of north India is divided into two main growing periods: the rainy season, in which crops are sown at the beginning of the monsoon in June and are harvested in the fall (*khariff* crops), and the winter season, in which the crops are sown in October and early November and are harvested in the hot, dry months of March and April (*rabi* crops). The staple food grains, such as wheat and barley, are winter season crops. Winter season crops are considered to be the most important products of the agricultural cycle, and more effort is devoted to them than to the crops of the rainy season. Agricultural laborers and hereditary servants receive much of their payment at the two harvests and are consequently extremely dependent upon them. They are particularly affected by fluctuations in the yield of the winter season harvest.

Farmers with fairly large holdings usually have sufficient stocks from the rainy season harvest or stored surpluses from previous winter harvests to take care of their domestic needs until the spring threshing is completed. The agricultural laborer and the farmer with very small holdings, however, often find their food supplies depleted by late November or early December and must suffer a good deal of hardship and live on a much reduced diet until March or April. It was with this general condition in mind that the Cornell Project attempted, in 1955, to stimulate greater interest in the planting and care of potatoes in Senapur, a village of eastern Uttar Pradesh.

There were a number of reasons why the potato was chosen as the product which could alleviate the situation. Though the potato was a vegetable that had been grown in the vicinity for some time, it was known to have been introduced within the life span of persons still living and was still considered "new." In 1953 a prominent Senapur villager, then 75 years old, said: "Potatoes and tomatoes are the only crops which have been introduced as long as I can remember. There are no other crops which we grew when I was a boy which aren't grown now. We grow a lot more sugar cane now, about five times as much as when I was young, I think." The potato, though present for some time, had not become one of the important staples of the village.

Whatever land could be spared or reclaimed had been used to increase the acreage given over to the cash crop, sugar cane. Established practices and rhythms of crop rotation had kept the land on which potatoes were raised to a modest village-wide total of a little more than eight acres for a number of years preceding 1955. Concerning potato cultivation, W. David Hopper, who studied the economic organization of Senapur from October, 1953, to February, 1955, could only say:

> Potato (Solanum tuberosum): rabi crop - A crop recently introduced to Senapur. It fills a food gap in January when kharif supplies are low and before other rabi crops are ready for harvest.
>
> Crop Management: Only very small plantings of potatoes are made. On sixty-three farms studied forty-two grew potatoes and averaged 3.1 biswas, or about a tenth of an acre each. Potato fields are generally manured and as they are usually near the residential areas the fields are of higher than average fertility. Fields are plowed six to nine times and the seed tubers sown at a rate of roughly 330 pounds per acre. Plowing and sowing requires about 280 man-hours per acre and about 55 hours for a pair of bullocks. Sowing is customarily done in early November. Potatoes are given frequent irrigations during November, December and January. As the fields are small these irrigations do not require a great amount of time. To further reduce the irrigation burden, this crop is frequently planted near a tank or channel where it can be rapidly watered with a trough or swing basket. Harvest is according to family needs and is done throughout January and into February (Hopper 1957:148-149).

Yet there were sound reasons for encouraging the growing of more potatoes. The potato was a vegetable relished by the people, and there were no religiously inspired misgivings about it. This was not always true of recently introduced food products. The red interiors of certain varieties of beans and of tomatoes were repellent to many vegetarians. Moreover, the potato harvest came at a most opportune time. The potato seed was planted during the same period as the rest of the crops of the winter season, that is, in late October and early November; but it was

ready to harvest much earlier, in late December and January, instead of in March and April. Thus it bridged the period of want and acute hardship for the poor. It provided green fodder for the cattle when that was in short supply. Also, it was eminently suited to the requirements of the farmer with small holdings. The yield per acre was extremely high, much higher than that of any other crop. Even without special attention potatoes were yielding a minimum of over 4,000 pounds an acre, more than three times the yield of maize. Consequently, even a small plot spared for potatoes would furnish a good deal of food at a critical period. The yield was good enough to make sharecropping feasible for the poor. A man without land or with very little land, if he could induce someone with large holdings to devote a bit of his land to a potato crop on shares, would end up with enough food to justify the arrangement and effort. Then, too, the villagers were already acquainted with the practice of slicing and sun-drying potatoes which were not needed for immediate consumption. This meant a storable product that would not spoil and that could be made to stretch until the major food grains were available. A greater use of potatoes would introduce some variety into the diet, as well. After the leafy vegetables of the rainy season were gone, the tendency was to depend almost entirely on grain. Potatoes, when available, were a welcome addition to the diet. The cultivation of potatoes fitted nicely into plans for full land utilization and efficient crop rotation. By having maize precede the potato crop and by planting onions after the potato harvest, a plot of land could remain in cultivation all year long without loss of fertility.

The particular device used to arouse interest in the growing of more potatoes was to sponsor a contest among the potato growers of the village. Fairly substantial cash prizes were to be awarded the winners. To increase the chances of an individual to gain a prize and to attract a large number of entries, a rather long list of awards, eleven in all, was announced. There was to be a village-wide competition to determine who had raised the heaviest crop and who had put most land under potato cultivation. In order to insure that all the prizes would not go to the wealthier residents of the central settlement who owned the best lands and had the means to work them more efficiently, there were competitions open to residents of various hamlets only. A small entry fee was charged; no one could present his produce for consideration who had not signified his intention of entering the contest and who had not paid his fee by a specified date. Only those who put a certain minimum amount of land (approximately a thirtieth of an acre) under potato cultivation could compete. This, of course, was an attempt to increase the acreage given over to the raising of potatoes. Since there is a strong sense of pride and a good

deal of competitive spirit among Indian villagers, it was felt that a formal and public declaration of entry into the contest would lead to a heightened interest in the raising of potatoes and in a genuine effort to win a prize, or at least to make a good showing. Anyone who entered the competition was to have the privilege of accompanying the judges on their rounds to the various fields to be inspected.

The contest was announced in mid-August. A notice was displayed prominently on a wall at one of the crossroads of the village. Project members visited all sections of the village to announce the plans, urge participation, and answer questions. Everyone whom Project members met was asked if he knew about the contest. Anyone who was a potential grower of potatoes was urged to enter the event. Technical advise was promised those who claimed they were too inexperienced in the growing of potatoes to compete successfully.

It was not long before cultivators began to indicate their intention of participating. Eventually all the farmers who regularly raised potatoes were enrolled as contestants. More important, cultivators who had never bothered to grow potatoes now made arrangements to do so and entered the contest.

It was soon apparent that, as a result of the contest, there was a much less casual attitude toward the outcome of the next potato crop. Many cultivators decided to plant more of their land to potatoes than they had previously allotted to this crop and chose locations where the sandy loam was more likely to yield a good crop. They began to seek better seed and new varieties. Fields sown to three different varieties were entered in the contest. The farmers began to inquire about the technical advice and aid that had been promised. They sought advice about fertilizers, pesticides, irrigation, seed rate, line sowing, and many other technical particulars. One cultivator installed a low-lift hand pump for the irrigation of his potato field.

This was a development for which the Project had hoped and for which it had prepared. One of the Project members, an Indian, had studied agricultural engineering and extension work at the Allahabad Agricultural Institute at Naini, near Allahabad. He was a tremendously energetic and dedicated person and responded immediately to every request for aid and information that was made. He helped the farmers select their most promising fields for the purpose and showed them how to plant the potatoes in straight rows, a method that had not been used in the village before. He introduced furrowers and metal plows for them to employ in plowing, line sowing, covering the base of the plants, and cultivating. He helped the growers work out formulas for fertilizing. The various means and refinements that particular cultivators were using

became a matter of common knowledge, continual discussion, and evaluation. As a result, fields were turned into demonstration plots, examples of what one input or another might be expected to yield.

When the crop had matured and the judging was to be undertaken, the owner of the plot that was to be examined was always asked to be present. Two metal hoops of the same diameter, each covering one four-thousandth of an acre, were used in the judging. The cultivator was asked to place one hoop over the place where he thought he had the best yield. Whatever plants lay within the hoop were dug up and the potatoes were weighed. Then the Project member laid the hoop over the area in which the plants looked least promising. The potatoes below were also dug up and weighed. The results of the two weighings were averaged, and this became the official record and "score" of the particular participant. In each case the contestant was requested to attest to the fairness of the judging and to the accuracy of the record. As the weighings continued, interest grew in the comparative standing of the contestants; a good-natured rivalry between cultivators and between sections of the village was evident.

As a result of the extra care that had been taken with every step of the cultivation of the crop, the yields were extraordinary good. The field of the all-village winner produced at the rate of 36,000 pounds an acre. The value of such a crop was estimated to be over 800 rupees an acre. A few other contestants approached the figures of the winner. Most did about half as well. Yet even this was impressive, and the gap showed what could be expected if serious attention were paid to improving the crop qualitatively and quantitatively. As a result of the practices and higher yields which the contest inspired, everyone benefited, even those who received no prizes. During the contest and after its conclusion there was evidence that the campaign to grow more potatoes was going to have a continuing impact. The village farmers were talking increasingly about the methods and field size they were going to utilize in the future. It was obvious that they had a new conception of the rewards that would attend more careful attention to potato cultivation. The awarding of the prizes, incidentally, was made a public occasion and again directed attention to the accomplishments and possibilities in the raising of potatoes.

Social scientists interested in development always hope that their efforts will have continuity and direction. It is not always easy to prove that this is the case. Certainly it is something very difficult to demonstrate without a restudy of the situation, and opportunities for long-term investigation

and restudy are relatively rare. However, we have some reason to believe that the efforts of the Cornell Project to augment potato production was a strategic intervention in the true sense--one which reached its objectives and had lasting effects. In 1964-65 Sheldon R. Simon, a Cornell agricultural economist, made a ten-year restudy of the Senapur economy (Simon 1966). He found that much more land was devoted to the raising of potatoes than was true ten years earlier and that dependence on the potato as a food staple was much greater. He established that because of the large amount of potatoes grown and consumed in the village, the people of Senapur spent 26 per cent less than they had spent ten years before on vegetables purchased in markets outside the village. The freeing of this money for other uses has had an appreciable effect on habits of expenditure and consumption, according to Simon's findings. It is heartening to find that the decision concerning the target for strategic intervention has, in this instance, proved so accurate, enduring, and profitable.

Bang Chan: New Rice Strains. An attempt was made in 1954 to take advantage of a rice improvement project directed for the government by Professor Harry Love. Two farms were carefully selected for technical feasibility, public visibility, the position of the two farmers in a wide and active network of social relationships, and their eagerness to cooperate. Unfortunately, there was a delay in the provision of the new seeds until after the Cornell group had to leave the field. Further, the new seeds, which had just been developed, had not been thoroughly tested. This was all explained to the two farmers and to others, and the local project was left to a young Thai agriculturalist to carry out and report on. Some of the new strains were successful, some were not, in the judgment of the "experimenting" farmers and of many others who had made a point to evaluate the trials. Successful strains were retained, and their use had spread widely by the time the Cornell group returned in 1957.

However, the problem of establishing technical innovations among Thai commercial farmers is not a difficult one when greater profits can be envisioned and realized. Even among rice farmers in Thailand's Northeast, who work on a small margin, maize production for a rising market demand increased over ten-fold between 1959 and 1965 without any government or other intervention.

In 1957 the Thai government was sufficiently sure of its new rice strains and their suitability for the variety of local conditions to begin pushing for local adoption. The problem was to get farmers to plant the improved strains.

It was hastily decided that each village should have a "Rice Committee" with which district agricultural officers could deal. "Health Committees" were organized at the same time along with government committees. Village surveys in the center, northeast, and south of the country late in 1957 showed that this plethora of committees suddenly appointed by district officers overwhelmed the local villagers. The latter accomplished little more after the committees were set up than before.

Multi-Farm Unit

In establishing local committees to promote adoption of improved strains of paddy rice, the Thai government was seeking to accelerate farm practice decisions by family farm units. It was at the same time, however, setting up the kind of social organization that is required for certain other kinds of change in farm practices which cannot be made by one farm family alone. We have previously emphasized that the nature of decision required for adopting an innovation constitutes a very important factor in the change process (Dobyns, Holmberg, Opler & Sharp 1967:60-61).

Vicos. The Cornell Peru Project attempted one innovation in Vicos serf agricultural patterns which failed because its adoption required simultaneous decisions by farm families throughout the estate. The Project Director purchased a number of deciduous fruit trees and had them set out on a section of the manor's commercial fields, with the objective of demonstrating the economic advantage of orchards and encouraging former army conscripts to go into farming with more opportunity than traditional tuber and cereal grain production. Serfs carefully irrigated and tended these peach and apple trees, but they have never grown more than a few inches taller than they were when set out and most have died.

The fruit trees have been subjected to heavy and repeated grazing by goats belonging to Indian inhabitants of the estate, which has kept them severely pruned and forces them to grow new leaves all the time. These goats are voracious and agile foragers and are pastured by small children who are responsible to their parents for the welfare of the livestock. Shepherds are concerned about their own animal property, not about the possessions of others, except that they must keep their grazing animals from damaging growing crops of other Indians in order to avoid conflicts between families. The commercially exploited fields of the manor were regarded as fair territory for pasturing animals once growing crops were harvested, and much the same attitude has carried over now that the same fields are operated as a community farm enterprise. We have already mentioned the psychological set of the serfs in the

early years of the last decade, when they employed all sorts of covert means for stealing from the manor. Grazing serf livestock on manor fields was, of course, a fine way of stealing manorial assets for serf benefit, thus remedying slightly in favor of the Indians the gross imbalance in the limited resources available, from the local point of view. Thus, the goatherds have probably encouraged their charges to browse on the foliage of the apple and peach trees set out on manorial fields, and certainly they have made no effort to protect the trees.

It should be pointed out that a few fruit trees in Vicos have reached fruit-bearing size and regularly provide fruit for the Project and teacher mess. These are sour oranges growing in the manor house garden. This garden area is enclosed by a wall of sun-dried brick approximately ten feet high, with a single wooden access gate which is normally kept locked whenever the gardener is not at work within. These walls are effective barriers to goat entry, so the garden grows quite luxuriently, sour orange trees included. The oranges provide juice for orangeade or for hot tea.

Elsewhere in Vicos, fields are separated by walls of stone laid up without mortar. These are from three to perhaps five feet high, but typically overgrown with brush. They present no problem to the agile goats, which can be seen browing off the succulent leaves of bushes growing from the interstices between stones, standing beside thorny cactus plants with no visible ill effects. Fences employing manufactured metal such as barbed wire or rabbit mesh are unknown in the intermontane valley where Vicos is located, so the goats range freely over the area except in the high-wall-protected oases such as the manor hour garden.

The moral of this situation seems to be that the would-be orchardist can succeed by: 1) enclosing his orchard in a wall high enough and stout enough to be impervious to hungry livestock and humans, or 2) by securing a unanimous or nearly unanimous agreement from all the members of the population unit to go forward with orchard operation. The former alternative makes the decision unilateral, and the latter recognizes that the decision must be multilateral if the innovation is to succeed.

The Cornell Peru Project attempt to introduce orchards at Vicos never succeeded sufficiently for the trees to begin producing fruit. If it had, yet another situation requiring multi-family decision for the innovation to succeed would have arisen. The members of all the families with access to the orchard, particularly the boys, would have had to agree to eschew stealing fruit if the orchard were to bring in economic returns.

This decision would have been necessary because existing cultural patterns in this part of the Peruvian Andes make unprotected deciduous fruit fair game for roving boys. One reason the Cornell Peru Project Director conceived of an orchard at Vicos as a potential money-maker was precisely the shortage of ripe fresh fruit on the Peruvian urban market. Another reason was his perception of the Vicos climate as admirably suited to deciduous fruit production.

In truth, the Andean slopes at the elevations across which the Vicos lands sprawl are well suited to deciduous fruit production. Almost no fruit is grown in the zone in commercial quantities. The looting of green or nearly ripe fruit inhibits investment in extensive plantings. In Mestizo towns in the Callejon de Huaylas, some deciduous fruit is grown and picked tree-ripened, but this occurs where trees are carefully protected inside patios. The general attitude toward fruit appears to be one of regarding it as more or less public property. Fruit has not come to be viewed as an individual possession in the way that it is in orchard areas. The Vicosinos, as a matter of fact, consume large quantities of semi-cultivated or wild bush and tree fruits while walking along the trails but are not even perpeutally aware of this fruit as "food" in the same sense as the ingredients of prepared meals (Fine 1960:12).

This problem of neighbors picking the fruit from trees one plants and tends has been noted in other areas. Among the Mayo Indians in southern Sonora, Mexico, the would-be orchardist must also dissuade members of other families from picking his ripening fruit if he is to obtain any economic yield. People joked about having to eat their fruit green in order to enjoy any of it at all. The innovative orchardist there must also think in terms of fencing (Erasmus 1961:6-7) if he cannot obtain a multi-family decision against boys picking the green fruit. Building an animal- and boy-tight fence or wall around a new orchard presents one alternative to obtaining multi-family farm unit agreement on permitting fruit to ripen for marketing. There are other types of farming decisions which seem not to allow even this possible alternative to obtaining a consensus. In Vicos, for example, the customary planting dates related to the ceremonial calendar might appear to have little or no empirical justification, and serf farmers turning out to plant their fields simultaneously might seem to be mere creatures of custom. Actually, the farmers maintain that there is a good empirical reason for their planting simultaneously. This tropical area supports a large avian population. When all farmers sow a given crop simultaneously, the birds spread out over the available fields, and the proportion of loss in any given field is not serious unless by accident.

If a single farmer or only a few farmers attempted to sow a broadcast seed crop such as aflalfa out of season, however, the birds would concentrate on their fields, and the loss of seed would be so high that the planting would fail. Under such conditions, or when farmers believe these to be the limiting conditions, only a multi-family nearly unanimous decision can bring about innovation in the existing pattern.

Multi-Farm Unit Plus Government

Some innovations in agricultural production require not only temporally coordinated decisions by many family farm units but also the acquiescence or indeed the active participation of the government under which they live. Land tenure and distribution changes are one type of innovation that require governmental as well as farmer participation to succeed.

Senapur and Rankhandi. Given the restricted land base for the Senapur agricultural population, and the fragmentation of holdings that developed prior to independence, consolidation of land ownership appeared to be a desirable move to increase productivity. A native of the village who acted as a mainspring on the Cornell Project team perceived the desirability of land consolidation, and sought to persuade landowners in the village to consolidate their holdings. His attempt at persuasion failed.

Later on in time, however, the state government passed land consolidation laws, and these laws produced visible results in Senapur. Thus, the necessity for governmental participation in this type of innovation was well demonstrated by Senapur experience. Land consolidation is also taking place in the Rankhandi area, and though cultivated plots are in average larger and less scattered in Rankhandi than at Senapur, the implementation of the land reform legislation is expected to do much to make improved farming methods possible here, too.

Vicos. In Peru, another kind of tenure change revealed again the absolute necessity for governmental participation for innovation in tenure arrangements to succeed. The Cornell Peru Project staff rapidly induced extensive innovations among the Vicos serfs during a five-year period. Yet no amount of change within the Vicos population sufficed to terminate serfdom and give the ex-serfs control of the lands they cultivated.

Peruvian government permissiveness toward local autonomy expressed itself not only in its encouragement of the economic functions of the elective council directing the community farm

enterprise operated in Vicos from 1956 on, but also in its eventual basic reform in the tenure structure of Vicos. The central government, composed essentially of conservative politicans, sanctioned land reform, however limited, at Vicos.

The Cornell Peru Project, as a joint Cornell University-Peruvian Indian Institute organization, recommended near the end of the sublease period the sale of Vicos lands to the serfs in order to insure continuance of the change process started there. The Peruvian government formally expropriated the estate in 1956 and 1958, but the procedure was never completed. Even so, the decrees insured for five years de facto semiautonomy from the legal owners and protection against further public auctions of the privilege of exploiting the estate for five years. Then diplomatic representatives of a newly elected national administration in the United States, interested in the experiment by the Project Director, advocated land reform to Peruvian government officials, including the president.

Peruvian government officials arranged a direct sale to the Vicos ex-serfs by the legal owner, the Sociedad de Beneficencia Publica de Huaraz, exercising central government authority over public charity societies. The Vicos Indians paid down S/. 500,000 plus a million-sol loan from the Peruvian government, agreeing to pay off the remaining S/. 500,000 in three annual installments. The government loan called for repayment over a twenty-year period (Holmberg & Dobyns 1963:8).

The monetary credit the importance of which we have been stressing played a key role in the eventual tenure reform at Vicos.

Crop loans were fundamental components of the success of the community farm enterprise which earned the profits that permitted the land purchase of 1962. Beginning with the 1957-58 farming season, the Vicos community council has obtained successive crop loans from the Peruvian Agricultural Development Bank at what are low interest rates for Peru, to carry out its commercial agricultural operations and create community capital. That year the bank authorized a S/. 150,000 loan (Vázquez 1959:242) to plant seventy-four acres in potatoes under the technical supervision of the Interamerican Cooperative Food Production Service local agent. The council withdrew only S/. 129,000 and actually used S/. 123,892.75, on which Vicos paid S/. 9,854.55 interest after turning back unused funds. Selling potatoes for S/. 263,639.32, the Vicosinos turned a S/. 137,072.96 profit (Vázquez 1959:249).

In succeeding years, additional acreage has been planted to potatoes by the community farm enterprise. About S/. 163,000 financed the 1958-59 crop, but since then Vicos has worked with more and more of its own new capital, borrowing progressively less and less. In order to plant 111 acres for the 1960-61 season, Vicos borrowed only some S/. 90,000 from the Agricultural Development Bank out of a crop investment of S/. 200,000 (Montes 1960). Vicos cleared S/. 206,000 in cash and kind on that crop. For the 1961-62 season, Vicos borrowed S/. 20,000 from the bank to maintain its credit standing. With a population of approximately 2,000 individuals, Vicos required some S/. 84.50 per capita in the form of crop loans at credit peak necessity (perhaps four dollars per person per year) in order to create new local capital.

Family and community crop loans proved to be insufficient capital to insure the socio-economic development of Vicos to the point where it could enter successfully and permanently into the technologically competent world. At least one additional form of credit has been necessary--long-term credit to enable the former serfs to purchase title to the lands they inhabit and cultivate.

Without entering into all the complications of the situation, suffice it to say that inasmuch as Andean land values are determined in large part by the size of their attached labor force, the Vicos serfs in effect had to purchase their own freedom. The Public Charity Society was entitled under Peruvian law to payment for all improvements on its property made by tenants. So the ex-serfs were understandably reluctant to carry out a forestation program while each tree was assessed, extend the vehicular road while this would increase the value of the land, fence or improve pasture, control soil erosion, build new houses, electrify, provide sanitary water, etc. Thus, the process of capital formation and technification was slowed in Vicos by the powerful brake of unresolved status of land title.

The expropriation decree issued in 1956 had to be renewed late in 1958, but it lapsed toward the end of 1960, and another could not be issued until a waiting period of two years.

Almost a year later, a direct sale was arranged between the owner and the Vicos community, with the national government as guarantor. The agreement illustrates most forcefully the central role of monetary credit and government participation in tenure reform or any other innovation in agricultural production that cannot be carried through by multi-family decisions alone.

Using training gained in the sharecropping credit program instituted by the Cornell Peru Project and the crop loan capital provided by the Peruvian Agricultural Development Bank with technical supervision from the Interamerican Cooperative Food Production Service, the freed serfs of Vicos accumulated S/. 500,000 in community funds by the time the sale was finally negotiated. This sum was on deposit in interest-bearing savings accounts in a local bank for the specific purpose of purchasing land. This capital accumulation indicates the vital role short-term crop loans can play in the modernization process.

The Peruvian government agreed to advance S/. 1,000,000 to the Vicosinos to pay the absentee landlord, making a total of S/. 1,500,000 to be paid in cash. The landlord was to receive another S/. 500,000 from the Vicosinos during the next three years without interest (Franco 1961). Actually, a one-year moratorium on mortgages in Peru, due to a disastrous crop year in the highlands, delayed the final payment.

In effect, the former serfs of Vicos were loaned S/. 1,500,000 with which to purchase the land they occupied, putting down a payment of 25 per cent from their own created capital accumulation.

This loan of S/. 750, or approximately twenty-eight dollars per capita, provided the capitalistic capstone to consolidate the transculturation that had occurred in Vicos since 1 January 1952, completing the foundation for a predictable acceleration of that process during the succeeding decade (Dobyns 1961: 16-17). Once a hitherto underprivileged social group feels itself sufficiently secure in its course of change, it will accelerate that rate beyond the pace achieved by outside intervention.

The Vicos Indians had already demonstrated that this proposition held in their situation. When the Cornell Peru Project introduced modern agricultural technology into Vicos potato production, it doubled previous yields per hectare. Once Project withdrawal from the patronal role was completed, yields from the commercial fields approximately redoubled. They rose to quadruple the original yields, in other words. Actual yield did not increase with self-government, but social responsibility did. Thieves were then stealing from the community--from one another--so the robbery of the patron viewed as enemy and fair game for centuries markedly diminished as sanctions were effectively brought to bear against it.

Immediately after making their half million sol down payment on their land, the Vicos leaders demonstrated their propensity to accelerate the change process. They purchased a new Ford heavy-duty truck to haul Vicos potatoes to market,

to carry guano up the tortuous mountain roads from the coast, and to act as a symbol of Vicos progress and respectability. The truck bears the lettered legend "Shout of Reform."

Within six months of making the down payment on their own land, the ex-serfs of Vicos entered into negotiations to purchase an adjacent estate whose serfs were closely related to them through intermarriage, since it formerly was part of Vicos (Holmberg & Dobyns 1963:9). Working with Peace Corps volunteers assigned to the area, the Indians succeeded in acquiring this additional land at a lower altitude with favorable slopes. This acquisition cost an additional S/. 200,000 and involvement in operating a tourist hotel and thermal bath installation with Peace Corps volunteer aid. Once again, monetary credit allowed for rapid expansion of Vicos agricultural potential. A $5,000 loan permitted Vicos to make the purchase by which it acquired one large and relatively level field where maize can be produced, plus a number of small plots. The growing Vicos population looked eagerly to these to provide maize plots for the increased number of families which could not be assigned them in Vicos for lack of low-altitude lands (Dobyns, Doughty & Holmberg 1965:51-54).

IV. STRATEGIC INTERVENTIONS FOR WELL-BEING

Some anthropological theorists have viewed the cultural change process as one of replacement of competing traits or conventional understandings by others. The Comparative Studies of Cultural Change staff has found that while this may be true in some spheres of culture, medical therapies appear to be cumulative and additive rather than mutually exclusive, at least under the conditions of peasant village life.

Bang Chan

The rice-growers of Bang Chan behave in terms of three systems of medical therapies which they utilize: 1) Thai medicine, 2) Chinese medicine, and 3) Western medicine. Thorough acceptance of the latter perhaps implies to a rational Westerner a change or abandonment in the use of the others, but abandonment does not appear to occur when the people of Bang Chan utilize Western therapies, which they do under empirical pressures, but with little understanding of Western medical theory. In their limited experience, holy "medicinal" water spewed on them by a monk may be as effective as "medicinal" water injected from a doctor's syringe.

Senapur and Rankhandi

Many historical strands and levels of sophistication are involved in the treatment of sickness of north Indian villagers. First of all, there are widely known herbal remedies for particular diseases or abnormal conditions. They are usually the first recourse of a sick person, for it generally costs money to go outside the family circle for treatment and there is resistance, often because of poverty, to spend money for the maintenance or recovery of health. There are very often attempts on the personal and family levels to control health and combat disease by diet. There is a classification of foods into those with "cold" effects and those with "hot" effects. To eat certain foods during the wrong season or during the course of a given affliction may cause or aggravate an illness. Fasting is held to be important, too, especially at a time of fever.

Practitioners are of different kinds. Some are persons who are well known for a medicine or recipe to cure one specific ill, such as the bite of a snake or of a mad dog. The treatment may involve some taboo or specific

observance. One specialist in curing the bite of a mad dog dispenses his medicine on certain days only. Some treatments are caste-connected. In Senapur the Helas, or sweepers, apply leeches to afflicted parts from which blood is to be drawn. The Malis, or gardeners, carry on ceremonies to cure smallpox.

A good deal of sickness and misfortune is attributed to the evil eye, and precautions in the way of amulets and markings are worn to prevent such difficulties. When sickness persists, it is not infrequently blamed on a ghost who is persecuting the individual or his family. There are shamans who specialize in discovering and expelling these ghosts. Frequently, during the course of ceremonial treatment, shamans or their patients go into trance states and learn the identity of the invading spirit and its price for leaving its host. There are certain times of the year when ghosts are thought to be particularly active and when the help of shamans in dislodging them is sought.

The classical Hindu system of medicine is, of course, Ayurveda, and there are practitioners, usually Brahmans, scattered throughout the villages and living in the towns and cities, who claim to be skilled in it. The system rests on the theory that health depends on a balance within the body of wind, bile, and phlegm. An imbalance in one or more of these results in illness. Treatment consists of diet and medicines to restore the equilibrium. Precious metals in powdered and refined form are often part of the medicine. The nature and extent of the malady is determined by feeling the pulse. Treatment may be accompanied by prayers and religious sayings (mantra). Ayurvedic practitioners vary greatly in reputation. The famous ones have their offices in towns and cities, and villagers sometimes take long trips to consult them. Hakims, Muslim practitioners of the Unani, or Arabic, system of medicine, are also sometimes consulted. They are usually to be found in the towns and cities, too. A number of them have offices in Kerakat, the subdistrict headquarters not far from Senapur. Their method of treatment is similar in many respects to that used by the practitioners of Ayurveda.

Western medicine is the system least well represented in the villages. Doctors trained in Western medicine are concentrated in the cities, and most of them would not consider the accommodations and payment they could expect in a rural community to be adequate. Consequently, the representatives of Western medicine whom the villagers see are normally those sent in by the authorities at a time of epidemic. Some of the better educated and more prosperous villagers are beginning to take very sick children, usually

sons, to the towns for medical treatment or hospitalizations, and a few village women are now going to hospitals for confinements. Occasionally a practitioner who claims to know something about Western medicine settles in a village area. One such man, complete with stethoscope and bag for carrying medicines, took up residence near Senapur and served the villages of the vicinity. He claimed to have been a compounder (doctor's assistant) in the Indian National Army of S. C. Bose, which sided with the Japanese in World War II. His incessant use of the stethoscope has impressed some of his clientele, and he doses his patients liberally with antibiotics, but his competence and his record are not calculated to advance the cause of Western medicine. Needless to say, sick people of the vicinity often use several kinds of medical treatment during the same period. In the treatment of smallpox, as we shall see, several methods of arresting the disease, medical and ritual, were being tried at once in Senapur.

Vicos

The Amerindians of Vicos choose between elements of at least three systems of medical therapy when they are ill. One is traditional Indian theory, which stems from prehistoric times in the Andes and contains very large components of sympathetic magic. Analytically, a second system is traditional Spanish therapy derived from medieval times in the Mediterranean world. Behaviorally, Spanish therapeutic elements have often merged with aboriginal elements so thoroughly that any separation other than analytical is extremely difficult. In recent years, these Indians have gained limited access to the therapies of modern Western medicine as at least an alternative to the two systems learned earlier.

Under the manorial system, the Vicosinos relied upon local "wise ones" to diagnose their ills. These diagnosticians employed guinea pigs in a procedure strongly reminiscent of divination. If the ill person were not cured by the stock of household remedies made from plants, fruits, wild roots, clay, or purchased oils, plasters, alcohol or iodine, he would repair to a curer in one of the nearby towns. Rarely would a serf go to a hospital, this being the only alternative to resigning oneself to death.

The Vicosinos attributed the majority of their ills to malevolent witchcraft but ascribed others to infractions against the supernatural. Eclipses they regarded as heralding death, and owls, weasels, and other animals were also messengers of death (Vázquez 1952:51).

From the Spaniards, the Vicosinos long ago learned to classify foods and beverages as either hot or cold (conceptually rather than necessarily in fact). So as scientific remedies were introduced, pills came to be classified as "hot" in the local classificatory system. Ointments were quickly accepted, perhaps because the Indians associated them with their own. Initially rejected, injections were insistently sought by 1957. In general, the pharmaceutical products prescribed by the clinic staff serving Vicos after mid-1954 complemented household remedies.

Even after the biweekly or weekly clinic had been in operation for three years, the doctor was the person at the end of the chain of those the Vicos patient followed seeking a cure. The doctor was still the last resort, in other words, after household remedies and curers failed (Monge & Vázquez 1957:30).

Centralization of Therapeutic Facilities

A common problem in well-being in low-income nations appears to be the concentration of Western medical facilities in urban areas geographically out of the reach of the vast majority of the rural population which must play the major role in socio-economic development and tends to suffer from the gravest maladies, either epidemic or endemic, in the developing country.

India. In India the ratio of doctors with any training whatever is extremely low in relation to population. From the point of view of a proponent of Western medicine the situation is particularly discouraging, for the training resources and facilities that do exist support Ayurveda and Unani as well as Western-type medical education. Graduate physicians are in such demand in the cities that there is little economic pressure or incentive for them to locate in rural regions. As a result, except at a time of epidemic or emergency, folk medicine and ritual defenses against sickness have little competition in the countryside.

Thailand. As we have indicated in our monograph on methods for analyzing social change, the city of Bangkok dominates Thailand numerically and in most other ways. It has been, historically speaking, the urban filter through which Western conventional understandings diffused over the Thai countryside. The conventional understandings of modern Western medicine are no exception to this generalization.

Peru. Peru seems to be at the present time the nation most dominated by its capital city, as we have calculated in our monograph on the analysis of social change. The sheer numerical dominance of Lima's metropolitan area is not quite

matched by its predominance in medical facilities, but certainly the national capital contains the lion's share of Western medical practice in Peru.

Medical hospitals are significantly concentrated in the Lima metropolitan area. In 1959, forty-four of the 139 hospitals recorded in Peru were located there (Garayar 1961:228, 240). This amounted to 31.7 per cent of all the country's hospitals (Dobyns, Doughty & Holmberg 1965:204). Actually, the concentration of therapeutic facilities was much more pronounced than these figures indicate.

The hospitals constructed in the capital city are much larger than those in the Peruvian provinces. So the number of hospital beds constitutes a more accurate measure of concentration than does the number of hospitals. Again in 1959, the forty-six hospitals in Lima Department and the Constitutional Province of Callao contained 10,846 beds out of the 20,457 recorded in the entire nation (Garayar 1961:228). This meant that 53 per cent of Peru's hospital beds were to be found in these forty-six institutions. Two company hospitals had approximately 100 beds in 1959--the W. R. Grace and Company installation at Paramonga and the Cerro de Pasco company hospital at Casapalca. Subtracting these beds from the Departmental total suggests that the Lima-Callao metropolitan area contained 10,646 beds or 52 per cent of the national total for 16 per cent of the population (Dobyns, Doughty & Holmberg 1965:204).

Many physicians practicing from private offices provide medical therapy to patients who never require hospitalization, so the distribution of medical doctors also affects the well-being of a national population. Medical personnel is even more concentrated in Lima than are hospitals or beds. Considering only physicians attached to hospitals, the size of Lima health institutions and preference for working there is reflected in doctor location. There were 1,611 hospital physicians attached to the forty-six hospitals in Lima Department and Callao Province in 1959 out of 2,231 in all of Peru (Garayar 1961:228). This was 72.2 per cent of the total (Dobyns, Doughty & Holmberg 1965:205). The concentration of physicians in Lima approximated the metropolitan area concentration of total bank deposits, which has fluctuated from 81 per cent to 76 per cent of the total in the country.

There were many reasons for the concentration of doctors in the Lima-Callao metropolitan area, of course, but among the more important ones appears to have been the scarcity of medical training institutions in the country and the tendency of medical personnel to remain in the area where it was trained. The Medical Faculty of San Fernando

in the National University of San Marcos constituted the backbone of Peruvian medical training until 1958. Then medical faculties were established in the major provincial universities at Trujillo and Arequipa, but their production of trained doctors required several years to get under way, and their training volume remains well under that of institutions in Lima.

In 1960 a major struggle over Peruvian university administrative policy, involving questions of political party influence in the universities, was resolved by the parliament's granting to students the right to participate in the governing bodies within the institutions of higher learning. The medical faculty of San Fernando opposed the concept of student co-government on grounds that students could not possibly govern intelligently in technical subjects such as medicine. When co-government was imposed, the majority of the medical faculty--approximately 500 physicians--resigned. In 1961 many of these doctors proceeded to organize a new private medical school called Cayetano Heredia after a pioneer Peruvian physician. This venture quickly succeeded, as the prestigeful professors involved took U. S. foundation grants with them and attracted students seeking the best medical education available.

Thus the medical training facilities in the national capital virtually doubled overnight, since the posts vacated at the University of San Marcos were quickly filled with younger, albeit less prestigeful, doctors of more liberal political views, who were eager to man the positions from which they felt they had been blocked by the conservative medical establishment.

Attempting to improve well-being in Vicos under such national circumstances, the Cornell Peru Project sought to diminish the geographic distance between existing medical facilities and personnel by bringing them to Vicos itself. While seeking to achieve a strategic intervention in the well-being of the Vicosinos, the Project staff has tried a number of courses of action.

The first step in trying to improve Vicosino well-being consisted in finding out more than was originally known about just how well off the Indians were. The Project Director and his scientific staff had hardly taken over the management of the manor when the opportunity presented itself to study the parasitology of the population. A team from Parke-Davis Company and the Peruvian Ministry of Public Health which was engaged in analyzing the incidence of intestinal parasite infestations in the country wished to

include a rural Indian population in its sample. By throwing the prestige of the traditionally powerful patron behind the program, the Cornell Peru Project staff was able to gain widespread, if grudging, cooperation from a large number of Vicosinos. The results of this survey were not very encouraging. Nearly all the Vicosinos were found to carry one or more pathogenic intestinal parasites (Holmberg 1952:243; Payne, González and Schleicher 1956:696ff.).

Conducting a study of this type immediately after the strange gringo patron assumed command of the manor undoubtedly contributed to serf confusion and wonderment about the new masters. As one old lady remarked in hearing of a Project member, the former patrons had taken many odd things from the serfs, but this was the first one who asked for even her excrement!

During the first year of Cornell Peru Project control of Vicos, the Director established a medical clinic for the serfs. He contracted with the doctor in Carhuaz, the provincial capital with a small hospital, to come to Vicos with a nurse at regular intervals to diagnose serf ills and prescribe for them.

At roughly the same time that the Director initiated the clinic, he launched a hot school lunch program which provided significant food increments for some sixty youngsters. As we point out elsewhere in this discussion, a prime motivation for starting the school lunch program was to increase school attendance, but it also contributed directly to the improved nutrition of its beneficiaries.

The nutritional state of the Vicos population became the subject of scientific study through the cooperation of the Peruvian Department of Nutrition in the Ministry of Public Health. This organization carried out a survey of Vicos nutrition in 1953 (Holmberg 1953:162).

During the latter part of 1953, the Cornell Peru Project entered into negotiations with the Pativilca-Huaraz-Huaylas Program of the Ministry of Public Health, with the object of conducting a medical and sanitary survey of Vicos (Blanchard 1953:159). An agreement with the Ministry was signed in June of 1954, and a health and hygiene campaign was launched. The Pativilca-Huaraz-Huaylas Program was essentially a maternal and child health unit, but under the agreement to combine research and action in Vicos, it treated adults there. The Cornell Peru Project hired an additional Peruvian anthropologist to study the Vicos beliefs and customs regarding health and disease in both Vicos and nearby Marcará. Beginning late in June, the Pativilca-Huaraz-Huaylas Program sent a medical team into Vicos twice each

week. The team consisted of one doctor, one nurse, two aides, and one social worker. These specialists gave sufficient instruction to the local Peruvian army veteran hired to drill the Vicosino militia so that he could distribute medicines the team prescribed during its visits.

The medical team initially utilized the large corridor and manor house rooms to hold its clinics. The Vicos militiamen volunteered to construct a clinic building, and the Cornell Peru Project provided materials. The Pativilca-Huaraz-Huaylas Program dispatched a sanitary engineer to supervise the work, and construction began in the latter part of 1954. The Vicosinos reacted to the clinic program with initial curiosity, but by the end of 1954 one or more persons from approximately 150 families had patronized the clinic (Blanchard 1955:275-277).

The anthropological study of beliefs and practices associated with well-being found that the clinic achieved a rapid impact, so that attitudes favorable to scientific medicine as offered by the clinics increased in 1955. This shift was apparently aided by the energetic measures taken by the Pativilca-Huaraz-Huaylas Program staff. The doctor and his team went beyond the fixed clinic operation during August and September of 1955, traveling to the remote sections to reach more individuals. A health inspector attached to the Program started a campaign to install pit latrines. This progressed slowly, as did clinic construction (Blanchard 1956: 205).

The Callejón de Huaylas Health Unit, as the Program was renamed, increased its services to Vicos in 1957, as it placed additional personnel in the field. It added a dental service, set up laboratory demonstrations of the parasites affecting the population for the students, taught them how to use and install latrines, and made home visits. The new clinic building was ultimately completed, and it was dedicated in October (Vázquez 1957:225; Vázquez 1959:235), becoming a source of local pride (Monge & Vázquez 1957:31). While school children received systematic hygiene instruction, the clinic personnel exercised tact in dealing with adult clients, not attacking their explanations of illnesses (Monge & Vázquez 1957:29).

The Callejón de Huaylas Health Unit was part of the UNICEF maternal and child health program, and in 1958 it cut back its Vicos program to its defined mission. The Indians had sought free medical care so enthusiastically that the Unit leadership felt overwhelmed, and had to reduce its services. The Unit continued to provide dental care for school children and experimented with charging adult patients for its services to discourage clients.

The Cornell Peru Project added a Spanish health aide in this year, and a physician arrived to augment the technical staff of the Nuclear Peasant School. The new Vicos community council contributed to the health program by purchasing medicines and supplies for the clinic (Vázquez 1959:235).

This pattern continued until the latter months of 1960. By that time, provincial elite social pressures on the wife of the medical team leader who joined the health unit in 1958 reached serious proportions. The program was old enough to settle into a more bureaucratic mold and to stick to its narrowly defined maternal and child health mission. So visits gradually became more sporadic instead of weekly, and ultimately they creased entirely.

The resident physician attached to the Nuclear School spent less and less time in Vicos and confined his services more and more to the school pupils in preference to making house calls or holding clinics. Finally, he, too, found life in a provincial city more attractive, and the post became vacant.

The director of the Peruvian National Plan for Integrating the Aboriginal Population, which took over the action programs of the Peruvian Indian Institute in 1959, recruited in 1961 a recent medical school graduate who displayed considerable initial enthusiasm on his arrival at Vicos. Although he was interested in joining medical research associated with the Cornell Peru Project investigations, this doctor proved to be too well qualified for the post. In a few months he was offered a staff position at the Bethlehem Hospital in Huaraz, which he accepted.

Recruitment seemed to be impossible after that, and no medical personnel was sent to Vicos until the Plan obtained a large contingent of Peace Corps volunteers from the United States in September of 1962. By October, a number of them had been dispatched to Vicos, including one practical nurse assigned to operate the health center, assisted by another younger volunteer until the latter turned to teaching a sectional school. The practical nurse provided such services as she could with the existing stock of medicine. With no physician to diagnose and prescribe, she was largely limited to first-aid techniques and urging patients to consult doctors in either Carhuaz or Huaraz (Dobyns, Doughty & Holmberg 1965:73).

This difficult situation in time brought about an Indian loss of confidence in the volunteer. Vicos children came down with whooping cough during an epidemic in January of 1964. Their mothers brought them to the clinic in

considerable numbers, but all the practical nurse could do was to offer them aspirin to alleviate their pain. Although other volunteers sought medicine in the cities, the death rate rose. As children died, the Vicosinos lost the small confidence they had in the curative abilities of the Peace Corps clinic staff (Dobyns, Doughty & Holmberg 1965:74).

Not long afterwards, the volunteers were withdrawn from Vicos by their superiors in response to community pressures (Doughty 1965b:236-37). Volunteers teaching school were invited back and this educational phase of the program was the only one that survived.

Since that time, changing policies in the Peruvian integration agencies have produced a general reassignment of personnel from Vicos to an urban regional headquarters as the Departmental Indian integration program in Ancash was enlarged. As a consequence, the problem of bringing practitioners of scientific medicine to Vicos remains at this writing unsolved.

Social Isolation from Medical Facilities

Another problem common to low-income countries struggling to improve the well-being of their citizenry is sheer social isolation of large segments of the population from scientific medical facilities. This isolation arises from multiple causes and appears in myriad forms, but one of the most important forms is what we may term the "Indian path" of social habit. By an "Indian" path we mean the narrow trail of social interaction a person habitually traverses.

The image is that of the narrow footpath of the North American tribal peoples. Even today, one may discern the very narrow pathway worn through the grass on the Onondaga Indian Reservation (and others) from house to house, and from houses to Longhouse, by generations of individuals walking in the aboriginal Indian gait, placing one foot directly in front of the other. This culturally characteristic mode of walking wears a path only one foot (a human foot's width, not a linear foot) wide, rather than the two-foot-width plus a little bit produced by the European mode of walking.

Most people follow a path of daily habitual social interaction similarly circumscribed. An individual awakes in the morning in the same bed in the same house, sees the same members of the same family, follows the same route to work, sees the same people along the way, at least insofar as contacts have individual meaning, works with the same group, and seeks recreation with the same crowd of friends, attends the same church, etc. There is little venturing out of the established pattern of interpersonal interactions to establish new contacts.

The "Indian path" which the rural peasant follows through his social interactions may differ from that of the urbanite, but it resembles it in minimizing interactions with strangers. This general human characteristic has very important consequences for the whole cultural change process, perhaps most particularly for medical therapy.

Senapur and Rankhandi. There are reasons why certain sections of the population do not obtain a proportionate share of the medical services that exist in nearby towns and cities. The seclusion and culturally expected shyness of women is a factor. Women who have been confined to their homes and courtyards do not think in terms of going to doctors, clinics, and hospitals outside the village. Most of them resist even the thought of being examined by a male. The same cultural prescription has held down the number of women trained in medicine, so that there is a compounding of difficulties. Because of a resolve to give whatever advantages are possible to the males of a line, there is a tendency to do very little for females in regard to health or education. The women themselves reinforce and perpetuate this tradition, for they have been brought up to be self-sacrificing and to subordinate their interests and comforts to those of the males.

Since most doctors are educated city folk and villagers feel awkward and frightened in their presence, a trip to the urban medical practitioner is considered only as a last resort. The worry about cost and status (for most educated and trained men are still of the high castes) is an additional barrier for the low castes. If a government clinic is involved, there is the old mistrust of officials to overcome and the almost ingrained feeling that nothing helpful will be done unless bribery is involved. Also, since literacy is still low among adults and communication poor, there is a good deal of ignorance of what services are available through government auspices. On a number of occasions the Cornell staff arranged for medical examinations and treatment which the villagers did not know could be obtained.

Bang Chan. The rice-growers of Bang Chan gained less access to Western-style medicine than might otherwise have been the case simply because of their tremendous confusion over the overlapping "Health Committees" created by governmental fiat.

Vicos. The boundary-maintaining mechanisms that effectively shut Vicos residents off from the rest of the world quite efficiently cut them off from Western medicine.

The first barrier between Vicosinos and Western medical therapy was simply the geographic one of the concentration of medical facilities already indicated. During manorial times, the nearest physician lived thirteen kilometers from the Vicos public square by road, although somewhat less by direct foot trail. Still, this physician lived and worked in the small hospital in the provincial capital of Carhuaz, where Vicosinos went relatively seldom. If they did go, they were likely to be in good health in order to make the trip. Individuals sick enough to feel willing to consult a physician were not likely to be physically capable of walking thirteen kilometers. A few more medical doctors practiced in the departmental capital of Huaraz, but this city lay even farther from Vicos, and a trip there required either two days on foot or mechanized transport of some sort.

The second barrier between Vicosinos and Western medicine was the manorial system. The patron-client relationship existing between the various lessees or their overseers and the Indian serfs resulted in nearly all medical therapy being provided by the patron. This occurred rarely and left the Vicosinos largely reliant on traditional household remedies and native curers.

The third barrier between Vicosinos and scientific medicine consisted of Indian poverty. Even if serfs were willing to attempt to bypass the patron and seek medical treatment personally, they usually lacked the economic resources to be able to afford it. Only 7.7 per cent of the serf population was defined as wealthy by local standards at the beginning of 1952 (Vázquez 1965b:9), and very likely this small minority was the only part of the serf populace able to afford medical fees.

World View and Individual Worth

One significant variable in acceptance of scientific medical therapy appears to be an individual's world view, particularly his self-evaluation in cultural terms.

India. There are certain elements of the Indian world view which probably do have some bearing on the vigor with which the benefits of medical therapy are pursued. One is transmigration, the doctrine that the soul of the individual passes through not one but many existences and that the present life is only a brief part of this process. Coupled with this is the idea of the depreciation of the body, the temporary cage of the soul in its present phase, and of the exaltation of the spirit and its long journey. Such a philosophy tends to frown on paying too much attention to the body and its present state and encourages concentration

on religion and the preparation of the soul for its onward journey, instead. This is reinforced to some extent by the doctrine of karma, the belief that one's present circumstance, good or ill, is the consequence of acts in former existences. This outlook makes it more congenial to wrestle with the problems of the future rather than with those of the present, for the latter are the inevitable fruits of the past. Regardless of philosophy, man recoils from misery and pain, and the surrender of the Indian to the idea of fate can be, and usually is, overemphasized. Yet an element of disdain for the body and its welfare does run through Indian thought, and we cannot totally disregard it in considering the state of medicine in India.

Bang Chan. The basic philosophical viewpoint of the village Hindu in India has its parallels among the village Buddhists of Thailand.

A difference between India and Thailand lies in the Thai female role as entrepreneur, which gives her a more practical value and role in the family than that accorded the Hindu female.

Vicos. In Vicos as in Senapur and Bang Chan, a basic philosophical position tended to keep Indians from seeking scientific medical therapy. For the Vicosinos firmly believed that illness in man, animals, and plants was a castigation the gods imposed for human infractions against the supernaturally sanctioned rules of proper conduct. A plant plague was brought on by incestuous sexual intercourse, in the Vicosino view of the world. Thus, well-being was viewed as a state to be maintained or sought, if lost, by propitiation of the gods rather than recourse to scientific medical practitioners.

In Vicos as in Senapur, in contrast to Bang Chan, males are valued much more than females. Yet this fact appears to make relatively little difference in decisions to seek medical treatment. During those periods when the Vicos clinic has operated steadily, the doctors have noted that one frequent type of patient is the hypochondriac old lady complaining of myriad (imaginary or psychosomatic?) aches and pains, but perhaps really mostly in need of a sympathetic ear.

Individual-Household Innovations

In preventive and therapeutic medicine, as in other spheres of human behavior, the scale of decision to be made on an innovation is pertinent to its acceptance (Dobyns, Holmberg, Opler & Sharp 1967:59ff.). A great many of the basic innovations scientific medicine indicates for disease prevention in relatively unsanitary areas involve individual or household decisions.

Vicos. Privy construction is a favorite public health worker program in those parts of the world not equipped with plumbing. Vicos has not escaped this type of attention. At one time, public health workers exhorted as many Vicosinos as they could reach to build and use wooden privies. A handful of families actually constructed such privies over pits dug into the glacial fill. A cursory check of these structures a few months after they were erected disclosed that they seemed to make fine maize granaries. The health workers had not been able to convey to the Indians a comprehension of the germ theory of disease and the role of insects and intestinal parasites in disease transmission that would motivate the theory to utilize privies.

Senapur. A parallel type of program in Senapur concerned with an entirely different type of prevention technique illustrates very much the same principles, so we consider it at some length.

Success and Failure in Intervention in Health Problems of Village India. It must not be thought that intervention by governments to promote welfare or to protect health is a recent phenomenon or that, once a government's concern and good offices are mobilized into action, a solution is automatically assured. A population can be forced to comply with official edicts and the orders of those in authority who are on the spot. Yet, especially in the area of health, practices and precautions to prevent illness have to be continued faithfully to be effective, and this usually presupposes a widespread intellectual and emotional commitment on the part of the individual which will provide momentum even in the absence of representatives of civil authority. This suggests that the ease with which change is effected varies inversely with the strength of the traditions or practices which must be replaced or greatly modified to achieve the end in view.

Thus the success of strategic intervention often depends as much on the changing of outlook and conception as it does on innovation in practices. Still, it is so much easier to deal, at least superficially, with externals and overt behavior than with ideas, that the belief system which parallels and regulates so much activity is usually left to change at its own pace. To some extent this may be inevitable. A frontal attack on cherished beliefs may provoke stubborn resistance that may block needed change at any level. On the other hand, a change in practice, even though unaccompanied by any initial deep conviction, may ultimately alter thought as well as motor activity.

Perhaps the important point to remember is that beliefs about a subject, taken as a whole, are usually evidence in metaphor of a point of view. It is when there is a confrontation between what this implies and what government intervention

proposes that confusion and irresolution result and programs limp along. It is in the hope of clarifying the issues involved that this particular instance of government intervention in an important and sensitive area of life is presented.

On February 5, 1955, at the request of one of the Indian members of the Cornell University research group, the vaccinator of the State Public Health Department who was stationed in the subdistrict headquarters approximately five miles away came with his equipment to the village of Senapur in eastern Uttar Pradesh, a state of north central India. An epidemic of smallpox had been raging in the area for some time. This was a return visit, for the vaccinator had been in the village not long before to vaccinate all who would permit it. A new upsurge of cases had made it urgent to recall him. Four villagers, one a woman twenty-five years of age, had died in the previous ten days. The number of new cases threatened still more fatalities and disfigurement. The Cornell Project staff was familiar with the localities and families in the village most affected by the disease. It was hoped that by seeing to it that family members and neighbors of those stricken were vaccinated, the spread of the malady could be arrested.

Since there were a number of cases of smallpox in the section in which members of the oil-presser caste (Teli) lived, the residents of this quarter were urged to bring their children for treatment. One young widow with a two-year-old son assured the health officer that all the young children of the family had been vaccinated. When she was asked to produce her son and let his vaccination scar be seen as proof of her statement, her attitude changed abruptly, and she sullenly refused to do so. Her husband had died of smallpox even though he had been vaccinated, and she attributed his death to the vaccination. "I am not interested in this and don't believe in all this. I personally don't want to have myself vaccinated," she told the harried official. The vaccinator grew angry, demanded to know her father's name, and threatened to report her to the District Health Officer as well as to the District Magistrate for misbehavior and unlawful conduct. The Cornell Project member interceded at this point and reminded her that there was a 50-rupee fine for obstructing the work of a vaccinator. At this the woman burst into tears and folded her hands before her in supplication. Between sobs she said: "Since my husband died because of vaccination, I have considered it to be a misfortune for the family. If you are going to report me I am willing to bring my son for vaccination. My son is the only hope of my life in the world. I am already a widow, and there is nothing much worse in life than to be a widow. If you wish to

snatch my son also, I shall pass my life alone unhappily and in an unfortunate manner." She allowed her son to be vaccinated, but in spite of all attempts at persuasion she avoided vaccination herself.

During this exchange a small crowd had gathered. A man of the Teli caste tried to calm the distracted mother by telling her that his son had had an attack of smallpox even after vaccination but that it had been very mild, and he advised her and the other women to allow their children to be vaccinated. One Teli woman, whose home was nearby, showed what she thought of this counsel by ordering her two youngest children to run away and hide. When the vaccinator looked for these youngsters and informed the mother that he had been her husband and received permission from him to inoculate all the children, the woman was thrown into great confusion. She dispatched an older boy to find the children, but they were securely hidden and did not appear during the vaccinator's stay.

An old woman brought her two-and-a-half-year-old grandson for vaccination. The child was stoical enough, but the grandmother showed every evidence of anguish and could not bear to watch the child being treated. Once the ordeal was over, she asked the vaccinator when she should perform the ceremony to the Mother Goddess, the bringer of diseases. He patiently advised her to have the ritual on the ninth day after the vaccination and to have rice and curd in readiness as food for that day.

In a household in which two persons had recently died from smallpox, two small children were vaccinated. An adult male member of the family was traced to his employer's home but resolutely refused to submit. He protested that he was eating his meals and sleeping away from his home and therefore was in no danger. It was futile to try to convince him that he had been "exposed" and might endanger others. When he was pressed, he argued: "Dr. Gupta [a State health officer] gave me an injection last time, and I was sick for two days." The Cornell Project member told him: "Last time you received an injection for plague. This is a vaccination for smallpox. Don't worry. It will cause little or no temperature." The man looked most sceptical and continued to refuse. He was a day laborer, dependent on his daily wage, and was obviously alarmed at the prospect of being incapacitated.

A section of the village in which members of the cattle-herder caste live (Ahir) was also badly hit by the epidemic. A man of thirty who lived there was persuaded to allow himself to be vaccinated. It turned out that he had never been vaccinated before. Another man of the same caste and approximate age steadfastly refused, however. He had been inoculated

against cholera some time before and had been sick for a week; he could not be persuaded that there was any difference in the materials used in immunization against the two diseases. He declared that he had to care for his elderly blind mother and therefore could not risk being disabled for any length of time.

An old woman to whom an appeal for cooperation was made urged her daughters-in-law to submit to vaccination and bullied the reluctant younger one until she agreed. When her own turn came, she begged off, saying: "I am old enough to be saved from the attack of the Mother Goddess. The Mother Goddess should bless my children and make them happy and prosperous. I don't need any medicines or injections. I'd like to die at my present age so that I shall not worry others about helping me in my old age."

When he had treated as many villagers as would allow it, the vaccinator left. At length the epidemic which had brought him into the village subsided. The following year, however, at about the same period, an even more widespread wave of smallpox engulfed the village, and again the personnel of the Cornell Project sent word to the subdistrict office of the Public Health Department to dispatch the vaccinator to the village. He arrived on March 7, 1956, and vaccinated twenty-two persons of one of the afflicted neighborhoods.

The vaccinator was back again on the ninth of March and first approached Cornell Project personnel to get some help for his mission. It was decided that since school was in session and the teachers and Cornell Project members would lend moral support, the children of the primary and junior high schools should be vaccinated. That afternoon, 164 school children (153 boys and 11 girls) were vaccinated. The great disparity in the number of boys and girls enrolled in school indicates the difficulty of trying to control the situation by immunization of the school population. It also suggests why so many smallpox victims are females.

On March 18 the vaccinator returned for a third time. His target for the day was a hamlet of the village inhabited by Chamars, a caste of untouchable agricultural laborers. Nearly all the families of the hamlet were affected by the disease, and in many cases all the children of a household were stricken. Some indication of how such an epidemic is spread is apparent from one incident. A twenty-eight-year-old woman, married to a man of another village but visiting her parents in Senapur, had a light case of smallpox. When the vaccinator came upon her, she was paying a social call on a family whose members had thus far resisted the scourge. The vaccinator scolded her for moving about so freely and forbade her to leave the village until the epidemic was over.

The vaccinator stationed himself under a jackfruit tree in a central location, and an Indian member of the Cornell Project went to inform the people of the hamlet of the presence of the health officer and to urge them to utilize his services. The first person encountered, a man in his late forties, told him: "We were vaccinated in our childhood, and therefore there is no need of taking it again." When asked if he would send his infant son to be vaccinated, he replied: "No, he is too young to be vaccinated, and we are too old. We cannot be affected by the Mother. Besides, if she gets up angry, we cannot please her."

A man in his early thirties explained his lack of cooperation by saying: "I am willing to send the children, but my wife does not favor it. She feels that the vaccination has no effect if the Mother Goddess is angry." At this point his wife emerged and added: "I cannot send my children to get vaccinated. The vaccinator is a cruel person. He may stick a needle into the body of my children. I cannot tolerate it." Another man and wife said firmly: "All our children were vaccinated last year, and they don't need to have it done again. As regards ourselves, the elders, we cannot be influenced by it." One Chamar voiced a concern that was in the minds of many of the group: "I am coming right away with my two children, but I have no money to pay the fee of the vaccinator." He was assured that there was no charge for the treatment.

A woman, a widow, who "guessed" that two of her children had not been vaccinated, agreed to send them for immunization. As she spoke, one of her sons appeared and expressed a somewhat different view. He said he had never had smallpox and probably would not catch it in the future, either. As regards vaccination, he continued: "It generates tremendous heat inside the body. I cannot withstand so much heat during the hot season. If I were vaccinated, I would not be able to do any harvesting for several days." An attempt was made to counter his exaggerated notion of the incapacitating nature of vaccination, but without success.

Despite these pockets of resistance and misunderstanding, most of the families approached promised to send their children to the place where the vaccinator was waiting. The Project member went back to join the vaccinator, and both waited for the children. A half hour passed, but only a very few children had appeared. The vaccinator became disgusted and disgruntled and made some disparaging comparisons between the Chamars of Senapur and those of other villages. The Project member nervously suggested that they move to another part of the hamlet where a group of Chamars, including some who had already been contacted, had gathered. As the two approached, several of the Chamars left the group and hid behind the walls of courtyards and buildings.

At this the vaccinator became extremely angry. He shouted that if the Chamar women thought that if they refused to have their children vaccinated, his salary would be stopped, they were wrong. All that would happen if they would not allow their children to be vaccinated was that the bodies of the children might become deformed. Perhaps it would not matter much, he went on sarcastically, if a boy lost one of his eyes or a hand or a foot. However, if a girl lost any of her limbs, she would not be accepted in marriage by anyone.

This burst of anger brought some results. A man who had declined vaccination before now said that even though he had not been vaccinated in the past, he would accept it now "because the Babas [Brahmans] are eager to vaccinate me." He was apparently impressed by the fact that both the vaccinator and the Project member were Brahmans. This man's wife brought her children for vaccination, but she successfully resisted vaccination herself. Now a trickle of volunteers appeared. The most dramatic convert was a woman who at length allowed her children to be vaccinated but for some time turned a deaf ear to the entreaties of the vaccinator, the Project member, and several women of the hamlet that she herself comply. When the vaccinator was just about to pack up his equipment, she reappeared before him, arm outstretched. In all, fifty-seven persons had been vaccinated that day, including three girls from outside the village who had been visiting relatives.

When the incidence of smallpox had just about run its course in the Chamar hamlet, a new resurgence of cases occurred, this time in the vicinity of the "American Lodge," the house in the main settlement which served as the headquarters of the Cornell Project. Again a letter was written to the Health Department, and the Project cook was sent with instructions to place it in the hands of the vaccinator. It brought the vaccinator back to the village on March 28. He readied his equipment and this time set up shop at the American Lodge. There he first vaccinated all project members and the servants employed at the house. The project sent word to neighboring houses of the presence of the vaccinator and urged that both children and adults of these households come for immunization.

In response to this summons a householder appeared with his infant son. The child was vaccinated, and the father agreed to be vaccinated, too. When he was asked about other family members, he said: "The women of the house need not take it. Moreover, they cannot come out of the house [this was a high-caste household, and the women were in purdah, or seclusion]. Smallpox is more dangerous for young children than it is for adults."

This idea, that smallpox attacks only the young, was advanced again and again despite the glaring example of several adults of the village who were currently suffering from the malady. In the words of one woman: "All the children except the youngest one have been vaccinated at the school. The baby is too young to be vaccinated. In regard to the adults, there is no danger that they will be affected by smallpox."

Another notion that had to be combatted was the conviction that vaccination was required only when a case of smallpox appeared in the family. As one young woman expressed it: "There is no smallpox in my family, and therefore my children do not have to be vaccinated." She was told that if a death from smallpox occurred in a neighboring house or even in the village, she and her children could be asked to submit to vaccination and could be forced to accept vaccination. For a refusal to cooperate with the vaccinator in these circumstances she could be put behind bars. This grim recital so alarmed her that she appeared at the American Lodge with a child in her arms.

The Cornell Project--and particularly the young Indian extension worker who was affiliated with the Project and who cooperated on many occasions with the vaccinator--did not escape criticism from those who objected to vaccination on principle or who were frightened by any reaction or side effects.

One man who had been away from the village when the vaccinator came and whose wife and children had been vaccinated in his absence was very irate and expressed himself forcibly thus: "I was not at all interested in getting the children of my family vaccinated. If I had been in the village that day, I would not have allowed them to go to the vaccinator. One of my sons, Phul Chand, was injected against cholera by the District Medical Officer some time ago. That injection made Phul Chand's life hopeless. Later on I had to spend 50 rupees in order to have my son cured of a strange disease due to the adverse effect of the injection. That incident changed my favorable attitude toward the use of injections. I lost my faith in it. I believe that if God does not wish the death of someone, it is bound not to occur and vice versa. Even if a man jumps into a well or is run over by a railway engine, he may be saved through the mercy of the omnipresent God. In the future I will not allow any member of my family to be vaccinated."

Other repercussions were not long in coming. The Project member who had cooperated in the vaccination drive wrote in his report for March 29: "Tonight, while going to

one of the hamlets, I was stopped by RR, who had a fever due to the vaccination that he took at the Lodge. He said he had been sure this would happen and because of this he hesitated to be vaccinated, but the vaccinator influenced him to allow it. He complained that he felt so bad that he could not do any work at the threshing floor, and since he was the only adult male in the family, he was worried that his agricultural operations might be delayed. I assured him that he would be all right by the following day. I pointed out that, had he not gotten vaccinated, he would have been badly affected by smallpox. I told him it was very good that he took the vaccination."

The reaction of this man to the vaccination lasted longer than anticipated, however, for the next day RR's mother approached the Project member and asked if he had some medicine to cure RR's headache. She said he had been having great trouble since he was vaccinated. He could not raise his arms, and the cattle were not getting properly fed and watered. She was given two aspirin tablets to take to her son and later reported that they did relieve RR's headache.

No sooner had the Project member succeeded in mollifying RR's mother than he was approached by two women who were worried because the children of their families had had a rather pronounced reaction to the vaccination. They wanted to know what to do to dry the "marked places" on the arms of the children. They were told to go to the Lodge and ask for some of the powder the vaccinator had left behind. Later, when the Project member returned to the Lodge, one of the women was waiting for him. She touched his feet and said: "Because of you I had the children vaccinated. Now they have got fever. I have no other source to which to go to get advice or medicine. I ask you to give me the best medicine to make the children happy." She was assured that the powder was the best medicine to dry the "vaccination spots."

Another woman approached him in some alarm and told him: "Both of my babies have fever and pain due to the vaccination they were given. The eldest has not eaten a meal since last night. It is really a matter of worry for me. If the vaccinator comes to the village again, ask him to pay a visit to my house and look at the condition of my babies. The powder you provided helped, and therefore they are a little better than before."

The complaints were so persistent that on April 2 the Project member went to the subdistrict headquarters to get the vaccinator. The vaccinator was elsewhere on his rounds, but word was left that he should come to Senapur at his earliest convenience. The next day the husband of the woman who had last complained came to learn if the vaccinator was coming to the village. He and his wife felt that the condition of their daughter was "not very good," and he wanted

to be notified as soon as the vaccinator arrived. By now the effects of the vaccination were fast wearing off, and the requests for medicine and attention declined. Since the message left for the vaccinator asked him to come to allay the fears and discomfort of those already inoculated (a type of request with which he was well acquainted) rather than to stem a new upsurge of the disease, he did not make a return visit on this occasion. A few days later, when the Project member inquired about the children and adults who had had the most marked reaction and who had complained most loudly, he found them much improved or fully recovered.

The intervention of the health officers was not limited to treatment of smallpox only. They did give some attention to preventive measures as well. In February, 1955, the chief medical officer of the district met with the heads of the local judicial bodies of the villages of the area. He described the extent and severity of the smallpox epidemic to them and the efforts of his staff to stem it. Then, to use his own words, he told these village officials: "Apart from checking the epidemic when it breaks out, it is essential for the people to give thought to why it happens at all. I explained to them in brief the causes which give rise to such epidemics and requested them to take necessary precautions. I told them the causes could be summarized as follows: the habit of the people of defecating anywhere and everywhere in the open fields so that the flies get contaminated and carry the diseases to the villages, the lack of care in cleaning the supply of well water, and above all the existence of sick persons in the villages who do not get proper medical treatment and who act as continuing sources of infection. The remedies I suggested to them were to use borehole latrines, to get brick-lined wells made and get the water in them purified periodically by using potassium permanganate, and to see that chronically sick persons are cured and do not spread their diseases through contact."

This health officer was not too optimistic over the likely response to his admonitions, however. "When an epidemic breaks out," he said gloomily, "the village people become perturbed and run here and there. Yet even in such cases they are not receptive to the health authorities. For instance, there are people in the village who, despite acute danger from smallpox, will not listen to the vaccinator. Then, too, whatever effect we have when an epidemic breaks out is washed out entirely when the epidemic is over. Whatever has been told to them during the epidemic period is forgotten when it is over. In spite of our attempts to persuade them to take some elementary precautions, they are not interested in doing so. For instance, they are reluctant to change their age-old habit of defecating in the fields."

From this review of the attempts to cope with outbreaks of smallpox in a particular village and the surrounding area over a two-year period, it is evident that the state and district authorities were not indifferent or inactive. The vaccinator was much in evidence at a time of epidemic and came rather promptly when summoned. Yet, while his efforts and the natural immunity of a large number of people who had had the disease previously were enough to prevent total devastation, the accomplishments of the first year were not sufficient to prevent a recurrence of the epidemic in the following year. As a matter of fact, epidemics of this order went on year after year before the period of which we are speaking and after it, too. It will be noted that in both 1955 and 1956 the vaccinator encountered adults in the village who had never been inoculated. Some of them permitted him to vaccinate them, and some did not. In some cases children could be vaccinated; often this was not permitted. Obviously there was resistance to the help the government was trying to extend that greatly impaired its effectiveness. The help and the resistance both have a long history. One villager, in attempting to convey the length of time that vaccination for smallpox had been practiced in the village, said: "I have seen vaccination scars on the arm of my grandfather, who was born in 1850."

Thus, while government intervention in this matter has been long-standing and has not been negligible, it is plain that there are misunderstandings which have impaired the effectiveness of the immunization program. Some of these are rather apparent from the data already presented.

For one thing, there is a confusion between chicken pox and smallpox which throws doubts upon the efficacy of the vaccination in the mind of the villager. Chicken pox is known by the same name as smallpox, is considered to be due to the same cause, as we shall see, and is simply thought to be a lighter case of the same disease. Consequently, if anyone contracts chicken pox after being vaccinated for smallpox, this is pointed to as proof that vaccination cannot control the disease and is useless.

The fact that immunization is not necessarily permanent is not clearly understood. Instances in which an individual contracted smallpox twice, no matter by how many years the two attacks were separated, are taken to be evidence of the impossibility of controlling the pestilence through this means.

A large proportion of the adult population consists of survivors from smallpox attacks. Therefore the highest percentage of fatalities and severe cases occurs among the young. This has given rise to the notion that the disease

is essentially a malady of the young, and consequently many adults, even if they have not had smallpox, feel a false sense of security and shrug off requests that they be vaccinated.

One of the barriers to the elimination of smallpox is the lack of appreciation that vaccination must be village-wide and be equally available to both sexes to be completely successful. The fact that so many of the women are in purdah, or seclusion, and are much restricted in their movements and even in their contacts with men of their own families means that a large percentage of women never see the vaccinator and are never immunized. This has been rationalized in the belief that the Disease, or Mother, Goddess, to whom we shall refer presently, is especially attracted to young women. The use of the schools as a theatre for vaccination also leaves out many of the girls, who are, as we have seen, much less well represented in the school population. It also, incidentally, omits many of the low-caste boys, who work in the fields and pastures while their high-caste age mates study in school. Nor should the influence of the cultural tendency to show more concern for the health of boys than of girls, on the grounds that the family line is continued through the males and the girls leave the family and village through marriage, be ignored in this smallpox vaccination differential.

Hindu conceptions of the proper treatment for sickness do not favor practices such as vaccination. The standard methods of combatting sickness are fasting--especially in the case of fevers--control of diet, and the drinking of herbal remedies. The cutting of the flesh, unless it is absolutely necessary, as when a boil has to be lanced, or the injection of foreign substances into the body arouse apprehension and opposition. The degree to which the side effects of vaccination were dreaded and exaggerated has probably been noted by the reader.

Concern over the discomfort and danger attending vaccination, though disproportionate to the actual hazards, is not without some foundation in fact. The vaccinator is a petty employee of the Health Department. He has no real medical training but has some elementary preparation in hygiene and in the mechanics of his job. To hold his post he must perform a certain number of inoculations. Therefore, in particular instances he can be arbitrary, harsh, and unskilled. Because what he does is so much at variance with traditional Hindu medical practice, until recently it was difficult to recruit educated and high-caste Hindus to carry on this work. Certainly his sanitary precautions often leave much to be desired. He works out of subdistrict offices that have limited facilities. Quality control of the vaccine is difficult to maintain in these circumstances. Consequently the pain and inconvenience which the villager anticipates or of which he complains are not entirely illusory.

Though the vaccinator does not command the respect which would be accorded a prominent official or a highly educated man, it is probably an advantage for his post to be occupied by a subprofessional--a man of the people--during this transitional period. He understands, as the urbanized officials do not, the fears and misgivings of his clientele. He realizes to what the villagers are referring when they ask him when the ceremony should be performed for the individual who has been vaccinated (actually to propitiate the smallpox goddess who has been thus introduced into his body). He knows it will reassure them to be told to hold the rite after nine days (the length of time during which the Mother Goddess is worshipped twice a year) and to have "cold" goods in readiness for the feast following the ceremony (fevers and the ailments associated with the Mother Goddess are countered with "cooling" eatables). The present-day vaccinator, strange as it may seem, is something of a bridge between smallpox treatment of the past and that of the future.

The circumstance that the Disease, or Mother, Goddess is identified with plague and cholera as well as with smallpox does not allay apprehension over vaccination. Because, according to the belief system, the illnesses stem from a common source, the material with which the diseases are treated is assumed to be the same also and to threaten the same discomfort. Consequently, any bad experiences with plague or cholera inoculations are vividly remembered and are used as an argument for refusing to submit to smallpox vaccination. There is a very practical note in this fear of being disabled, even for a short time. Many of the adult males are day laborers, living at the barest subsistence level. The loss of wages for a few days is a serious financial blow to them. Even a cultivator who is much better off than this dislikes to court incapacitation for even a short time. Many times agricultural operations are carried on in rapid succession, and considerable loss may be entailed if they are not performed on schedule.

However, the main reason why vaccination, in spite of official sanction and effort, has not achieved greater acceptance and compliance is that it runs counter to important Hindu attitudes toward disease. The sicknesses marked by fever and skin eruptions, most of which are particularly prevalent in the hot season, are considered to result from the displeasure of the Mother Goddess, or Kali, a fearsome aspect of the consort of the Hindu high god, Shiva. The Mother Goddess is referred to by various names according to the situation, for she is really a composite of seven sisters, each one of whom can be separately conceived to control one of the pustular diseases. The conception is even more complex than this, for the composite Mother is

often pictured as leading an army of subordinate goddesses whose tendencies to quick anger and destructiveness are not infrequently the cause of man's ills.

Smallpox and chicken pox are believed to be manifestations of one of the more important and capricious of the seven sisters. In fact, the symptoms and blisters of smallpox are taken to be the outward signs that the Mother is present in the body of the afflicted person. A victim of smallpox of either sex is actually addressed as the Mother Goddess, and the sick person's words are anxiously studied for some clue to the wishes and purposes of the Mother.

A little boy who was not yet two years of age contracted chicken pox. A woman of the neighborhood who had heard the news appeared and greeted the child as if he were the Mother Goddess. She pressed her hands before her in reverent salute and exclaimed: "Oh Mother, everything is in your hands. See that we are not troubled very much." The child's grandmother, who was cradling him in her lap, asked him rhetorically: "Mother, have you come here to eat curds, rice, and milk [favorite foods of the Mother and foods designed to "cool her down"]?"

Two members of the Cornell Project staff were walking along with SK, a village girl. Suddenly another village girl suffering from a case of smallpox crossed the path about ten feet ahead of them. SK stopped and said in a soft voice: "Oh, the Mother is going there." She folded her hands reverently and added: "I worship you."

During the height of the epidemic of 1955 a young village woman told of a similar incident. She was coming from the fields early one morning when she met a girl who had smallpox going to the fields to relieve herself. She confessed she was frightened and that she was not pleased to start the day with such an encounter. In relating the occurrence, she said: "Early in the morning the Mother came my way. I was frightened, so I folded my hands in front of her and I bowed down. Then we went our separate ways."

Not infrequently a patient suffering from smallpox goes into a trance and acts the part of the Goddess, telling what angered her and what must be done to mollify her and hasten her departure. Thirteen members of a large joint family were stricken with smallpox. The family head personally carried out ceremonies for nine successive days, each one culminating in the kindling of a sacred fire. Early in the morning of the last day the youngest son, who was one of those ill from smallpox, spoke very disrespectfully to his father. This convinced the man that the Goddess was speaking to him through the body of his son. Using the boy as her vehicle, the Goddess told him that she was very pleased that he was offering a

ceremony to her and asked if there were anything that she could do for him. He reminded her that thirteen of his family members were ill with smallpox. She told him that he should offer clarified butter to her and prepare a sacred fire whenever anyone was suffering from smallpox or cholera and that recovery would follow. All the sick members of the family did recover on this occasion, and the father became an ardent devotee of the Mother Goddess. He has, of course, scant respect for vaccination as a solution.

An Indian friend who grew up in a north Indian village has explained such cases of possession by the Mother in this fashion: "In smallpox cases the sick person is treated just like a god. His mother comes with folded hands and asks what he wants. The father, who may have slapped him around before, says, 'Oh, Goddess, what do you want now?' The person is sick and weak. All this talk and attention affects him. He becomes delirious and begins to consider himself the Goddess. Then the Goddess 'comes on his head,' and he goes into a trance and talks as though he is the Goddess. There is a background of suggestion to it. It is in these smallpox cases that the Goddess speaks through the sick person, who becomes possessed, instead of through the shaman."

In the Indian medico-religious system there are two ways of dealing with the smallpox goddess. One is to act and to carry on rituals in such a way that she will pass by without entering the home or possessing any of its residents. The other is to hasten her departure if she has paid an unwanted visit.

Just before the onset of the hot season there are standard rituals performed in every household which are calculated to please the Mother and keep her on her journey. The watchwords of these activities, carried on by the women of the household, are cleanliness and coolness. The house is thoroughly scrubbed and replastered, with special attention to the drains and the kitchen. Then food is cooked outside of the home so that the kitchen cannot become defiled, and this cold food is eaten all the next day, for no cooking can take place then. An early morning ritual is conducted in which the Mother is symbolically ushered from the interior of the house through the courtyard to the outside. The materials used in this rite are rice water, flowers, lumps of clay, and other objects and substances which support the "cool" motif. Silver medallions to represent each male member of the family who has had smallpox or has been vaccinated are displayed on a representation of the Mother (a decorated earthen jar filled with water). In keeping with the motifs of cleanliness and coolness, leftover food is presented to the washerman.

If, in spite of all efforts to keep peace with the unpredictable and easily angered Mother, someone does fall ill with smallpox, every attempt is made to mitigate the grim consequences of her visit. Her entrance into the body of the sick person will be marked by fever; therefore strenuous attempts are made "to cool her down." Again the symbols of coolness appear. The foods served in the house should be those which have a "cold" effect; those which are considered to have a "hot" effect, such as meat, fish, and eggs, are forbidden. Continence is enjoined. The patient is fanned with branches of the *nim* tree (*Azadirachta indica*), which is noted for its cool, astringent qualities. *Nim* leaves are put in his bed, and his pustules are bathed with a liquid medicine made from the *nim*. If ritual is required, a member of the gardener caste is summoned, and he arrives with more *nim* leaves and flowers. Religious-minded gardeners are supposed to have special knowledge of the Mother Goddess and to be very effective in dealing with her. There are also village-wide rituals which the people may organize themselves when many households are invaded by the Mother. It is interesting to note that someone who dies from smallpox is not cremated, as is the usual Hindu custom. Instead, he is given a river burial. His body is weighted with water jars which fill and carry the corpse to the bottom of the stream.

This is the barest outline of the ideas, activities, and events that accompany the incidence of smallpox. Even so, it is probably enough to indicate why vaccination is so uncongenial to the Indian conception of how to deal with the smallpox goddess. The traditional Indian precept is to do everything possible to prevent the Mother from entering the premises and the person. Vaccination is the direct antithesis of this; it is based on the idea that the sickness is to be welcomed and induced in order to prevent greater future evils. In Indian thought and practice in regard to smallpox every attempt is made to foster coolness and to war against fever. Vaccination usually is followed by fever, again to make certain that a more crippling fever is prevented.

What we have, then, is a clash of views of desiderata and sequence. Though he does not analyze it in these terms, the Indian villager, in his half-heartedness toward vaccination, is responding to a basic clash in ideology. It is not just a conflict between a scientific and nonscientific point of view. The Indian villager accepts a good many practices on pragmatic grounds which he does not grasp scientifically. This is a collision of styles, of approach--of a determination to control a situation by avoidance versus an interest in coping with it by incorporation. When the American or educated and sophisticated Indian is vaccinated, he feels that he has escaped the disease. When the Indian

villager is vaccinated, he is sure that the troublesome Mother Goddess has gained entrance to his body, and he asks the vaccinator when he should carry on the propitiatory rites so that the deity will make her exit.

Vaccination is an important and necessary intervention by government. In view of the eagerness of the Indian government to provide it and the length of time it has been practiced, many have wondered why it has not met with more complete success and why such a controllable disease as smallpox has not been wiped out. Certainly efforts to educate and persuade must be continued and redoubled. Yet they are not likely to do too much good if they consist of little more than scoldings and homilies. To overcome the present impasse and faint-heartedness, it will be necessary to recognize and to take into consideration in education, planning, and practices the substance and vitality of the Indian villager's view of the nature and treatment of smallpox.

It should be noted that while smallpox continued to be a problem in the Senapur region, the authorities have had much more success in dealing with malaria, which used to cause endless misery and debilitation but which now has been virtually wiped out. Malaris, since its lethal effects are relatively indirect, never captured the Hindu imagination and stimulated a ritual defense. It is thought of as Americans regard the common cold, as something annoying and inevitable. There are herbal remedies to alleviate its symptoms but no goddess upon whom to blame it and no ceremony through which to expel it. Its cause was external to the sufferers both in fact and in theory. Therefore the government and international agencies could spray the surroundings with DDT and reduce the number of mosquitoes without arousing opposition or even too much interest. As long as the spraying could be carried on periodically by outside technicians, no important revisions of patterns of action or belief were called for from the villagers. A distinction has to be made between efforts like this or like the measures taken for the protection of a municipal water supply, where external authority can act effectively with a minimum of popular participation, and such matters as smallpox control, where the individual becomes an agent of infection and must be persuaded to cooperate with those prepared to deal with the situation. It was a satisfaction to the Cornell research group that its action brought government personnel and resources to the village to stem smallpox epidemics more often than otherwise would have been the case. The presence of the research group also made possible the collection of data that show the limitations of the intervention at this time and the reasons why smallpox continues endemic in India and is likely to persist, hopefully with diminishing incidence and severity, for some time to come.

Bang Chan. This rice-growing village has not escaped the world-wide urge of preventive medical personnel to install latrines. Several have been constructed, but in practice they exist only at the residences of headmen and are utilized only on inspection days.

Multi-family Misdirected Consensus

There are fairly numerous innovations in environmental sanitation, at least, which require a measure of multi-family consensus in order to achieve, yet do not necessarily require an accurate comprehension of the medical reasons for, behavioral change. We somewhat flippantly label these cases of "misdirected consensus," when the perceived wants of a given population lead to action that achieves an improvement in environmental santitation, but in terms of an entirely different perceived want.

A good example of this class of consensus is the urban Ecuadorian population that cheerfully accepted a potable water distribution system because it provided water that did not look muddy (Erasmus 1961:28). The potable water system, installed by engineers concerned with reducing disease by eliminating pathogens from the water supply, had quite different aims, therefore, in the view of the scientists and technicians installing it and in the view of the people using it. The same series of actions were acceptable to both the technicians and the people despite their dissimilar goals.

The same kind of desire for clear in preference to muddy and chemical-stained water led to acceptance of an improved water system in the Peruvian Indigenous Community of Muquiyauyo (Adams 1959:102).

Vicos. With the Indian population of Vicos living scattered over the lower altitude slopes of the estate, purification of the water supply is a problem of equipment for each household. One reason the Cornell Peru Project relaxed manorial restrictions against assigning house lots near the public square was the expectation that Indian settlement at the square might eventually produce a dense enough settlement to make installing a potable water system economically feasible.

In the meantime, the Project limited its efforts with regard to domestic water to installing a system of water pipes to provide running water in the quarters of Project personnel, the teachers' quarters, and the school, with some public spigots. The small system draws its water from an irrigation ditch and provides no treatment other than settling in a storage tank designed mainly to provide good pressure in the pipes.

The tank, when the system is working properly, does provide sufficient settling action to keep the running water supply clear of suspended particles. The Vicosinos show no reluctance to utilize the piped water and resort to the spigots as a matter of convenience. Thus the conversion to a potable system would require only the external decision and economic investment in filtration or other treatment.

The Cornell Peru Project staff has boiled its domestic water, but diffusion of this purification technique to the Indian population has been minimal.

Senapur. The Cornell Project in India intervened in a more direct manner than did the field workers at Vicos to provide the inhabitants of the community with purer water, but the motives of the residents for accepting the innovation differed considerably in some cases from the reasons for proposing it. What was introduced at Senapur was a hand pump. It was expected that water lifted from far below the surface would be safer for drinking purposes than water drawn from wells. The idea gained favor and momentum, and it was not long before over a dozen hand pumps graced the village. As a result of the Project's efforts, several were placed in hamlets or neighborhoods at central spots, where they could be used by those of the vicinity. One fact that came to light was that some members of high castes and the orthodox, who were more concerned about the ritual purity of water than its germ count, used the water from the pump for the washing of their persons and clothes but preferred to get their drinking water from the well, as usual. They reasoned that a length of metal pipe that was polluted by the touch of someone who was ritually unclean could not be purified, whereas a water jar could be scoured or destroyed.

The Project workers thought of the hand pump as a step in modernization. The wealthy family heads wanted them in their courtyards where their presense would be a convenience to women in purdah for washing and bathing and would make it still less necessary for them to leave the premises. The Project workers thought in terms of health and public convenience. It soon appeared that most of the wealthier families of the village wanted a pump for the exclusive use of its members as a mark of social status. It became a matter of prestige to have one, once one was installed at the home of a rival family. When this aim was achieved, there was little interest in seeing that pumps were installed for the convenience of the general public and the impecunious. Nevertheless, in spite of the clash in purposes, it meant some progress in improving and protecting the water supply. With the same ends in view, the Project helped to have a pipeline, fitted with taps, laid to Senapur from a tube well in a neighboring village.

Bang Chan. In the broad river delta and canal region of Thailand, there is not much to be done about purifying the watery environment. The villagers of Bang Chan during most of the year draw their water directly from the handy waterways; but in health terms, their habit of drinking tea results in the normal ingestion of water that has been boiled, while a preference for fresh rain water gives them drinking water during the rainy season that is certainly more pure than that derived from canals or rivers. In an environment which makes a multi-family or community water purification system impracticable, the solution is to maintain a supply of cheap tea while trying--with as little effect as in Vicos--to provide an understanding of the reasons for boiling ordinary drinking water.

Unilateral Technical Intervention

The general level of well-being in the population of a low-income area can often be improved by unilateral government programs based on the legitimate monopoly of power and conducted by technicians operating in terms of scientific medicine. This is the case most conspicuously when a disease-causing factor in the natural environment can be eliminated or reduced by technical action which can be carried out by a few experts and does not require individual participation to achieve success. Mosquito control programs are perhaps the clearest example of this kind of program, with malaria the most serious of the mosquito-vectored diseases which has been dramatically reduced by eliminating tremendous numbers of these insects.

On the Florida peninsula, city and town governments protect their residents against malaria and other mosquito-vectored illnesses by regular "fogging" with insecticides. Motorized pressure spraying machines force out dense fogs of insecticide as they drive up one street and down another, so that ornamental foliage and weeds, house exteriors, automobiles, and whatever else offers a possible mosquito breeding place or refuge is inundated with the poison.

There seem to be a variety of techniques for improving environmental sanitation, at least, without much direct comprehension of the preventive medical principles involved or need for people to perceive the importance to act in medical terms.

Senapur. Sometimes useful traditional practices can be reinforced and made more effective, even though the hygienic principles are not too much emphasized or even fully understood. In connection with a certain calendrical rite it is the custom to clean the house. Some families took this less

seriously than others and carried on their responsibilities symbolically rather than thoroughly. Yet, no matter how lax certain people had become, there was a feeling for the practice that could be seized upon. To kindle maximum enthusiasm and effort in the undertaking, the Project offered prizes to be awarded to the households which were judged to have best cleaned and repaired their living quarters. There is no doubt that the consciousness of competing and of being watched, compared, and judged stimulated a good deal of extra work and set a standard that carried over to succeeding years.

Vicos. Employees of the Peruvian Ministry of Public Health exercised the power of the state some time before the Cornell Peru Project began operations by a large-scale campaign of DDT application to combat lice that could transmit bubonic plague, which is endemic among rodents in northern Peru. Such teams visited Vicos and subjected Indian houses to a thorough application of DDT and the Indian themselves to the same treatment. Resentful though the people may have been at the occasionally rough handling they received from the public health workers during the campaign, they promptly recognized the comparative comfort of life without fleas.

The flea population was not entirely wiped out, so continued judicious use of DDT powder is required, but the Vicosinos have kept themselves remarkably free from these pests. In fact, in recent years when university students reared in the affluent and sanitized society of the United States have spent their vacation months living with Vicos families, the Indians have had to advise them on occasion that the way to avoid all those itchy red welts on the legs is to go to the store in Marcara and purchase a little pasteboard squeeze-box labeled DDT!

Bang Chan. Since the 1920's the Thai Government has supported a public health service of increasing quality. The medical profession, recruiting many women, and nursing, which recruits some men, maintain high standards of training whether at home or abroad. As in India and Peru, medical people tend to cluster in the cities, particularly in the great primate city of Bangkok in which are the best hospitals and most lucrative practices. In response, the government helps support good hospitals in the provinces, tacitly permits "moonlighting" for those who can thus augment their stipends, and recognizes medical training in various degrees, from the midwife with a short-course certificate through the Bachelor of Medicine to the M.D. specialist.

For the standardized curriculum of the primary schools throughout the nation the Ministry of Public Health provides sensibly worked out materials to impart some sense of modern

medical and health principles. Thousands of children have watched Thai and World Health Organization malaria eradication teams at their work, which goes on even in remote hill villages along the borders. But when the teams and the anopheles have gone, the children are little wiser than they were regarding any decline in the incidence of fevers. For the rural areas of Thailand, modern medicine is still much of a mystery, as indeed are traditional Thai and the long-familiar Chinese medicines. Thus in times of crisis, the technically competent government authorities feel they have little choice but to intervene unilaterally to the fullest needed extent that the local lay public will permit.

Bang Chan, in its proximity to Bangkok, has had experience of such unilateral intervention by the public health authorities. The villagers remember the outbreak of cholera in 1910 and how the disease simply ran its course with no outside help available. But when the disease broke out again in 1940, a public health officer was available, and only five persons died. Again, a little later smallpox struck and took a heavy toll, for few had been immunized against it. Through such experiences of death and pain, or escape, the people were left with some idea of contagion and some sense of hope in new means for combatting the dangers of disease. When an epidemic struck the local water buffalo in 1948, members of the Cornell Thailand Project staff were asked to short-circuit the district bureaucracy to seek more immediate help from Bangkok; and when help arrived quickly, villagers willingly had their buffalo inoculated and were grateful for the foreign intervention in their affairs.

Unilateral Intervention in a Diphtheria Epidemic. The effectiveness of unilateral intervention in the public health field may depend on more factors than simply the experience and willingness of those receiving aid. When diphtheria struck in Bang Chan in 1954, a situation defined by outsiders as a community emergency, the response to proffered help was conditioned by the season of the year, by established communication and settlement patterns in the village, by attitudes toward authority and the customary chain of command, and by the world view of Bang Chan. In the unilateral intervention which followed, the Cornell Thailand Project members participated actively, in order both to protect the children of the village and to help demonstrate the effectiveness of modern medical techniques (Hanks, Hanks, et al. 1955).

Within a week two children of neighbors on Bang Chan canal were stricken with diphtheria. One, treated traditionally, died; the other was saved by modern doctors. When this information was conveyed to the district office, a day was set for the immunization of children and announced to

their parents. About one-third of the available children were immunized by the public health officer. What factors determined the pattern of response to the call for immunization?

Answers to this query are discussed in terms of the social and cultural milieu of the community. By and large, the farmers of the community are individualists who usually pay little attention to disease in general and to children's diseases in particular. There are no modern doctors in the immediate area, and people utilize their services only when traditional medicine has failed. They were not alarmed by the appearance of the disease. It was the rice-planting season, and they were exceedingly busy.

With this background, few were disposed to send children for immunization even though they knew of the opportunity. Information on diphtheria and the immunization announcement were transformed into bald official directives and circulated through the headmen rather than the more customary channel for dealing with child health offered by the schools. Few learned of the death of a child or understood the danger of possible contagion from the disease. Most parents who did have their children immunized responded largely to the authority of the headmen, public health officer, and other governmental officials; they did not act out of a sense of danger.

In such a setting, it is the task of health education to increase understanding of modern medical concepts and not just to show how modern medicine may satisfy the expressed wants of the people.

Concepts of Sickness and Health. The concepts of sickness and its treatment in Bang Chan reflect the wide cultural diversity of southeastern Asia, where influences from China, India, and the Indies converge. Both traditional Thai, Chinese, and modern Western concepts are used to combat ill health. One may look in vain for an active quest of "good health" in the occidental sense. Sicknesses range from a vague series of essentially undiagnosed maladies to those whose symptoms are fairly well defined. Some diseases are attributed to malevolent spirits which attack unexpectedly for no particular reason or because taboos have been transgressed. In another group of sicknesses, attributed to sorcery, foreign objects are thought to enter the body by accident or malicious design. They cause intense abdominal pain which, under proper treatment, is relieved by passage of a foreign body with the feces.

Imbalance of the four basic elements--earth, wind, fire, and water--also produces disorder. The elements may get out of proportion so that fire dominates, producing

fever; or winds may blow upward instead of in a circle through the body, producing belching, headahces, and dizziness. Some diseases, characterized by inflammation and swelling in the head and neck region, afflict children only; these are called "sang" and are associated with temporary loss of soul or with astral confluences, so that a child born on Sunday, for instance, is more susceptible to red inflammation. Village practitioners also speak of malaria, typhoid, cholera, and smallpox, although the symptoms would probably be recognized only in the more advanced stages and certainly would not be understood in Western terms.

Distress due to organic disturbance is not clearly distinguished from other kinds of human misfortunes. Traditional doctors may use some of the same general cures for a woman suffering as a result of the disappearance of her husband as one suffering from rheumatism or spirit possession. A man who is the victim of false accusations from his neighbors may be doused with holy water much as if he were afflicted by pains in the legs; holy water cools the heat of emotional as well as organic upset. Indeed, a person with sufficient merit from good deeds in present and past existences is likely to avoid misfortune, so that moral considerations enter the picture as well.

Yet the near-Buddha is rare whose virtue will protect him from all misfortune. Most people must depend on foreknowledge, protective devices, or curing after the damage has occurred. Individuals facing a critical period heed the advice of astrology and the portent of omens. Others fearing attack by man or beast wear amulets or have protective insignia tattooed on their chests; needles inserted under the skin offer permanent protection from wounds; some women seek to minimize labor pains by a small tattooed device; but against those things where man is powerless, he can only repair the damage.

When misfortune strikes in Bang Chan, the people initially posit a mundane cause; only when difficulties become aggravated are more cosmic and less optimistic explanations invoked. Colds, coughs, constipation, and diarrhea may strike even the most virtuous; these ailments generally pass unnoticed. If symptoms persist, however, family members may recommend an all-purpose tonic from the Chinese pharmacist. In certain children's diseases, parents may decide to let a topknot grow on the child's head by leaving an island of untrimmed hair on its scalp. For continuous crying or brief losses of consciousness, ritual techniques may be used to induce return of the soul stuff. More disturbing symptoms, however, call for help from either a traditional or modern practitioner, depending on the presumed nature of the sickness. By and large, people go first to their own local doctors rather than to the more expensive modern doctors.

How long a patient will remain under the care of a given doctor varies. Optimally, cure occurs in a day or two, but confidence does not necessarily diminish if progress is slow. Except where cutting or injecting is deemed necessary by preliminary diagnosis, people tend to view modern doctors as a secondary recourse, perhaps to be sought out after two or three traditional doctors have been tried. As symptoms persist and anxiety grows, people solicit the advice of other friends who may have had satisfactory experience with another doctor. Rarely does the traditional doctor consult another traditional doctor of his own accord, although sometimes he may recommend visiting a modern doctor. These in turn may invoke other resources such as the modern hospitals of Bangkok. Then those who have submitted to some or all of these treatments without improvement or alleviation may blame sorcery or ponder the teachings of religion for consolation.

In Bang Chan approximately eight traditional doctors and about fifteen traditional midwives practice their skills but earn their living primarily as farmers. In the Minburi market center live the four persons the villagers call doctors. Only one has received a complete medical training and can be considered a first-class doctor. The other three have had less formal training. The first-class doctor, a nurse-midwife, and a dentist form the staff of the Minburi Health Center. Under the Ministry of Public Health, this organization makes diagnoses and referrals but treats only the less acute illnesses. One or two beds serve the critically ill until they can be transported to a Bangkok hospital. Fees are low, and treatment can be free. Despite its official status, the Health Center is less popular than the more friendly second-class doctors of the market place. These men diagnose and treat freely the less critical cases, although they, too, refer patients with serious complaints to the Bangkok hospitals. Frequently they state their diagnoses in terms familiar to the farmers; they administer injections wherever possible and tend to ask relatively high fees for their services.

On the side of prevention, one sanitarian is attached to the district office as public health officer. He is particularly on the alert for communicable diseases, conducting regular immunizations in the schools of the district and taking such measures as are necessary to combat a particular threat. A single death due to plague recently brought him and a special staff from Bangkok into action to exterminate rats and fleas in the market place. There are government programs for improving sanitation, but since he is a lone worker in the district, his time for health education is necessarily limited.

The Standing of Modern Medicine. Concepts of modern medicine such as deficiencies, infection, and disturbances of growth are little understood in Bang Chan. The idea that drinking water may contain potentially harmful substances is foreign. Yet there is little active antagonism to modern medicine as such. For many years the people of Thailand have accepted ideas and practices from different cultures; resistance to Western medicine does not arise from its foreign origin. Some regard surgery with apprehension because Buddhism forbids activities which threaten human life, but even this antagonism is disappearing as surgery continues to prove successful. Farmers go readily to hospitals to have lumps and growths removed. Stories are told in Bangkok of both patients and physicians who combine traditional and modern medical techniques.

The spread of modern medicine is slow because its ideas are strange and because people are slow to become alerted to the dangers of certain diseases. They have learned to fear cholera and typhoid, but not diphtheria. Moreover, children's sicknesses in general cause little alarm. The danger of diphtheria was recognized only by the families of the afflicted children. Nevertheless, previous contact with modern medicine facilitates acceptance of new ideas. The government immunization program in the schools plus the century-long activities of Christian missionaries equipped with Bible and smallpox vaccine have helped to implant the idea of preventive medicine. The people of Bang Chan have also accepted injections as beneficial. Indeed, a patient often visits a modern doctor anticipating an injection. But the farmers of Bang Chan do not yet distinguish between different kinds of injections; antibiotics and antitoxins are all the same as long as they come through syringe and needle.

Religious beliefs and attitudes also influenced response to the call for immunization. The Islamic hamlet responded more fully to the announcement than the Buddhist hamlets. In addition to this hamlet's greater integration, it is possible that Islam may offer a more favorable climate than Buddhism for the acceptance of modern medicine. Interview evidence indicates that Muslims make more frequent use of modern doctors than do the Buddhists.

For Islam the physical body contains both good and evil. Great stress is laid on purifying the body, and salvation consists in removing the corruption from both body and spirit. Buddhism, on the other hand, considers the body a source of contamination for the soul. One may purify the soul by prayer and discipline, but the body remains a continuous handicap. Thus, Islam not only heeds the body but in its concept of corruption possesses ideas congenial to modern theories of disease. In both religions, pain is a lesser evil than it is for occidentals, but Islam links pain with sin, which may be overcome by prayer, pilgrimage, or other means. For Buddhism, pain is in part the inevitable product of cosmic retribution for past misconduct.

Like the West, Islam distinguishes more clearly between the moral order and natural order of the cosmos, while Buddhism perceives a greater interdependence of the two. Furthermore, in Islam as well as in the West, man appears to be granted greater freedom to act upon his world. On the basis of such considerations, we would expect Islam to present a more fertile basis than Buddhism for the acceptance of modern medicine.

All the foregoing facets of Bang Chan culture combined to form the backdrop against which the call for immunization was seen by local people and to set the attitudes of the farmer who was suddenly told to have his children report for immunization. He was hard at work at rice planting during the critical transplanting phase of the community's basic subsistence activity. Sending children off in a boat meant cessation of work in the fields; it also meant disrupting a laboriously arranged cooperative work party. The Bang Chan farmer was heir to a tradition of individualistic rather than collective methods for coping with disease; disease of childhood were customarily regarded with relatively little concern, and his children were neither sick nor visibly threatened. His attitude to disease in general was essentially more passive than active, with Buddhism fostering a relatively fatalistic attitude toward the outcome of illness. He was unfamiliar with diphtheria and what it meant and not well informed on general concepts of contagion and immunization.

In addition to these aspects of Bang Chan culture that influenced the reception of the immunization call, immunizations were customarily given in school by a public health officer, not at a store, and information involving health programs for children was generally disseminated via the school system. The practical matter of how and through what channels information could and did reach people also contributed to the pattern of response.

V. STRATEGIC INTERVENTIONS IN ENLIGHTENMENT

Formal educational institutions have become an integral part of every modern nation-state for reasons we have touched upon in our introductory chapter. Each modern state finds itself in constant competition with other such units so that it maintains its independence or gains it through enlightened individuals massed in political movements, in industrial production units, in consumption categories, and in power organizations. Enlightenment is necessary to the modern state since sociological and technological changes have become omnipresent, so that knowledge has become required to deal with constant innovation simply in order to maintain a nation's relative power position in the world, at least in the cases of the militarily competing great and several of the minor powers.

One of the recurrent themes of modernization of underdeveloped areas appears, therefore, as the need for enlightenment. A nation's educational system is its prime machine for generating internal social, economic, and political change. Countries which invest heavily in education have a better development record than those which do not (McClelland 1966: 278). Power weakness may often be nothing more than lack of integration of unenlightened subsocieties inhabiting blocs of a nation's territory.

An unenlightened subsociety tends to be a relatively stable one in terms of conventional understandings. One of the dynamics of stability, to employ somewhat incongruous terminology, appears to be the correlation of wisdom and knowledge with experience. The longer an individual survives in a traditional society, the more time he has to learn how it functions and to interpret his personal experiences so as to capitalize upon them.

Modern industrialized society preserves this tendency, which seems to be a natural one based upon the nature of human culture and human brains, but it is characterized by quite a different dynamic making for cultural change and short-circuiting the correlation between age and knowledge. This dynamic is most clearly expressed in the operation of formal instruction, but it appears in many guises.

The rationalization of production, for example, allows for mass manufacture of artifacts of high utility at low cost, compared to handmade articles with comparable functions. Thus, the competition between the manufactured article and the handmade article tends to destroy the social position of the artisan. To cite a well-known example of

this process, we mention what happened to the elder men among the Yir Yoront aboriginals in Australia. These fellows traded local spears made from materials abundant in their coastal environment south into the continent in exchange for finished or almost finished stone axe heads. They possessed the skills to finish blanks they obtained, but, most importantly, they monopolized the stone axe trade and retained ownership of the green stone axe heads acquired by Yir Yoront. These useful artifacts they loaned out to their female and juvenile relatives, but the older men retained control of the green stone artifacts which were related to legend and supernatural power.

Then Protestant missionaries set up church stations in Yir Yoront territory and attempted to convert the natives to Christianity. They hired aboriginals to perform the many physical tasks required to set up and operate a mission station, and they paid off in steel axe heads. Brought up in a society whose members believed that a worker is worth his hire, the missionaries naturally disbursed axe heads to anyone who carried out tasks around the mission station, without regard to individual status in traditional aboriginal society. Thus, mere striplings who had not yet been initiated and polluted females acquired steel axes of their very own, so that they no longer needed to borrow a green stone axe from their elder male relatives. The comparative abundance of efficient steel blades tremendously devaluated the scarce stone axes and, with them, the status of their elderly owners who had formerly dominated Yir Yoront society. Sharp (1952) has remarked that the impact of steel axe heads on Yir Yoront society was so grave, as a matter of fact, as to constitute one of the key influences in breaking aboriginal morale and destroying belief in the traditional conventional understandings.

The rationalization of production in far-off English factories undercut the utility of the specialized knowledge upon which the dominant social position of Yir Yoront elders had been based and instituted a new order of social organization.

Something of the same sort happened on a lesser scale among the nomadic Siriono Indians in the Bolivian rain forest. Siriono social structure was far simpler than that of the Yir Yoront, social dominance being limited to the most skilled hunters who consistently brought home the most game. Handicapped by a limited technological kit, which included long bows not very well adapted to moving rapidly through the forest, Siriono hunters depended heavily upon skills in finding and following game and in wielding the bows and arrows they had accumulated gradually as boys and adolescents. Holmberg (1954) found that a man who was taken from the free-ranging Siriono as a child and reared as a plantation serf simply could not acquire the skills needed to succeed as a hunter with the native technology when he escaped and returned to his band as an adult.

Given a shot gun and a few moments of instruction, however, that same man quickly turned into the greatest of all Siriono hunters. He rapidly moved from the bottom of the social structure to near the top, with multiple wives attesting to his prowess as a provider. Again, the rationalization of production in industrial society that enabled the mass production of firearms and munitions whose operation was so simple that an illiterate Indian could master their use in a matter of minutes after observing someone else employ them allowed for the complete overturning of a traditional way of life. In this case, the process did not go to its logical conclusion, since only one gun disrupted the band's way of life and its owner ran out of ammunition after a time.

The formal educational process can be a steel axe head or a shotgun cutting at the roots of social prestige and power in a traditional society, especially one that is illiterate.

Without anticipating too much what we are going to say about our attempts at strategic interventions in formal education in India, Thailand, and Peru, let us cite briefly one kind of revolution in traditional power structures let loose by the school.

In the manorial subsociety of Vicos, age brought power and respect in a manner rather parallel to that among the Yir Yoront. As men grew older, they grew wiser in fact and by definition, as they accumulated cattle and clothing which were counted as wealth, which won respect. Experience counted most in this nonliterate subsociety. Then the Cornell Peru Project initiated measures which brought an effective Ministry of Public Education teaching program to Vicos. Boys actually learned to read and write in the expanding school, so that several were functionally literate by the time local autonomy was grated to the Vicosinos.

These literate striplings quickly assumed a significant power role in changing Vicos society that eclipsed in many respects that of their elders. As the elected councilmen untertook to direct their constituents at tasks involved in the community farm enterprise, disputes arose over equitable imposition of the labor tax. As long as the delegate and his constituents both had to rely on their memories to determine who did what, when and where, disputes were inevitable, and the delicate social fabric of local self-government was sorely strained. The newly literate youths were moved into the breach by the delegates themselves, who made the boys timekeepers of labor tax fulfillment. The written records the boys kept resolved the disputes and insured the equitable imposition of the labor tax. Since the boys could read the records and the workers could not, the youths moved immediately into a strong power position with high respect.

Within their own families, the newly literate sons were entrusted with crucial economic decisions that had formerly been the province of respected elder males. Since they could count, they could be trusted to make sure that Mestizo merchants were not cheating on change during commercial transactions. The newly literate boys could negotiate on cattle sales with the buyers in Spanish, and they could find out what the going market price was for steers, for potatoes, or whatever else a family might have to sell. Thus, the functional utility of literacy catapulted the newly literate striplings into the power and respect niches previously reserved for experienced oldsters.

Vicos

The Andean manor called Vicos in Peru was an excellent example of the culturally stable subsociety when the Cornell Peru Project intervened there in 1952. At that time, Vicos lacked an effective enlightenment process in that it lacked a formal educational institution that actually enlightened any students (Holmberg and Dobyns 1962:107).

Vicos had not had any formal instruction at all, so far as known, until the year 1940. On May 8 of that year, a Presidential Decree created a Mixed (i.e., Coeducational) Elementary School No. 13014 at Vicos. The wife of the Mestizo manorial overseer from Huaraz sought and obtained this government recognition and became the first teacher. According to Ministry of Education records, the serfs were much interested in change and sought education for their children at that time. Reportedly, seventy-nine students enrolled and fifty-three took the final examinations. Their parents erected a school building by means of community labor. The teacher was enthusiastic and awakened response in her pupils. She left in a short time, however, and her successors were interested only in receiving the salary assigned to the teacher's position. The school building remained unfinished as students gradually lost interest (Vázquez 1965a:57).

The Peruvian organic law of education at the time the Cornell Peru Project began operations at Vicos required private enterprises with as many "employees" as Vicos had to pay for schools for their school-age children. Thus, the public school operating in Vicos constituted one case in many of bypassing the basic education statutes in order to obtain a government salary for a local individual. The interest of teachers in such schools in their salaries rather than in teaching was reflected in the failure of the Vicos school to produce a single literate Indian, as far as is known, during eleven years of operation (Holmberg & Dobyns 1963:5).

When the Cornell Peru Project carried out a census of the Vicos population at the beginning of 1952, only thirty-nine persons admitted to having attended school (Alers 1965:442), despite the eleven-year history of the institution and the Ministry of Education records of an initial enrollment of seventy-nine pupils (Vázquez 1965a: 57). Taking the Project census figures at face value, 97 per cent of the Vicos population had not attended school when the Cornell Peru Project began. By 1963, that percentage had been reduced to 82 per cent even though the total population had increased during the intervening eleven years.

The rate of annual increase averaged over 18 per cent, so that the proportion of the total population receiving any schooling rose from only 3 per cent in 1952 to 18 per cent in 1963 (Alers 1965:442). This comparison indicates the marked difference between the 1940 establishment of a rural school rather typical of others in the intermontane valley where Vicos is located (Vázquez 1965a: 57) and the 1952 strategic intervention in the enlightenment process by the Cornell Peru Project. The time periods are of equal length, since the 1952 Project census recorded conditions after eleven years of formal educational effort and the 1963 census recorded conditions after an additional eleven years following the beginning steps in Cornell Peru Project intervention.

A significant part of the situation obtaining in Vicos a decade after a public school was formally established there was a traditionalistic fundamental assumption as to the nature of intergroup relations in Andean Peru. The Vicos Indians shared with their Mestizo neighbors a basic premise that Indians and Mestizos were inherently different in quality and worth to their common social structure. This view favored cultural stability, with Mestizo socio-economic and political dominance over the rural Indian populace. Manorial owners and managers in Andean Peru did not believe in general that educating their Indian serfs was either necessary or even desirable. Literacy and the other skills and knowledge gained in the classroom were viewed as a dominant group privilege, so Mestizos highly valued education for themselves but made access to formal education as difficult as possible for Indians.

The Cornell Peru Project scientific staff saw in studies of the dynamics of Western industrial civilization evidence of a functionally equivalent fundamental assumption with quite different social consequences. This was the fundamental assumption that every adult and sane member of a given society enjoys equal rights of citizenship under law (Holmberg & Dobyns 1962:107).

This general view of socio-political dynamics was reinforced by Cornell Peru Project theory at a different level. As the scientific staff succeeded in introducing new farm practices to serf family farm units as described in Chapter III, it recognized the danger that this success could prove ephemeral if an integrated program of change did not reinforce it with deeper Indian understanding of agricultural principles as well as practices.

In order for basic technological changes in agricultural production introduced by direct instruction to become permanently accepted and susceptible of future modification to meet changing natural and cultural circumstances, they must be thoroughly understood by the innovative farmers. At Vicos, this meant that nonliterate farmers had to be educated sufficiently to comprehend the rationale for techniques and technology they had learned to apply in a practical and probably rather mechanical way. Alternatively, the farmers had to be made literate so that they could learn for themselves the rationale behind the farm practices they were taught.

Such thinking fairly clearly implied a concerted effort to make the public school already established in Vicos a mainspring of cultural change and a source of enlightenment in the Indian population.

Enrollment. When the Cornell Peru Project initiated its strategic interventions in the enlightenment process in Vicos, one limiting condition was enrollment. The single teacher dealt with an enrollment of twenty boys. The first Cornell Peru Project innovation in a series of actions that together constituted an integrated program of planned change in the educational system and came to be a very strategic intervention was to increase enrollment and average daily attendance. Even elegant school buildings must house a sufficient number of students to justify teacher salaries in a productive educational system.

The power position of the patron of the manor might have been sufficient to force serf children to attend school. The Cornell Peru Project Director chose the alternative of leaving the decision to the child, in accord with local custom, but offering him inducements to attend. He reasoned that a rewarding experience with a formal educational institution fosters individual participation in the formal education process (Holmberg & Dobyns 1963:4-6).

The Cornell Peru Project Director offered school pupils a hot school lunch each day. Enrollment jumped to sixty students (Holmberg 1952:243; Holmberg & Dobyns 1962:108). This spectacular increase was possible because the Indian serfs were short on food because of crop failures stemming from their lack of technological mastery of their environment

and from local customs ingrained by decades and perhaps centuries of food shortage. Adults ate first in the serf household, and children received what they left (Vázquez 1952).

A significant factor in Vicosino attitudes toward school attendance was acute poverty and serf perception thereof. Parents felt that children should be working hard caring for their flocks and herds or helping with farm chores, on the one hand. Sending children to school required an actual cash outlay, on the other. Although the national government provides free public instruction, pupils have to obtain their own pencils, notebooks for the extensive copying of rote-learned lessons, textbooks, pens, and other school supplies. Peruvian school pupils are required, moreover, to wear school uniforms. Private schools, whether secular or operated by religious orders, require that their students appear for class dressed in distinctive uniforms, often quite sumptuous and expensive. The public schools throughout Peru have a standard uniform for girls and one for boys, with the manifest function (Merton 1957: 60ff.) of doing away with precisely the kinds of socio-economic distinctions between pupils the different school uniforms symbolize. The public school uniform requirement performs quite the opposite latent function of discriminating against students from truly poor families, however, because even the cost of the khaki "commando" uniform of cotton, drill cap, shirt with shoulder straps, pants, and shoes is more than many a peasant farm family can raise in cash.

The Cornell Peru Project endeavored to meet the most immediate objections to sending serf children to school in 1952 by purchasing supplies of notebooks, pencils, chalk, and even soccer balls, in addition to the bowls and cups and spoons required to serve the hot school lunch (Holmberg 1952:244). Comprehending that the Vicos population was extremely poverty-stricken, the teachers assigned there initially did not insist upon compliance with the uniform requirement, so that the economic dimensions of formal education came to be felt by the Indian families only in later years after the revolution in potato-farming practices was bringing in sufficient cash income to allow uniforms to be purchased.

Staff. One of the limitations on enlightenment in Vicos when the Cornell Peru Project commenced operations was the small size of the professional teaching staff. One third-category teacher met with the Indian students, who averaged fifteen in daily attendance.

The Project Director's solution to the limitation of low enrollment worsened the staffing problem in the short run by raising the average daily attendance far beyond the capacity of a single teacher, who had not been able to produce a

single literate child among a third this number. In the long run, however, the increased enrollment provided the justification for increasing the number of teachers assigned to the Vicos school.

The Cornell Peru Project petitioned the Ministry of Public Education through the parent Peruvian Indian Institute to obtain additional teacher posts for the Vicos school. Success crowned the petition, and the Ministry in 1953 assigned two additional teachers to Vicos. Representatives of the Cornell Peru Project acted in accord with the Provincial Education Inspector to obtain the nomination of a particular candidate for one of these two posts--the only occasion on which it entered into this administrative process at all (Vázquez 1965a:56). After this initial push, the Cornell Peru Project intervened only to petition further increases in the size of the Vicos school staff.

Increases in teaching staff at Vicos usually have been concomitants of reclassification of the school institution. At the beginning of the 1953 school year, the coeducational school was divided into a boys' school, with two trained teachers newly assigned to Vicos, and a girls' school, under the same teacher who was at work when the Cornell Peru Project began (Vázquez 1965a:57). At the outset, these new teachers displayed an enthusiasm that generated in the pupils a fairly good opinion of their classroom experience, even though their feelings remained mixed because of cultural barriers between Mestizo teachers and Indian students which were not breached. At the mid-semester break in 1953, an evening adult literacy class was authorized, with the Cornell Peru Project paying the teachers to instruct the militiamen on Sundays.

In mid-1954 the Ministry elevated the boys' school from first to second grade and then to prevocational, adding two new teaching posts in classroom and technical instruction. The prevocational classification became operational in 1955 with the assignment of three technical instructors for agriculture, for shop subjects, and for mechanics.

In 1957 the teachers sought and obtained Ministerial authorization for a kindergarten which would teach Indian pupils from Quechua-speaking households enough Spanish to facilitate their classroom studies in the graded years. This preschool program functioned for one semester and was then suspended. In 1959 it was informally reorganized, with the Cornell Peru Project sponsoring it until the Ministry reassigned a kindergarten teacher to Vicos. In 1960, however, this post was moved to Carhuaz.

The same year, 1957, brought the formal establishment of a nuclear peasant school at Vicos by Ministerial decision. The actual implementation of this decision, as a reclassification to a prevocational school, took additional time. The

nuclear school organization actually took effect in 1959 with the appointment of a principal and four technical specialists, reduced to three the following year. This final change in classification made the Vicos school the Central School in the nuclear peasant school complex and headquarters for the technical staff serving a number of one-or two-grade sectional schools in nearby settlements.

In 1959 the girls' school was merged into the prevocational school. By that time the teaching staff had settled into the pattern of a principal with four teachers of academic subjects and three instructors in technical subjects teaching five grades plus two preparatory sections (Vázquez 1965a:59).

Buildings. The building the Vicos Indians erected by community effort in 1940 consisted of one room, inhabited by the teacher in 1952, with a roofed front corridor where she held classes. This school physical plant imposed another type of limitation upon the enlightenment process. The Project Director's quick success at increasing enrollment and daily attendance merely worsened this situation.

Yet, the demonstration of the real possibility of increasing enrollment and attendance justified to the scientific staff the immeidate erection of classrooms and other school facilities able to house more students than could be crammed into the drafty and cold corridor. Under Peruvian law, the national government some years ago obligated itself to provide teachers to those settlements whose inhabitants constructed school buildings.

In the role of patron of the manor, the Cornell Peru Project Director was able to allocate some serf obligatory labor to school construction instead of to agricultural tasks. The power position of the patron was sufficient to construct buildings with obligatory serf labor. The Director was, nevertheless, unwilling to carry through the school building program entirely by authoritarian means. He wished to enlist immediate Indian participation in the interests of long-range community identification with the school and with cooperative development action. The manor foremen and the traditional socio-religious authorities offered their cooperation, and the heads of families joined in. When the Project sought a donation of twenty-five sun-dried bricks from each family, however, the serfs entertained serious doubts as to the sincerity of the strange new patrons. The Indians anticipated a request for the customary public labor party, which in theory turned out the entire population to execute public works. In practice, a few of the more skilled individuals usually worked, while the rest showed up to drink whatever alcoholic beverage was provided.

The Indians suspected that the twenty-five brick quota was designed to hoodwink them into cooperating in constructing a large extension to the manor house rather than a school.

They began to regard the local authorities as simpletons. When the Indians learned that the Cornell Peru Project was investing manor profits in the school buildings, their suspicions grew even stronger. They found it difficult to imagine that any patron would spend any of his profits on a school, since the traditional effort of the lessees of the manor was to extract the maximum profit. In self-protection, one of the native authorities finally sought a certificate stating that he had cooperated in erecting a school building and not quarters for the U. S. scientists in the Cornell Peru Project.

The suspicions of the serfs were not allayed on this score until General Armando Artola del Pozo, then Minister of Labor and Indian Affairs, personally inaugurated the first wing of the school as such on 20 July 1953 (Vázquez 1965a:52). The Minister's trip to dedicate the provincial school resulted from yet another in the series of Cornell Peru Project initiatives in Vicos education. Cabinet ministers in Peru seldom traveled outside the national capital, and it was an even rarer event for a minister to dedicate a new school. The joint Cornell University-Peruvian Indian Institute structure of the Cornell Peru Project allowed the scientific staff to persuade the Minister, who happened to be a native of the Department in which Vicos is located, to undertake the somewhat arduous trip.

The Ministerial inauguration of the buildings as a national public school finally convinced the serfs that what they had built really was a school for their children, strengthening their trust in the strange new patron. Once their suspicions were allayed and their trust in the gringo patrons were established, the serfs played a more enthusiastic role in completing the second wing of the school which was placed in service the following year (Holmberg & Dobyns 1962:108).

Personal Grooming. The Indian population of Vicos stood apart from Peruvian national society in 1951 not only in psychological set, but very visibly in dress and gait and hair styles. The free-swinging Vicosino walk that eats up the kilometers along mountainside trails to the accompaniment of merry whistling could not be soon or readily changed. The local costume was likewise not very susceptible to rapid change, although manufactured clothing has gradually replaced traditional homespuns. Hair styles proved more vulnerable to rapid change under the impact of a single strategic intervention forming part of the package of cultural innovation fostered by the public school.

In 1953 the Cornell Peru Project donated to the new school a complete barbering kit. The new teachers took charge of the equipment and taught adolescent students the elements of haircutting, as both a sanitary measure to reduce head lice among the school pupils and a social measure

to change Vicos hair styles in the direction of Mestizo models. The militiamen and night school students submitted to the clippers for social, rather than other, reasons (Vázquez 1965a:60).

Military Service. The power which the patron on the traditional Andean manor wields apparently is great enough to secure serf compliance with or evasion of national laws. Manor patrons generally have not encouraged serf compliance with the Peruvian compulsory military service law. This statute applies to all males except those exempted because they have fulfilled its requirements in school, where students receive regular lessons and exercises. Manor patrons generally have not encouraged serfs to comply with this statute, however, because they lose able-bodied young men at the peak of their physical strength. Conscripts are, moreover, exposed to ideas outside the estate which the patron considers dangerous to his continued exploitation of a population geographically and socially isolated from Peruvian national life. Serfs have fallen in with patronal policy in order to ingratiate themselves with the local wielder of power from fear of the unknown society outside the manor where another language is spoken.

When the Cornell Peru Project staff assumed the role of patron at Vicos, it sought to terminate local evasion of compulsory military service on the part of Vicos youths (Holmberg & Dobyns 1963:7). The Project Director did not bring patronal power directly to bear, but the staff made it clear that it did not sanction draft evasion. The Peruvian anthropologist carrying the main burden of research in Vicos sought to persuade young men to volunteer as conscripts by presenting themselves to the draft authorities instead of fleeing to the hills when press gangs appeared, as had been the manorial custom.

This Cornell Peru Project policy aimed at several goals in terms of changing Vicosino conventional understandings and the social status of these Indians in Peru. One major reason for encouraging compliance with national law was to alter the respect in which Vicosinos were held, or not held in this case, by the local Mestizo dominant group. Indian evasion of conscription reinforced the Mestizo stereotype of Indians as lawless brutes, outside the pale of decent society as unpatriotic criminals. The scientific staff anticipated that the dominant group stereotype would necessarily change if Vicosino youths stepped forward to comply with the national compulsory military service law and actually served in the Peruvian armed forces, the ultrapatriotic institutions of the country. Cognizant of the extremely low level of occupational skills and literacy and Spanish-speaking among the Vicosinos, the Cornell Peru Project scientific staff also reasoned that those young men who spent two years as army conscripts would at least learn to speak Spanish and to read and write, acquire the rudiments of personal hygiene in Western terms (including a filling and wholesome diet), gain the experience of wearing clothing other than scratchy homespun, and, with luck, become trained in a useful occupation.

Community Leadership. The Cornell Peru Project scientific staff proceeded at Vicos on the theory that the continuance of changes successfully initiated in a local subculture depends upon both local institutionalization and governmental permissiveness. The staff set about building competent local institutions, therefore, as well as providing a species of power umbrella for a period during which they might develop.

The Project staff in effect created local self-government institutions where none had previously existed in Vicos. The Project Director charged the Indian straw bosses for the manor with administrative responsibility by drawing them into discussions of work assignments and procedures every Tuesday, thus encouraging them to voice their opinions. He gradually made them responsible for decisions (Holmberg 1952:241). This leadership training seminar continued under successive field directors representing the Cornell Peru Project at Vicos with such success that by the end of the Project's sublease, when an expropriation degree was issued by the national government, the Indians were able to elect a council to govern Vicos. The Indians became de facto ex-serfs and semiautonomous under governmental tutelage when the Cornell Peru Project withdrew from its five-year-long role as patron.

Antecedent even to the planned seminar program for training Indian leaders, the base-line of Vicos as a manor conducted by Dr. Allan R. Holmberg and Mario C. Vázquez between 1949 and 1951 established a new pattern of social relationship between Vicosinos and outsiders. Living with Indian families, as any good field anthropologist would, Vázquez amazed Indians and local Mestizos alike. This act set him off from Mestizo society in the area by proving that he did not treat Indians as inferiors. Over seventy-five scientific investigators working with the Vicos population from 1952 to 1965 reinforced this pattern over and over again, to the discomfiture of dominant group members (Doughty 1965a: 15).

A brief account of the kind of behavior the scientific personnel injected into provincial intergroup relations will illustrate the ingenuity of at least some of the outsiders living briefly with Vicosinos in making clear their egalitarian treatment of Indian and Mestizo alike, with perhaps a balance of sentiment in favor of the Indian underdog. The Cornell Peru Project staff took undergraduate students from Cornell, Harvard, Columbia, Illinois, and other universities to the Callejón de Huaylas during several summers from 1960 to 1966. The students living at Vicos often admired the homespun Vicos costume and ordered garments woven for them. Usually the Vicos weavers were not able to complete these items until just before the students were ready to return to the United States. One very tall young man succeeded in placing his order soon enough to have his oversized pants,

jacket, and poncho delivered some time before his departure. He immediately began to wear his Vicosino-style costume, to the amusement of the Indians over whom he towered and to the discomfiture of Mestizos in the towns he visited with Indian companions.

The student and his Indian friends like best, perhaps, to relate what happened one day in the departmental capital city. The student had accompanied a group to the city and had driven a Project vehicle. He parked on the street and remained seated behind the wheel while his companions went off on errands. The spectacle of a Vicosino in full local costume driving a motor vehicle was too much for the local detachment of the national police force to believe, so one of the minions of the law approached and demanded to see the Indian's driver's license. The student respectfully handed the policemen an international driver's license. When the disconcerted policeman was finally convinced that the student really was a United States university student legally licensed to drive automobiles in Peru and wearing full Indian costume, he favored the student with a few choice remarks about his poor taste in clothing and retreated.

Sewing. As the public school system in Vicos reached full development in the late 1950's, it became apparent to the Cornell Peru Project scientific staff that the pattern of differential school attendance according to sex was firmly established at the ratio of nine boys to one girl enrolled. Because of the differential local evaluation of males and females, which resembles that in rural Indian villages and contrasts with that in rural Thai settlements, the public school seemed to be widening the gap between the men and women of Vicos.

Long after the Cornell Peru Project had taken the fundamental steps in its strategic intervention in the enlightenment process in Vicos, therefore, it launched an experiment in female education in 1960. The Project sought to involve Vicos women in the formal educational process by offering them instruction in practical skills directly related to their homemaking roles as locally conceived. The Project purchased a sewing machine and hired a bilingual seamstress from the nearest Mestizo trading town to teach its use to interested Indian women (Holmberg & Dobyns 1963:8). The seamstress hired worked with her mother sewing the clothing worn by Vicos women, who lacked the simplest sewing skills. Many of the Indian women already knew the seamstress because they had hired her to make their skirts or blouses, etc.

Consequences. The results of Cornell Peru Project strategic intervention in the enlightenment process in Vicos, successful as this was, illustrate well the time that is inevitably involved in changing the subcultures of previous social isolates when starting from virtually zero in terms of formal educational preparation. In terms of the most

general measures of change in enlightenment of Vicosinos, we have already mentioned that the eleven-year period between 1952 and 1963 saw the number of individual Indians claiming to have attended school at all increase from 3 to 18 per cent of the total population aged seven years or more. A good cross-check on the self-reporting of those listed in the census is the ability to speak Spanish, which increased from 2 to 17 per cent of the total population aged seven or older during the same interval (Alers 1965:442).

In terms of the measure of success in secondary school and higher education, the Vicos experience with the establishment of a primary school again well illustrates the time lag between strategic intervention and developmental results. Even though a public school had existed in Vicos since 1940, graded instruction started essentially from zero in 1952 and 1953. The first two years of change had to be spent primarily on teaching pupils sufficient Spanish to enable them to begin graded instruction.

At best, a primary school being established among completely unschooled people can add no more than one grade per year. In the decade of the 1950's Peru provided five years of primary instruction, so half the decade was required simply to initiate instruction at all levels. Once the full graded system of instruction had been set up, pupils from a hitherto subordinated population without previous experience with formal education faced serious psychological problems in entering secondary schools and technical schools offering training past the primary level.

A number of Vicos students have chosen to repeat various grades in order to assure themselves that they had really mastered the content before accepting promotion to a higher grade, and this pattern has been particularly significant in the final primary grade, when boys faced the prospect either of going outside their home community to secondary school in dominant group territory or of turning to farming in Vicos.

It was not until the end of the 1959 school year that the first Vicos schoolboy graduated from the Nuclear Peasant School. After the summer vacation, Felix Urbano Sánchez enrolled in a public secondary school in the Mestizo trading center of Carhuaz, thirteen road kilometers from the Vicos plaza, in April of 1960. He was the first Vicosino known to have attended secondary school.

This pioneer Vicosinos student happened to be an intellectual by nature and not only passed his first-year subjects in secondary school but performed well enough to win a scholarship. His success encouraged two other Vicos boys, who completed primary school in 1960, to enroll in the same secondary school at the beginning of the 1961 academic year. One of them had done well enough in the Vicos primary school

to enter secondary school with a scholarship. The bellwether effect of the first student's success was also reflected in the enrollment pattern in the Vicos primary school in 1961. For the first time, attendance in the fifth grade exceeded that in the third and fourth grades. This abnormal attendance pattern for Vicos resulted from a return to classes of earlier drop-outs who decided that they, too, might succeed in secondary studies since Sánchez had (Holmberg & Dobyns 1962:109).

This Vicos student graduated from the provincial secondary school late in December of 1964. Not only was he the first Vicosino to complete secondary school, but he also improved his scholastic standing enough to graduate fifth in a class of twenty-seven (Doughty 1965a:16), whereas he had stood thirty-ninth at the end of his first year. Thus he demonstrated very clearly that Vicosinos can compete effectively against Mestizos on their own grounds.

By 1966 a number of Vicos primary school graduates had matriculated in agricultural schools at Huaraz and Carhuaz and in normal schools at Jaén and Tingua, and one who attended a special combined secondary-normal school completed his preparation for rural school teaching and was assigned to Vicos as a member of its teaching staff.

The total number of Vicos students enrolled in secondary school still fell appreciably short of the proportion of one per fifty population (McClelland 1966:278), which was thought to be adequate for "rapid economic development." The Vicosinos studying in institutions of higher education fell only slightly below the four that a rate of one per 500 population would imply.

Such pioneering students from only the vanguard of much larger numbers if the Vicos population is eventually to become wholly or almost wholly literate as a result of classroom instruction. This is true of any population where formal education begins from scratch. Under such circumstances, the speed with which formal education can be introduced to a nonliterate population is, at least in large part, a function of the rapidity with which the value of formal education can be instilled in the still nonliterate sector.

The course of events in Vicos public school life illustrates the kind of change in conventional understandings that takes place when strategic intervention succeeds in transmitting the value of classroom instruction to the nonliterate sector. When the Cornell Peru Project initiated school expansion, no Indian serf at Vicos had had a rewarding experience with a formal educational institution, so far as could be determined. The hot school lunch program appeared to provide the first rewarding experience in the context of a formal educational institution for a significant number of students. This program by itself, while it tripled enrollment and attendance, could not attract more than a minority of the school-age children to the school.

Whole sets of long-established Vicosino values were actually antithetical to formal education. The serfs believed strongly in what can be termed a "muscle culture." They valued hard work, thrift, early responsibility, and traditional ways of performing agricultural tasks which were the main activities of the population.

At the same time, the social system in which the Vicos serfs lived frustrated them sufficiently to keep them desirous of changes for the better in their social and economic status. They recognized, as a result of repeated frustrations in their own lives, the value of bilingualism in Spanish and Quechua and of the ability to cipher. Such skills protected Indians dealing with the Spanish-speaking commercial world outside the manor. So Vicos parents were quite willing to send sons to school to learn such protective skills.

Parental shortcomings in understanding the nature of formal instruction and learning reflected time and again the relationship between the speed of enlightenment and the comprehension of how the educational system works among nonliterate parents.

One traditional Vicos value cut the potential student body virtually in half along sex lines. Prevailing sentiment defined and continues to define the protective skills of bilingualism and mathematics as desirable only for males, who are assigned the primary responsibility for dealing with the exterior Spanish-speaking society (Holmberg & Dobyns 1963:6). Enrollment in the enlarged Vicos Central School averages 90 per cent male and 10 per cent female year after year (Vázquez 1965a:63). Stated in somewhat different terms, by 1959 approximately 70 per cent of the school-age boys were attending classes, compared to only 6 per cent of the school-age girls (Alers 1965:441).

A traditional manorial behavior pattern also handicapped Vicos students and slowed the learning process. Nonliterate parents could not comprehend the significant role which continuity of attendance plays in learning. They tended to equate attendance at school with manorial work, in which any adult family member might fill in for the family head nominally responsible for carrying out assigned tasks. The serfs also defined the protective skills of bilingualism and mathematics as highly desirable for only one member of a family, who could function as a sort of emissary to the Spanish-speaking commercial world. So only one child among several was sent to school at one time, but families often rotated siblings in the classroom.

As more and more Indian children attended class and perceived, however dimly, the dynamics of formal learning, they managed to communicate some of their perceptions to

their parents. More importantly, probably, family experience with boys who stayed in class long enough really to acquire the protective skills of bilingualism and mathematics encouraged the nonliterate adults to take a direct personal interest in the quality of education their children received in the Vicos school.

The first adults to exhibit a direct concern over the local school and its operations were the few Vicosinos who had fled from the manor in former times and who returned as word of the Cornell Peru Project spread. Their experiences in learning Spanish and, in a handful of cases, in becoming literate on coastal plantations had taught them the value of formal education, and they sought a better education for their children than they themselves had received.

The second group of adults taking a direct interest in school affairs consisted of the young men returning from two years as Peruvian army conscripts. These veterans formed an important body of adult supporters of formal instruction and modernization. Their experience outside Vicos reinforced the formal educational system in Vicos. The emotional torment they suffered having to learn Spanish "from the fists of the sergeant" motivated them to insist that their younger brothers go to school to learn Spanish before going into military service, despite local customary permissiveness toward children.

The elected delegates who assumed the responsibilities of local self-government in 1957 successfully directed a community farm enterprise on the same fields formerly exploited commercially for the patron. This large-scale business realized a profit of more than $5,000 annually. The council shifted from the Cornell Peru Project policy of local reinvestment to a plan of banking profits in interest-drawing accounts so as to save capital toward land purchase.

The improving local economic situation attracted back to Vicos a tide of migrants with many years of experience elsewhere, strengthening the contingent of adults favoring formal education, as well as providing a leaven of individuals experienced with local government tasks in the directly administered areas of Peru. This reverse migration brought to Vicos one key community farm enterprise leader (Holmberg & Dobyns 1963:8). This gentleman, when a deputy in the Peruvian parliament taxed the Indians for still chewing cocoa leaves, asked the legislator why he had just lit a cigarette after a recent issue of the Spanish edition of the Readers' Digest reported that smoking caused cancers (Doughty 1965a: 16). By 1961, sixty-eight persons were known to have returned to Vicos from areas to which they had emigrated. The thirty family heads in this number (Vázquez 1963:98) comprised 6.5 per cent of the total number of families enumerated in 1963 (Alers 1965:425); thus this was a somewhat larger proportion of the 1961 total.

The leaders trained in Vicos and outside proved their capacity to turn a large annual profit by utilizing the human and natural resources available with the skills and knowledge acquired during the five years of Cornell Peru Project administration and later reinforced by the public school staff, agricultural extension agents from the Interamerican Cooperative Food Production Service, and officials of the Peruvian Agricultural Development Bank and of the Ministry of Labor and Indian Affairs.

The final tenure reform came only in 1962, with a down payment paid early in April and final documentation completed with presidential approval on 13 July. Meanwhile, the experience of successful self-government and economic enterprise on a large scale had instilled a significant degree of self-confidence in the acting and former members of the elective council in Vicos. As councilmen completed their terms of office, they passed into an informal body of elder statesmen, advising incumbent councilmen and ready to provide leadership in almost any area of community activity.

By 1961, the adult population, albeit still overwhelmingly nonliterate, had developed a sincere concern over the operation of the Vicos elementary school. This concern was openly expressed in a community effort to have the Central School principal transferred away from Vicos, even though he was one of the two pioneer teachers assigned to the new school in 1953 and had commenced his tenure there with much enthusiasm and impact. The parents felt that he had gone stale, however, by 1961. They charged him with permitting his pupils to play and otherwise waste their time in the classroom. They also charged him with dishonestry in collecting not only his basic salary but an additional fee for a night class for adults whom he did not teach, and they expressed doubts because the principal had not rendered an accounting for profits realized on fields assigned to the school.

Vicos dispatched a delegation of six men, drawn from the corps of elder statesmen, to the national capital to intercede with the Minister of Education after the parents seized the keys to the schoolrooms and locked the teachers out at the beginning of the term. These actions symbolized the fact that the value of formal education had indeed been accepted within a decade of the strategic intervention of the Cornell Peru Project (Holmberg & Dobyns 1962:109). The delegation did not talk to the Minister but did discuss the matter with the Director of the Bureau of Fundamental and Adult Education, which administers the nuclear peasant schools in Peru. The Director upbraided the Indians for their actions, but within a relatively short time the principal was promoted to a post in the provincial inspector's office and a new principal was dispatched to Vicos.

Perhaps the most significant aspect of this 1961 Indian movement to oust the Central School principal was its eminently Indian character. Historically, Vicosinos had joined in some Indian protest movements, but apparently always in response to dominant group initiatives and following Mestizo leadership (Barnett 1960:88-89, 94-95, 153-156). By 1961, the therapeutic experience of responsible democracy (Dobyns 1965:171ff.) seems to have prepared the Vicosinos to recognize a significant issue in their own community and to act effectively upon it. So far as we know, their school lockout stemmed from experience with strikes on coastal plantations (they termed their action a "strike"), and they dispatched the delegation to Lima following their models of commercial dealings, without Mestizo participation.

The comparatively late Cornell Peru Project experiment in female education achieved virtually instant success. The classes started by a Mestiza seamstress from a nearby town attracted classes of sixty women, who learned how to sew on the foot-treadle-powered machine, how to crochet, and at least the elements of cutting clothing from patterns.

After the first sewing course was successfully completed, enrollment doubled for a second course. A social work student from the Catholic University who initiated a study of the program became personally committed and began to teach the women to sing, read music, and a few words. Within a short time, the government of Peru integrated this instructional program into its staffing pattern, purchased half a dozen more sewing machines, and boasted of the program's success in its periodic reports (Román 1965:44). Enrollment reached 167 women in three classes in 1963 (Román 1964:116).

Rankhandi: Change in Education[1]

The expendable resources (savings, loans, and credit) of an underdeveloped country determined to improve its economic and social conditions are always meager, compared to the needs and ambitious plans that exist. How much to spend on each economic and social endeavor in order to stimulate maximum response and growth therefore becomes an important and often hotly debated issue.

Recently it has been argued that the best investment an underdeveloped country can initially make is not in material inputs but in education, since efficiency and productivity in labor and wisdom in direction, planning, and management rest so completely upon the drawing out of capabilities and on the knowledge of materials, techniques, machines, and organization that come with increased training. Consequently, there is much discussion about the place education should have in the allocation of scarce resources.[2] Some of the studies bearing on the subject are rather abstract, and most deal with national figures and movements. Therefore it has

been thought useful to introduce a case history, to take a closer look at how and why an educational institution takes root in a specific locality of an underdeveloped country, to consider to what degree it constitutes a strategic intervention, and to trace its history and influence. The location of the educational center that we shall consider is in northwestern Uttar Pradesh, India, in a large village about 95 miles north and slightly west of the capital city of Delhi. It began as a junior high school. It now boasts an impressive and modern school, which carries instruction from the sixth through the twelfth grades. At present, therefore, it is an intermediate college, or intercollege. The creation of this school is an interesting example of strategic intervention by authorities determined to advance education and of local response.

Beginnings. It is well known that in the glow and enthusiasm accompanying India's independence, politics and plans for development were very much interwoven. The National Congress Party, which had led the struggle against British rule, had made very substantial promises concerning reforms in education and in social and economic spheres in general which would follow independence. One of the most vocal of these interpreters of Congress Party aims for rural regions was Thakur Phool Singh, a forceful and influential Congress worker of the north Indian State of Uttar Pradesh, who entered the race for a seat in the State Legislative Assembly from the Deoband constituency. The village of Rankhandi was located in his political district, and his campaign brought him to this populous and sprawling settlement, where many members of his own Rajput caste lived. Rankhandi received Thakur Phool Singh cordially and supported him strongly in his campaign, which ended in victory.

The new legislator, who was soon to be named Deputy Commissioner of Planning for the State, had reason to feel that Rankhandi was an important center of his political strength in the countryside. He was also aware that it was not considered a very progressive village. Its drainage, sanitation, health, roads, irrigation facilities, agricultural methods, and agricultural productivity left much to be desired. Rankhandi and the villages surrounding it were particularly deficient in educational facilities. Though it was relatively prosperous and seemed able to support education at a more advanced level, Rankhandi's educational institutions were limited to a deteriorating Sanskrit school, or pathshala, and to primary schools offering instruction only through the fifth grade. As a result, illiteracy was high, and few residents of the village were prepared for any calling other than their traditional caste occupation or employment on the family farm. Thakur Phool Singh resolved that the center of his political support should also be a focus for new progressive accomplishments, and he determined to begin with education.

He discussed his hopes and plans with the chief government officer of Deoband, the subdistrict in which Rankhandi lay. Because he knew that this man, Munshi Singh, was admired and trusted by the villagers, he asked him to go to Rankhandi and see what could be done about arousing enthusiasm for a junior high school (grades six through eight) to be located in the village. Munshi Singh was cordial to the idea and, in December, 1948, went to Rankhandi to discuss the matter with the village leaders.

Even though the initiative was taken by government officials who were trying to put into practice the postindependence socio-economic plans of their political party, the time was ripe in this locality for a favorable response to such an appeal for more activity in the field of education. The complacency of the most powerful group in Rankhandi, the Rajputs, had been shaken by land reform movements which threatened to put a ceiling on landholdings which a family might own and which provided for the transfer of title of land from the absentee landowners to long-time tenants. They had begun to realize that their sons should have some alternative to farming and some means of gaining access to positions in government and industry. They knew that this depended on a much better educational start and atmosphere than was being provided. Consequently they gave Munshi Singh a sympathetic hearing.

Munshi Singh suggested to them that the funds and facilities which were being used for the Sanskrit pathshala be utilized, instead, for a junior high school to be run along secular lines. The pathshala had its friends and defenders in the community, however--persons who had graduated from it or who did not wish to see a symbol of religiosity disappear from the village. It was decided that a new school could be launched and supported without sacrificing the pathshala. Munshi Singh was given assurances that plans for the new school would be laid and the necessary funds would be raised.

During the year that followed, the matter was discussed throughout the village. Prominent men of nearby villages whose boys would have access to the new institution were invited to join in the planning and the fund-raising. The Rankhandi landowners agreed to an assessment based on the amount of land owned per family. Neighboring villages pledged substantial contributions. Thakur Phool Singh was delighted with the sum raised, about 18,000 rupees (approximately seven rupees equals a dollar at the present rate of exchange), and with the general response and promised that he would bring to Rankhandi no less a personage than the Chief Minister of the State to make the formal announcement about the projected school.

Chief Minister Pant's appearance in the village occurred on January 6, 1949, about a year and a half after Indian independence had been declared. The site of his announcement

about the new plans for education was symbolic and prophetic. On the southern fringe of the village stands an old Muslim tomb to which Hindu and Muslim women of all castes come with their offerings and prayers. Through the centuries, the pir, or Muslim saint, who lay buried there had become a kind of patron of Rankhandi, a symbol of village unity that transcended religious, caste, and factional divisions. Still, like the Sanskrit school situated nearby, the pir was also symbolic of the old order and was considered by secular-minded and younger Indians to stand in the way of social and economic progress. And it was to this more secular kind of progress that Pandit Gobind Ballabh Pant, Chief Minister of Uttar Pradesh, addressed himself in the clearing by the pir's tomb, as he urged the people of Rankhandi to build a new Western-type school in their village.[3]

This urging, since matters, as we have seen, were understood and well planned in advance, was only ceremonial, as was Pant's acceptance and return of a purse presented to him by village leaders. The purse contained the sum which had already been collected by the villagers toward the establishment of the new school.

Two days after the public meeting a school committee was formed and charged by Thakur Phool Singh with the task of finding a principal for the projected school. The search lasted for six months. On June 18, 1949, the president and secretary of the committee traveled to the district of Meerut, approximately 50 miles south of Rankhandi. There they contacted a prominent family of that area, well known to the relatives of the secretary's wife, who came from a nearby village. First they made their offer to the eldest son of this family. When he was unable to accept it, they turned to the younger son, who had just completed his education and was prepared to enter the practice of law in his father-in-law's firm. Although he was not eager to change his plans, Sarju Singh (this is the pseudonym which will be used) consented to pay a visit to Rankhandi.

On June 25, 1949, Sarju Singh was met at the nearby railway station by the president and secretary of the selection committee. They showed him around the village and introduced him to some of its leading residents. They even took him to the Sanskrit pathshala, or school, which some of them still hoped could be transformed into the new institution. Sarju Singh was impressed by the size of the village--he was told Rankhandi had a population of 5,000--and by the enthusiasm of the villagers for the new school. The men who had invited him, as well as almost all the prominent people he met, were members of his own Rajput caste.[4] Thus, although an outsider, he was treated fraternally, in addition to being shown the respect due his education (he held a degree in commerce and a law degree). Yet, when he discreetly inquired about the 75,000 rupees

which he had been assured were already pledged for the new school, no one could show him any positive record of it. His hosts did not even produce the initial sum collected which had been presented to Chief Minister Pant. Actually, the money was quite safe. It had been lent to a sugar cane co-operative so that it would earn interest until needed.

Sarju Singh left Rankhandi with many misgivings. His elder brother, who, by this time, had made further inquiries, provided him with additional doubts. Rankhandi, he said, was notorious in the whole district of Saharanpur. Some of its leading Rajput families, in past generations, had had the reputation of being cattle thieves. During the nineteenth century it had been referred to in some quarters as a "criminal village." Furthermore, the prospects for the school looked bleak. It would take many years to develop. Sarju Singh's brother warned him that he would ruin his life by accepting this offer.

The young man did not ignore this warning. For the next few months, he tried to extricate himself from commitments that the Rankhandi villagers felt he had made to them. He sought to find someone to go in his place. When news of this reached Rankhandi, a delegation was sent to him. They pleaded with him to accept the position for a trial period. They begged him to do it "for the sake of the country." He was particularly vulnerable to this patriotic appeal. An active member of the Congress Party, he was fired with enthusiasm for nation-building and social reform. At length he consented to become principal of the projected Rankhandi school, at least for a year. This decision, as it turned out, was a crucial one, both for Sarju Singh and for Rankhandi.

Before the arrival of Sarju Singh, Rankhandi's educational facilities consisted only of a boys' primary school and the Sanskrit pathshala previously mentioned. The path shala had been founded about half a century earlier by an already legendary village reformer, Sucheet Singh, who, as a member of the Arya Samaj[5] religious sect, was anxious to revive an interest in Sanskrit among the young. Because of the views of the first schoolmaster, however, it had emphasized orthodox Hinduism. Now it was in the hands of a proponent of the Arya Samaj, and the doctrinal approach was somewhat relaxed. It is thus rather paradoxical that this institution, which came to symbolize "Hindu tradition" and "the old order" in its confrontation with the "modern" school, was itself the product of the previous generation's "modernism," for the tenets of the Arya Samaj were considered quite daring in some circles. The pathshala's admission of non-Brahmans to the study of Vedic lore was, for instance, a radical departure from tradition, bitterly opposed by the orthodox. One informant recalls that many Brahmans were obliged to abandon their traditional priestly calling and take up agriculture, teaching, or clerical work as the result of Arya Samaj pressure.

Yet in the new context all this was forgotten, and the pathshala came to be regarded as the stronghold of Hindu tradition. Most of the villagers felt that the kind of education imparted by this school could not prepare their sons to compete in a changed world. The student body had declined drastically in recent years. "Nobody wants this sort of lopsided education any more," declared one village elder, who had himself helped to found the pathshala half a century earlier. Now he favored its conversion into a Western-type primary school. Another villagers nostalgically hoped that the pathshala would be preserved by the government as "a memorial to the older generation." Sarju Singh expressed the belief, shared by an increasing number, that "the pathshala will go automatically some day."

Nevertheless, the principal tried to mollify the head of the pathshala for the time being. He expressed willingness to have the two schools combined and to allow the head of the pathshala to direct the joint educational effort. The swami in charge of the pathshala, however, was by no means resigned to his institution's absorption or obsolescence. While agreeing to accommodate the teachers and students of the new school on the pathshala's premises for the first few months until other quarters could be found or built (with powerful village leaders backing the new project, he had little choice), the swami fought the new school and its principal with all the weapons at his command. He began by spreading rumors that an English-type education was immoral and would corrupt the youth of the village. He manipulated village factions in order to oppose the backers of the new school. When this did not succeed, he resorted to more drastic means and began to throw doubts on the principal's character. Two incidents nearly caused a crisis of confidence in the new school during the first months of its existence. Sarju Singh described them as follows:

> The swami had three bullocks on the place. After a certain night on which one of the bullocks was stolen, the rumor went around that I had stolen the bullock. A few days later someone broke into a wooden box which belonged to the swami and in which he kept his money, along with some religious books. These books were taken, though the money was untouched. These books were taken to the fields and half burned. It was done by the swami just to create a bad impression in the minds of the people against me. Even my closely related friends began to have suspicions about me and the school.

Tension grew until it threatened to erupt into physical violence. Sarju Singh recounted:

> The swami was getting impatient to get me out [of the pathshala buildings]. One day I came to the school and found that the benches on which the boys were to sit had been thrown out of the shed in which we had the school and cattle had been tethered there during the night. He refused to let me put the benches inside the building. The swami had brought his teachers and students, and they had sticks and staves. My students were there, and there would have been violence. I sent my boys to go and have morning prayer, but they didn't obey the order, even though I asked them twice. A student said, "We can't go, leaving you alone." The students told me that the swami had asked his students to come armed for a fight. I myself was expecting that there would be a fight, but even so I smiled and said to the swami, "You are a holy man and you have seen the world, and even then you are going to commit a mistake like this. It will ruin the pathshala as well as the school, and, besides, your boys will be beaten." I told him to go to the village and ask the people to come and decide the matter because they had asked him to let me use the room for a school room. He came with twenty people, and a compromise was reached. My school remained there until October, 1950.

This incident marked a turning point in the struggle between the old and the new education. Thereafter, the fortunes of the pathshala declined still more rapidly. An added factor in this was the suspicions which many villagers entertained of the swami's financial dealings. He had failed to account for the proceeds from the pathshala lands for quite some time. There was no committee or other organization to supervise the affairs of the school, and rumors began to circulate that the swami, a Punjabi, was misappropriating funds to send to his relatives in Punjab. It was only because of the great secrecy maintained by the swami, according to one informant, that no one was able to verify this. The swami's reluctance to cooperate or amalgamate with the new school, it was alleged, was mainly due to his unwillingness to open his records and accounts to public view.

Donations formerly made to the pathshala began to be diverted to the new school. Five years after the establishment of the new school the enrollment in the pathshala had decreased from about forty-five to twenty-five. The enthusiasm and voluntary labor which, twenty years earlier, had built its present facilities were now being applied to the paving of roads and other secular development projects,

many of them centered in the new school. One of the teachers of the pathshala volunteered a number of reasons for the decline of Sanskrit schools. First of all, he said, Sanskrit was now being taught in secular schools. More schools were being opened in the villages. Parents no longer appreciated the virtues of religious education. Some of the students could not endure the rigorous life (simple diet, beds of wooden boards, etc.) prescribed by the school. Most important of all, graduates of this kind of school could not find jobs in the new society. Both defenders and detractors of the pathshala agreed that its prospects were poor and that the future favored the new Western education.

Another gesture of resistance from the old order came when, soon after the establishment of the new school, the village assembly, or panchayat,[6] decided to transfer to the new school land belonging to the shrine of the pir and used for its support. The custodian of the pir, who cultivated some of these lands for his own benefit, let his objections be known. These were easily overruled by the village leaders, however, as were those of cultivators who held some part of the pir's lands in trust and were farming them. The sarpanch[7] described the proceedings thus:

> When the land which was in the name of the pir was transferred to the intercollege, the priest raised an objection. But when the village panchayat decided about the transfer of this land, he could not say anything. He kept quiet. The panchayat has now legally transferred the land to the intercollege. Since the panchayat took the decision about the transfer of the land, it was not necessary that either the people possessing the land belonging to the pir or the person in charge of keeping up the pir sign the resolution. The panchayat gave possession of the land to the intercollege, and now it is being cultivated by the college.

This cavalier disposal of religious lands for secular purposes would have been inconceivable a few generations earlier. The fear of offending the pir had been great. One elderly informant recalled that when oaths were taken before arbiters in his youth, it was the pir that villagers would swear by, whether they were Hindu or Muslim, for the pir was regarded by all as a guardian deity of the village. When Rankhandi escaped the ravages of an epidemic or blight that devastated surrounding areas, it was at the shrine of the pir that the villagers would offer their thanks. The

custodian and his family, though of relatively low caste, were respected by the villagers and lived well from the fruits of the land donated to the shrine as charity. There was a story of the pir asserting his power over the great Hindu god, Shiva, and breaking a wall of a recently built Shaivite temple to demonstrate his superiority. Another story has the pir compelling the dreaded smallpox goddess to avoid Rankhandi. Still another, dipping into recent history, represents the pir riding out on a blue horse during the Indian Mutiny of 1857 to protect the villagers from artillery.

All this had changed. The influence of the Arya Samaj had significantly weakened belief in the pir, at least among males. Sucheet Singh, the founder of the pathshala, had urged his fellow villagers to transfer their devotions from the Muslim saint to the Hindu pantheon. It was he who suggested that they build a temple to Shiva, advice rather inconsistent with the original teachings of the Arya Samaj, which attacked all idolatry, Hindu as well as Muslim. As is often the case, the original doctrines of the reform movement reached the village in a somewhat diluted form. At present it is mostly women who continue to worship at the shrine of the pir. The change in this godling's status was pointedly illustrated by a dialogue which took place inside the domed shrine between a young cowherd and a girl who had come to bring an offering: "Why do you worship a Muslim godling?" the boy asked, reclining irreverently on the saint's tomb. "Because he has power," the girl replied, and then added as an afterthought, "and because all the world believes in him." The boy laughed and inquired, "Do you think you are all the world?"

Since relations with the head of the pathshala were strained and uncertain, the financing of the school and its building program now became the immediate objective of the principal and the sponsors of the new school. To insure a steady income, the lands transferred from the pir's shrine and additional acres donated by villagers were used to establish a school farm. A manager to run these farm lands was hired, and he was authorized to secure whatever local help he needed. Lands which could not be farmed by school employees were rented. Tuition and fees, though they were modest (a little over ten rupees a school term), were a dependable source of income. As the student body neared the five hundred mark, this became a respectable amount of revenue.

The District Board, which quickly acted to recognize the school, made it an annual grant of 1,200 rupees, which was raised to 3,000 rupees as soon as facilities, staff, and student body size warranted it. As part of its plan

to encourage education, the government of the State of Uttar Pradesh decided to make a grant for improvements to one school of each of its districts annually. The new Rankhandi school was the first institution in Saharanpur District to receive this award, which came in two installments and reached the handsome total of 15,000 rupees. It had been the custom for any family of the village which gave or received a marriage dowry to donate 10 per cent of the sum involved to the pathshala for its maintenance. Now a council of prominent villagers proposed that these contributions be given instead to the budding institution. Soon this became the standard practice, and, as a result, a substantial sum was guaranteed yearly to the new school.

Two Punjabi refugees had established a brick kiln on unused village common land at a place where the clay was particularly suitable. They utilized local labor, a practice of some benefit to the village; but the brick, which was in much demand by the villagers, was said to be none too good and high in price. The local people were further irritated because the operators of the kiln were unwilling to extend them much credit. As another act to aid and finance the school, the village assembly reclaimed the land, ousted the Punjabis, and donated the land to the school with the understanding that the making of bricks would continue on the site under school auspices.

In order to improve the kiln and re-establish the industry, capital was needed. The District Planning Officer, a State official, let the principal know that the needed 15,000 rupees could be borrowed from the State government. The loan had to be secured, so a number of prominent villagers mortgaged their land as security for the loan. This is another instance of initial intervention and aid by government, backed up by local aid and resources. The kiln proved to be a most lucrative venture for the school, netting a profit of 10,000 rupees in the first year of operation and 14,000 rupees in the second.

Since sugar cane is the main cash crop of the area and one that cultivators with any sizable acreage grow, it was made a source of revenue for the school during the initial period. Each cultivator contributed according to the weight of the sugar cane he sent to the sugar mill. Later, on complaint of the large sugar cane growers, this tax was discontinued, and an assessment of 30 rupees for each plow used in cultivation was substituted. Large donations were received from the treasuries of the sugar cane growers' cooperatives, however. After it became apparent that the school kiln could be depended upon to yield a large, steady income, the principal suggested that both the cane tax and the plow tax be abanded. He disliked dependence on the wealthy landowners of the community, something that he feared would ultimately involve the

school in village quarrels and factionalism. He much preferred income from industries owned and controlled by the school. Moreover, he felt that too high a percentage of the surplus funds of the cultivators was being absorbed by the school and that other worthy community needs were being neglected.

Another project that was expected to earn funds for the school was a nursery in which seedlings for the farmers of the vicinity were to be produced. This was not taken too seriously at first. The farmers even ran their bullock carts over the land set aside for the nursery rather than take a longer route to their destinations. The nursery ran at a loss at first and for some time was pointed to as one of the failures of the school and the principal. Sarju Singh persisted, and at length the nursery began to show a modest profit.

Donations from wealthy well-wishers and "patrons" helped to swell the school's coffers, too. Individuals who originated in Rankhandi or vicinity but who were now employed in government or industry and lived elsewhere were contacted and contributed liberally. Successful and prominent men of the area, such as the manager of one of the sugar mills, rallied to the cause with handsome donations, as well. The school has a small Executive Board but a very large General, or Managing, Committee. All members of the General Committee-and they include most of the prominent villagers of Rankhandi and a goodly sprinkling from surrounding villages, too--are expected to be "patrons" and to contribute at least 12 rupees annually to the support of the school.

A tube well venture, which, on the face of it, seemed to be propitious, proved to be less productive than anticipated during the period of research. The need for water for irrigation was patent, and there seemed to be little doubt that water could be sold to the cultivators at a profit. Again money was borrowed from the government in order to defray the cost of the boring and the machinery, and once more the farm land of villagers was offered as security for the loan. Once the tube well was in operation, there was such acrimonious competition for the water (and such reluctance to pay for it) that the principal feared the tube well would become a center of controversy and division in the village and therefore halted the use of tube well water on all but school farm land. The school now awaits the time when its landholdings will be larger (the village assembly has promised the school more village land for farming after land consolidation is completed) and it can use the facility to better advantage itself. Though this particular project was disappointing in its results, the principal continued to be ingenious in his quest for funds. He even had the school purchase a rubber-tired cart which could be rented to cultivators for the purpose of carrying their sugar cane to the mills or produce to market.

With the original donations and the sums in hand or in prospect through these additional sources, it was possible to begin construction on the new buildings in August, 1950. Eight tin-roofed rooms were built on the northern border of the village near the brook that gives its name to the section, or patti,[8] in which the school is located. Gradually dormitories, office space, and kitchen and dining facilities were added, and classroom space was quickly expanded. The normal construction cost was much reduced by voluntary labor (shramdan) of both students and other villagers.

The student enrollment at the school, once it became an intercollege, has fluctuated between 450 and 600. After a tragic accident in which a truck filled with students from the school on their way to perform shramdan was struck by a train near Deoband, frightened parents withdrew their children from school, and the student body decreased. The opening of other secondary schools in the general vicinity had also had an effect. A gradual increase in school population, however, can be expected. The principal would like ultimately to convert the intercollege into a degree college. His critics doubt that the size of the student body will warrant this and that the costs of the enlarged curriculum and required equipment can be met.

When the Cornell Project ended, the staff stood at twenty-two. This included the principal, who taught no classes, an extension teacher, and a physical training teacher. The other ninetten taught courses in Hindi, English, Sanskrit, history, geography, civics, mathematics, economics, commerce, general science, biology, agriculture, educational theory, drawing, and crafts. A surprising number of castes and "communities" were represented in the faculty: There were seven Brahmans, four Rajputs, three Vaishyas, two Jats, and one each of Kayastha, Punjabi, Tyagi, and Muslim background. Among the teachers only five had received teacher-training preparation. The teachers complained that they had no adequate quarters to which they could bring their families. The school had the usual problem of attracting professional personnel to a small community and holding them there.

The northern fringe of the village where the school was located was also the site of the Cooperative Seed Store and the Cornell Project, the buildings of which were to be donated to the school after the completion of the Cornell study. Thus, the structures which came to symbolize the new order for the people of Rankhandi were from the outset in close geographical as well as psychological proximity. All of them lay in the direction of Deoband, the tahsil[9] headquarters. A member of the Cornell Project reflected on the significance of the location in the following terms:

> The separation from the pathshala and the closer communication with the tahsil town, in which the bus line and the railroad also were located, were symbolic. Rankhandi had started on a new course, and from now on it was to have much closer relations with the state and nation (Hitchcock 1956:274-275).

The administration of the intercollege is technically in the hands of two bodies: a Managing Committee and an Executive Board. The Executive Board, according to the school's constitution, is responsible for formulating educational policy, appointing and dismissing teachers, granting scholarships, etc., while the Managing Committee, which elects the members of the Executive Board, is more concerned with general administrative and financial matters. In practice, however, largely because so many members of the Managing Committee are themselves uneducated and therefore deferential concerning educational decisions, the powers of both these bodies have been delegated to the principal. The secretary of the committee which first brought Sarju Singh to Rankhandi characterized the situation in this way:

> The principal has been given all the powers for running the college by the executive body. So the principal wields absolute power in practice.

The mechanics of this power concentration are described in detail by a member of the Executive Board:

> As a rule, the Executive Board should meet once a month. But it meets whenever the necessity arises and the principal convenes its meeting. The principal had told the members of the Board that if everything about the intercollege were to go through the Board, he would not be able to do anything successfully. It would cause too much delay. So he requested the Board to entrust all the powers of the Board to him. He asked the Board not to seek explanations on everything he did and not to press him too much to follow strictly the policies laid down by the Board. He just asked the Board to lay down the policies broadly. The principal asked the members of the Executive Board to be more particular about the result and efficient administration of the intercollege. After entrusting powers to him, if the Board found anything faulty, it could ask for an explanation from him. He asked the Executive Board to check the accounts whenever it liked, and if there was a shortage of even one pice in the accounts, the Board could remove him

> from office. So the Executive Board members asked the principal to do whatever he liked in the best interests of the college.
>
> Once the principal stated in an Executive Board meeting that because of too much interference on the part of the Board, he had not been able to do any good work and the college could not progress. On hearing this statement, the members of the Executive Board could do nothing but entrust him with all powers. In this way, with the approval of the Executive Board, the principal concentrated all powers in himself.

A member of the Managing Committee maintained that the principal had convened progressively fewer meetings over the years. The first year, there were three meetings, the second year two, and during the third year there had not been a single one. The reason he gave for this state of affairs was that, because of the profits from the brick kiln, the principal no longer had as much need of the villagers' support, particularly financial.

Whereas the power of the principal was recognized by all those interviewed--teaching staff as well as members of the official governing bodies--it must not be concluded that the attitudes toward this concentration of power were wholly negative. They were sharply divided. The views of the teachers seemed to reflect their own positive or negative experiences with the principal, while the attitudes of the village leaders who were active in the affairs of the college were, in some cases, shaped by the factional loyalties and antipathies that played such an important role in all village social interaction.

Sarju Singh was fully aware of the role played by factionalism in Rankhandi's social and political life. He had sensed it on his very first visit to the village:

> At that time I got the impression that there was party friction in the village. Each party came to me with tales about the others, and in this way I could find out what was in their minds.

He soon learned how to manipulate the situation in order to achieve his goals. "He knew what men in each subdivision of the village had to be approached and convinced if a program were to be carried through. He knew in what cases a favor to one man had to be balanced by a favor to another if divisive jealousies were to be prevented" (Hitchcock 1956: 276). He often expressed the opinion that he could function effectively only because he was an outsider and not involved in the factional quarrels of the village.

Sarju Singh's adroit handling of factional conflicts which affected the college, as well as the reputation for impartiality that he earned in the process, served to extend his leadership much beyond the confines of his official role. Within a few years of his arrival he came to be known as the "jewel of Rankhandi." The man who had brought Sarju Singh to Rankhandi and subsequently became one of his closest friends was elected to the position of village headman, or pradhan, in the first panchayat election that was held subsequent to the principal's arrival in Rankhandi. There is no evidence that the principal campaigned for his friend, though the results of the election certainly strengthened his hand. When factional disputes arose, they were increasingly taken to "masterji" for settlement. In 1954 Sarju Singh succeeded in having an impending election for mukhia[10] postponed when he feared that the contest would exacerbate factional quarrels and divide the village. After persuading the candidates for the office to withdraw, he called a panchayat to settle upon a mukhia by unanimous choice.

There were those who thought that the principal had overextended himself by such interference in village politics. A year later a second attempt to settle a village election--this time for the important post of pradhan--in this manner failed. Though he persuaded five out of six candidates to withdraw in the interest of village unity, the sixth adamantly refused. This was a blow to the principal's prestige. Members of the Cornell team studying this election regarded it as marking the beginning of a decline in Sarju Singh's position of leadership within the village.

> Up to the time of the election the Principal had concerned himself with village affairs in such a fashion as to avoid direct involvement in factional quarrels, and was able to maintain a position of neutrality in which he carried on activities for the good of the entire village. When he began to involve himself in the politics of selecting a new Pradhan, his impartial position was damaged. Many villagers strongly resented the intervention of "an outsider" in their affairs (Retzlaff 1959:76).

The candidate who refused to withdraw and many of his supporters "perceived the Principal's efforts as a trick which would result in keeping the old pardhan[11] in office....Feeling ran high against the Principal for what this group felt was an unwarranted interference in village politics" (Hitchcock 1956: 298).

There were other vital factors in the principal's rise to power within Rankhandi, factors which prevented his fall despite this loss of confidence in his impartiality on the

part of many villagers. Although an outsider, he belonged to the Rajput caste which dominated Rankhandi in terms of both numbers[12] and power. He was an educated man with university degrees in both commerce and law. Perhaps most important of all were his outside contacts. "He functioned as an intermediary between the villagers and 'the outside world.' His most effective connections were with the Congress Party apparatus and the staff of the Community Development Program....The secondary school, which was a show place of the area in any event, became a stop on the itinerary of all important visitors to the District" (Retzlaff 1959:75-76). The President of India visited the intercollege in 1955; Lady Mountbatten followed in 1956. Thakur Phool Singh was a frequent visitor, often bringing with him other major and minor government officials, and he came to be widely regarded as a political patron of Rankhandi. This piece of good fortune was attributed primarily to the principal's personal influence. One of the teachers characterized Sarju Singh as Thakur Phool Singh's "right-hand man." Another said he was the politician's "close friend" and consequently could "get things done for the village." The old pradhan describes the principal's role in village development as important because of his "direct access" to officials.

The Impact of the Intercollege on Rankhandi. It was generally agreed upon by those on the scene--and this includes both villagers and outside observers--that, aside from the Community Development Project, no institution in the village had served as a greater catalyst toward change than the intercollege. Its impact on every facet of village life was immense. It functioned simultaneously as a powerful prestige symbol and as an active link with the world beyond the village. Through the person of the principal, it provided leadership in village affairs. By virtue of the education it imparted, it served as a training ground for future leaders. It contributed substantially to the formation of a new village elite, challenging the traditional criteria of status in rural India. It proved to be a spur to education at all levels. Once its effects were felt, both the boys' primary school and the girls' primary school flourished as never before.

The Role of the Intercollege in Change. The role of the intercollege in effecting change was both direct and indirect. Since it was becoming universally recognized that education was the keystone to success in the new society, the establishment of a secondary school within the village opened up new opportunities to members of all social groups. For members of the lowest castes, to whom scholarships were available at every level of the educational system, schooling offered an escape from the age-old exploitation of the dominant caste in a rigidly ascriptive society. Students from the untouchable Bhangi or sweeper caste had voluntarily undertaken to teach literacy classes for their caste fellows.

A Chamar (leather-worker), also an untouchable, said that only through education could members of his caste find an alternative to working for the Rajputs. With education, he thought, one could get a job with the government, where the working hours were fixed and there was no begar (forced labor).

Members of the upper castes were coming to realize that, in the words of one Rajput informant, "family and property were not enough" to assure their sons a place in this changing world. Land reform laws and landlord abolition plans had unsettled and worried them. Some of them even regarded education as a short-term financial investment because an educated son could command a much larger marriage dowry. A study of the Rajputs in the patti in which the intercollege is located revealed the following dramatic increases in the number of educated males. While only 24 per cent of those over forty had any education, the figure was 38 per cent for those between twenty and forty, and in the age group of six to twenty a striking 70 per cent either had been or were currently enrolled in school.

The college played a leading role in development activities within the village. Lanes of the village were paved, and economically strategic roads, such as those to a sugar mill and to the subdistrict headquarters, were improved, largely through the students' efforts. Houses were built and repaired, and wells were dug with the voluntary labor of the students. A large pond was made serviceable again. All students interviewed had participated in sharamdan; all had favorable attitudes toward the idea, though some criticized its application to particular projects. Cleanliness campaigns were undertaken by the students, and dramatic performances were staged in which national goals were dramatized. The principal mobilized volunteer labor for work on various village projects, and through his connections prominent national and state political leaders came to the village. Youth camps were organized in cooperation with the Community Development Program. The brick kilns contributed to the village economy.

The presence of the intercollege in Rankhandi raised the prestige of the village in the surrounding area tremendously. The older image of Rankhandi as a "criminal" village was giving way to one in which it figured as an educational center to which boys from many surrounding villages were drawn. As one of the teachers put it:

> Before the starting of the intercollege, Rankhandi was notorious. Some people in the village were expert cattle-lifters and drunkards. People did not even dare to go to the orchard near the government tube well after dusk. People of other villages were terribly afraid of Rankhandi people. Almost all the people in the village were

> illiterate before the intercollege was started. But now the strength of the educated is considerable. The mental outlook of the villagers has changed considerably.

The educational experience strongly affected the intercaste attitudes and behavior of most of the students. For many of the upper-caste boys, this was their first encounter with untouchables as peers. The experiences of a twelve-year old Rajput boy were typical. There were seven or eight Harijan[13] students in his class, he told the interviewer. The students all sat together. He recalled that in primary school the Harijans used to sit separately. All of his teachers told him not to observe untouchability and taught him to treat the Harijans like brothers. Now, he said, none of his classmates observed untouchability. Actually, the young man exaggerated his emancipation somewhat, for while he no longer shrank from physical contact with untouchables, he still would not eat or drink from containers handled by them. Nevertheless, a notable change had occurred in caste relations. The principal reported that at the beginning he was forced to hire a Brahman cook for the school dormitory. Now there is a lower-caste cook, and no one objects.

A Chamar woman told one of the field workers that before the advent of the intercollege the Rajputs had not allowed Harijans to wear either bangles or nose ornaments. Now they let the low castes dress as they please. She also believed that the school was responsible for putting an end to forced labor.

Other informants alluded to public meetings and celebrations held at the intercollege, particularly the visits of important officials, when all castes mixed freely. Many villagers have vivid recollections of one such occasion, when Chief Minister Pant and Thakur Phool Singh publicly accepted milk from the hands of sweepers. This made a favorable impression on most of them. Even those who admitted practicing untouchability in their own relationships with the Harijans thought it proper for their national leaders to make such a gesture because "untouchability is on the way out."

The indirect results of the presence of the intercollege in the village included a more urbanized style of life (Western-style trousers, wristwatches, and bicycles were among student status symbols), increased social mobility, a questioning of purdah or the seclusion of women, a decreasing emphasis on caste and on the observance of untouchability, secularization (of which the dramatic decline in the fortunes of the pathshala provided ample evidence), and a general shift in orientation away from ascription toward achievement in many spheres of life. The school gave the village a common rallying point. It is significant that leaders who had been rivals cooperated to pledge their land as security when loans for the school were needed from the government.

The Perception of Change. It is interesting to note the way in which these changes are perceived by those experiencing them. In interviews with students, teaching staff, and villagers who were somehow connected with the school, Cornell field workers asked what changes the intercollege had brought about in Rankhandi. The majority of the students interviewed cited a change in the practice of untouchability. The most frequest area of change mentioned by adult villagers had to do with generational differences: "The younger generation is entirely different"; "The younger generation can go to town and talk to any officer"; "The younger generation is more educated irrespective of caste."

The second most frequent effect of the intercollege cited by the adult villagers interviewed was the visits of important officials. It was felt that this enhanced the prestige and importance of the village. This was also mentioned by two out of the three teachers interviewed, but by none of the students. The second most frequent change cited by the students had to do with development work, such as the paving of village lanes, the renovation of wells, higher income for the farmers as a result of improved agricultural techniques, etc.

Third in importance for adult villagers was a decline in the observance of purdah, and for the students an improvement in sanitation and a greater value placed on cleanliness came third. It might be noted that a number of students participated in a cleanliness drive sponsored by the Sarvodaya Association[14] with the cooperation of the Community Development Program. There seems to be an especially strong consciousness of the need for cleanliness among the educated members of the lower castes, who were traditionally regarded as both ritually impure and physically unclean by the upper castes. The five Bhangi and six Chamar students in the intercollege, whose ascribed status placed them at the bottom of the caste hierarchy, expressed particular concern about this. One Chamar student cited the cost of clean clothes as a paramount problem for children of his caste who attended school. The first reply given by a fifteen-year-old Bhangi student to the question of what changes he thought should be made by the people in the section of the village in which he lived was: "They should be more clean and neat." When asked what the women could do to improve themselves, he answered: "They should keep clean, cook well, clean their homes, and think more of God."

The comments of a fifteen-year-old Rajput boy reflect the tenacity of the "unclean" stereotype of the untouchables held by the upper castes, even where the religious basis of the prejudice is repudiated. The main reasons for not touching the Harijans, he said, were that they do not put on clean clothes and that they look dirty. If they would "observe cleanliness," he maintained, he would have "no objection either to touching them or to eating or drinking from their hands."

Both students and adults felt that increased education was an incentive to better and more lawful behavior and to more concern for one's self-image. There was general agreement that serious crime and moral failings, such as drunkenness and opium addiction, were on the wane. Time after time the uneducated were likened to animals, and the belief was expressed that the new emphasis in the village on education was elevating manners and activities.

Whereas most of the changes cited are in a direction away from tradition and toward Westernization, in one item the reverse seems to be true. This is in regard to the dowry system. Of those informants who spoke of any change in the dowry system resulting from education, the change was in all cases in the direction of strengthening the system. Two of the teachers mentioned this; one of them maintained that the hope for a larger dowry was what motivated most parents to send their sons to school. Other informants have spoken of this as one of the negative results of education, i.e., that the parents of an educated boy become increasingly demanding. On the other hand, an educated boy or his family is sometimes reluctant to accept an illiterate wife, and thus some enthusiasm is generated for the education of girls.

One other adverse influence of higher education that was mentioned more than once was the refusal of the educated, especially the holder of a degree, to allow himself to become involved in manual labor. Even work in the fields during vacations was distasteful to the educated boys, and often they remained in dignified idleness rather than endanger their new status.

Summary and Conclusions. In evaluating the causes for the strong impact that the Rankhandi Intermediate College has had on the village and the nature of its role as an agency of change, we are led to the consideration of three main factors:

(1) Receptivity: Education as a traditional and transitional value. The high value that Indian culture has traditionally placed on learning contributed to the eagerness with which the villagers accepted the idea of a secondary school in the village. A generation earlier, this enthusiasm was manifested in their attitudes toward the pathshala, which they built with their voluntary labor. "An illiterate man is like a beast" is a comment which was heard frequently from informants of all castes. A Brahman has traditionally been honored for his knowledge of sacred matters. Now that the Brahmans were interested in learning English instead of Sanskrit--as a teacher from the pathshala put it--a new kind of education has become the order of the day. In their full acceptance of this new and essentially foreign learning, the villagers demonstrated their adaptability to a changed world.

Even the old man who had been a cofounder of the pathshala admitted somewhat sheepishly that no boy in his extended family now attends the Sanskrit school.

The felt need for at least a minimal education was intensified by the coming of the sugar mills, with which most Rankhandi cultivators had dealings. Records, receipts, and paper work represented a significant element in these dealings. If the farmer was illiterate, he was dependent on others for many things vitally affecting his economic interests. This, he felt, automatically placed him at a disadvantage.

The need for literacy had been strongly felt by villagers for several generations in their dealings with law courts. "For some decades, knowledge of the law and court procedure has been an important means of protecting family interests" (Hitchcock and Minturn 1963:295).

The same overwhelmingly positive attitude did not exist in the matter of female education. At the time of this research the recently founded girls' primary school was struggling along, and the prospects for secondary school education for village girls looked dim. Here the attitudes of the majority ranged from indifference to hostility. Lacking the support of traditional values, the government promoters of women's education were faced with an uphill battle. Although there had been some increase in attendance at the girls' primary school, few girls were encouraged to go beyond the fourth grade. The ability to read and write letters and to keep household accounts was considered the limit of justifiable education for women by most villagers. When questioned about the prospect of admitting girls to the intercollege, the principal was not optimistic, citing purdah restrictions among the upper castes and economic pressures in the case of the lower castes. He hoped for the improvement of the girls' primary school, a matter in which his wife also took some interest.

(2) Leadership: The personality of the principal. The forceful manner in which this young man took command of the new school and subsequently extended his leadership to other facets of village life was the second important factor in the picture. The readiness with which the villagers accepted his leadership reflected their already changing values. In a society in which even a generation earlier leadership had been dependent on age, family status within the village, physical force or, alternatively, religious influence, the acceptance of this slightly built,[15] secularly oriented, young outsider represented a change indeed. Respected village elders took their disputes to him for settlement. The very fact of his being an outsider was taken as a guarantee of his impartiality. He seemed to regard this as his main asset in the village, and certainly it was a quality mentioned time and again by his followers. When one influential Rajput, himself deeply involved in factional quarrels, was asked whether the villagers were afraid of Sarju Singh, he replied in the affirmative and explained:

> We are not afraid of him because he has force behind him. We are afraid of him because he has certain qualities which have a good influence on the minds of the people. He is an honest man. He takes care of everyone in the village. He doesn't favor anyone especially. He has been living in the village for the last five years, but until now he hasn't become involved in any litigation, nor has he gone to officials to favor anyone in a court case, though he has lots of connections with officials.

This statement about the principal was made when he was at the peak of his power and influence in 1954. At that time he was by no means reticent about acknowledging or using his power. He said:

> I know everything about this village. I know who all the badmash [scoundrels] are. I am dealing with them, and I have to deal with them because I am taking money from their sugar cane payments for the school. I woundn't get anywhere if I didn't. If I hadn't dealt with them in the beginning, I never could have had the school built. As soon as I become self-sufficient, and I will become self-sufficient next year, I will crack down on these people and you will see some changes. There won't be any more drinking; there won't be any more opium. And if these people object, I will run them right out of the village. I have the support of the government from the top to the bottom, and these people know it.

As we have seen, the power that underlay this unbounded confidence began to decline somewhat when the principal's impartiality was impugned as a result of his role in the panchayat elections of the following year. Nevertheless, his position as the head of the intercollege, his activities as a prominent member of the ruling Congress Party, and his well-known connections with government officials assured him a continuing, if perhaps more circumscribed, leadership role in the village.

(3) Association: Links with national policies and personalities. The personal connections of the principal have already been mentioned. In addition, there were other, more institutional, links between the intercollege and the world beyond the village which acted as channels of communication between the government and the villagers, between

the planners and the recipients of change. The school, formed at the initiative of a state assemblyman and patronized by a nationally prominent political figure, was from the beginning closely associated with governmental projects such as the Community Development Program. Most of the students were familiar with its aims and some of the innovations it was attempting to introduce. They participated in various campaigns and development efforts. The local Village Level Worker was a familiar figure to them. While many of them were vague about particulars, they all seemed to identify with its general aims; these were usually translated into "Patriotism and Progress." Ceremonial visits of state, national, and international figures reinforced this identification, not only for the students, but for the village as a whole, enhancing its self-esteem and prestige in the surrounding area.

Thus, the traditionally high value attached to learning in India, the felt needs for literacy and training that would prepare the villagers to cope with a changing world, the vigorous leadership of a young university graduate, and cooperation and identification with national agencies of planned change all contributed to maximizing the impact of the new secondary school on the village in which it was located.

* * * * * * * * * *

The establishment of a school that grew into the intercollege was first seriously pressed by a state official, Thakur Phool Singh, and a subdistrict official, Munshi Singh. At several critical periods thereafter, Thakur Phool Singh's interest insured government support and financing for school projects. Thus government policy and intervention, mediated through Thakur Phool Singh, was the catalyst that precipitated the development. There were good reasons, however, why the idea was seized upon with such enthusiasm and persistence by the village people: the traditional regard for education as such and the dissatisfaction with the offerings of the pathshala, which emphasized learning by rote and offered a curriculum that avoided anything secular or practical, were among these. In the background was an interest in training which would provide some alternative to farming as a calling. It was increasingly evident that choice positions beckoned on the outside if one could qualify for them. The democratization of Indian social life caused the pathshala to look absurd as the prime agency of education for a large, modernizing area.

The village was certainly fortunate in recruiting so forceful and capable a man as Sarju Singh as its principal. It is significant that men of his training and caliber were willing to consider such a post. This demonstrates the emphasis placed on service through education by the National Congress Party and the country's leaders. One of the prime objectives of the Five Year Plans and the Community Development Programs has been the promotion of literacy and education.

Indian villagers are usually badly segmented and divided. They are often sectioned into blocks of land inherited by those descended in a patrilineal line. Caste, religion, and the landowner-worker dichotomy make for separation. As this study shows, the school is often the best rallying point and prospect for unification today. The low castes see litaracy and education as a way out of the economic and social depths they have endured; the high castes see education as the means of improving their prospects still further and of safeguarding their children from losses through land laws. The support of an educational institution is a cause on which all can agree.

Since the school commands such general support, it is the medium through which development programs can work effectively. It has been pointed out that many projects which were attempted at Rankhandi involved the school. The Community Development Project, when it began its operations in the area, used the school in many ways as a medium through which to work. Even before some new effort was launched, information about it was spread by the teachers and students. Consequently, we can say that the investment in the school at Rankhandi was more than aid to education. It was an investment in the on-going process of economic development and, to an extent not yet determined, in the changes for the future that are in the making.

FOOTNOTES

1. Acknowledgement is made to Alice G. Tyrner for assistance in this report.

2. See Curle (1964); Harbison and Myers (1964); McClelland (1961 and 1966); Mushkin (1962); Oshima (1963); Schultz (1961 and 1962).

3. The school, officially known as the Kisan Vidyala Intercollege, is roughly the equivalent of an American junior and senior high school, comprising grades 6 through 12. At the time of this study (1953-56) by a Cornell University field research team, plans were being made to raise the school to the status of a degree college. Actually, it was successively raised from a junior high school to an intermediate school (includes grades 9 and 10) to an intermediate college (includes grades 11 and 12).

4. A division of the Kshatriya or warrior group of the classical Hindu social system. Rajput literally means "king's son," and the Rajputs of Rankhandi have a tradition of having migrated to this area from their homeland in the western state of Rajasthan (formerly Rajputana) after the Moghul conquest.

5. Founded in 1875 by a Punjab Brahman named Dayanard Saraswati, this revivalistic reform movement condemned idolatry and many social abuses of Hinduism on the grounds that these were later accretions unknown to the Vedic religion, which was pictured as pure monotheism. The movement spread rapidly and exerted considerable influence in rural areas of Punjab and western Uttar Pradesh. Much of the enthusiasm which it spurred in the first decades of the century was subsequently channeled into the nationalist movement.

6. A body of representatives elected by the vote of all adults of the village.

7. Head of the local judicial body.

8. A division of the village based on a now defunct revenue unit. There are seven such patti, and they play a significant role in village politics and social interaction. Patti identification is particularly strong among the dominant Rajputs, and factions often form along patti lines.

9. Subdivision of a district.

10. A villager who officially represents law and order.

11. This is the village dialectical version of pradhan.

12. In 1955 there were 2,272 Rajputs out of a total population of a little over 5,000.

13. "People of God," the name Gandhi gave to the untouchables.

14. A service association.

15. One of his staunchest Rajput supporters could not restrain an expression of contempt for his small physical prowess.

VI. STRATEGIC INTERVENTION FOR INDUSTRIALIZATION

There were no small industries in or near Vicos or Bang Chan, and it may be some time before there are. A small industry that meshed with the agricultural economy has developed near Senapur, however, and may greatly affect its future. The story of the founding of this enterprise and its impact thus far on the rural area it serves is worth recounting, for this pilot project may become a model for an important step in India's development.

India: A Small Industries Complex

In 1959 an American scholar returned to a rural area in the eastern part of the North Indian state of Uttar Pradesh where he had carried on research in 1952-53. He was impressed by the increased number of low-caste tenant farmers who had lost their landholdings in the six years since his last visit and who had left the village for work in urban areas. He noted also that something new marked the departures from the village: a tendency for a man to take his family with him and permanently to sever his connection with the village if he could find steady work elsewhere. This led the investigator to suggest that a "new society" may be developing in India and that in another generation "the village will be in the hands of small peasant proprietors, with a floating group of landless workers, counter-balanced by a modern industrial urban culture" (Cohn 1959:966).

In the very same article the observer remarked on another development which had taken place since his last visit. About this he said: "Two miles away from Madhopur on the Benares road are large patches of alkaline land, one on each side of the road. On one side, there are two new shops, a grain godown and a cycle shop, both owned by Thakurs....Opposite, a local cooperative, formed by Thakurs of the area, is planning the building of a sugar factor. They are a long way from realizing the Rs. 60,000 they must raise in order to get the matching grant from the Government, but the fact that they have formed a cooperative and have gotten some of the money is a major change..." (Ibid.:965).

Since the sugar mill was only a hope and a promise in 1959, the author of the article cited could only guess what its effects and role would be if it materialized. The sugar mill, with its satellite enterprises, did become a reality and has been in operation for several years; consequently an assessment of its influence and some projections are now possible. Such an analysis may be particularly

useful at this point in Indian planning, since small- or moderate-scale industries in the rural areas, such as this sugar mill represents, have been urged by many as an alternative to the sharp urban-rural dichotomy which Cohn saw developing and as a deterrent to a mass exodus to city slums by agriculturalists unable to find work or land in their places of origin.

Both the emigration to urban settings and the search for alternatives to agricultural income and employment have to be understood in historical, demographic, and political perspectives. Large tracts of land in India had come to be considered the property of those who controlled them sufficiently to collect revenue for the ruling monarch or power. In some cases these local administrators or their ancestors had conquered the area, sometimes they had received title to the land for military services performed elsewhere, and sometimes they had come as "revenue farmers" and were ultimately recognized as the owners of the land for which they extracted taxes from the cultivators. The region in eastern Uttar Pradesh which we are considering was conquered by Rajputs[1] (locally called Thakurs) who were dislodged from their homes farther west by wars with the Moguls in the sixteenth and seventeenth centuries. At the beginning of the British period Thakurs of the Raghuvanshi clan, who claimed descent from a petty chieftain named Ganesh Rai, were in possession of a tract of land approximately 75 square miles in size north of the Gumti River and east of the city of Jaunpur. This chiefdom, which became known as the Dobhi Taluka (after Dobhi, an early settlement, still in existence), now contains more than a hundred villages, and the Dobhi Thakurs, the descendants of Ganesh Rai, still tend to think of it as their ancestral inheritance. As far as land ownership and control are concerned, the Dobhi Thakurs have been a close-knit group. They have insisted that what their forefathers won by the sword must not be lightly bartered away, and they have maintained strong sanctions against the sale of Dobhi lands to outsiders. On the grounds of their common loyalties and their duties to their ancestors, many of them condone practices, ranging from simple social intimidation to outright falsification of records, intended to nullify land reform laws. It may be added that these Raghuvanshi Thakurs are surrounded on all sides by other Rajput groups and clans whose sentiments, settlement patterns, and activities are essentially the same.

According to Thakur tradition Ganesh Rai and his retainers entered the area from the south. The region was then thinly populated, and any who offered resistance or failed to show proper respect were driven out. Herders, cultivators, and artisans of lower caste were invited by the Thakurs to settle in the Taluka under the guarantee of protection, specified payments, and other perquisites.

Although he depended for his livelihood on ownership of the land and the products of the land, the Thakur was not a skilled farmer. Military life and administration were his caste callings. Actually he was barred by custom from ploughing the land himself or doing many heavy or demeaning agricultural tasks. Consequently he allowed others the use of some of his land, and he shared its fruits to obtain the labor and services he needed. These arrangements between Indian zamindars or landlords and those who worked for them in return for tenancy privileges and a share of the crop are widespread and are known as the jajmani system and the raja-praja system.

Under the jajmani arrangement the family of a farm laborer or artisan (parjunia) with services to offer had a hereditary, continuing arrangement with an employer (jajman) who guaranteed employment and specific payments, usually in kind, and who often provided a small plot of land which the parjunia could cultivate for his own needs. In addition to agricultural labor, the services rendered under the jajmani system were barbering, pottery-making, household service, midwifery, carpentry and smithery, priestly work, and others. The payment was usually a certain amount of grain at each of the two harvests. On joyous occasions such as a marriage in the family or the birth of a son, the parjunia were invited to the festivities and received clothes or other gifts. In Dobhi the highborn and more opulent Thakurs had the largest number of parjunia, but even the lower castes, by exchanging their traditional services instead of offering grain, land, or money, were able to obtain the parjunia they needed. The system has been pictured as exploitative, but at one time it provided security of work and income to many, and certainly the low-caste artisans and workers who exchanged services were not exploiting one another. The terms were considered binding upon the receiver as well as the giver of goods or services. A potter whose handiwork was refused by his jajman or who was not paid could appeal to his caste panchayat (assembly), and this body could order its member to do no work for the erring customer until he came to terms. Obviously, too, the jajmani system guaranteed a craftsman a circle of customers upon whose patronage he could depend.

A carpenter or barber could ordinarily take care of the needs of a large number of customers, and therefore he was not too dependent upon any one of them. But a parjunia who was a cultivator and who had to spend long hours ploughing, leveling, irrigating, weeding, and harvesting another's land could satisfy but one jajman. The time that remained to such a cultivator after caring for his employer's fields was usually devoted to tending the small plot he was likely to get as a partial payment for his services.

Jajmani understandings were cross-cut by the raja-praja (ruler-subject) relationship, which in many ways was even more important and binding. The raja-praja concept was patterned after the ideal king-subject relationship as described in the Indian epics and marital tales. It was based on concepts of land ownership and use of land and on the loyalty owed to the one on whose land one lived. Since only the Thakurs owned the land of the Dobhi Taluka, no one but a Thakur could be a raja. All others were praja with profound obligations to the Thakurs on whose property their homes were built. Despite the hierarchy implied in this, the obligations involved cut both ways. Loyalty, support, and even unpaid labor (begar) at peak work periods was owed to the Thakur on whose land one lived; but, in return, protection, the loan of expensive equipment, extensions of credit, etc., might be expected. Again it was the agricultural laborer who was most completely influenced by this relationship. His jajman was also almost certain to be his raja. The land he farmed for himself, the land on which his home stood, and the work obligations to which he was subject all ordinarily involved one Thakur or Thakur family. This was the person or family to whom he looked for sustenance, protection, continued shelter, loans, and even advice in personal matters. To be in conflict with this Thakur was ruinous unless another Thakur was willing to make an equivalent arrangement or unless one had a haven in another village or region.

It is evident that the Thakurs never thought of their low-caste parjunia and praja as tenants with secure occupancy rights to the land which they cultivated. Permission to use these lands was considered to be partial payment to the parjunia or praja for services rendered. Even when the low-caste cultivator rented additional land to farm or when he farmed land on shares, this was not looked upon as an ordinary business transaction but was regarded, rather, as an extension of the jajmani or the raja-praja relationship. It should be emphasized, too, that payments in cash and kind for agricultural labor were very low because in most cases they were supplemented by permission to till a small plot of land. Moreover, a fairly substantial part of the payment was in clothes and other gifts presented at times of festivals and holidays. Ceremony and indirection marked contributions that flowed the other way, too, for parjunia and praja performed many important ritual acts as a part of their obligations. Despite any services received and any payment or privileges granted to the praja, the Thakurs have considered themselves to be the owners of all the lands of Dobhi and have assumed that they have the right to reclaim land lent or rented to parjunia or praja. They have felt fully justified, whenever jajmani or praja relations have broken down, in removing anyone who has been given these "temporary" privileges on their lands. Much of the deference in speech and action offered to the Thakurs by those of other castes turned on the strong hold they maintained on the land and on their power, if offended, to eject others from home, fields, and even the village.

The Thakur conception of unlimited and perpetual control over all ancestral land came increasingly in conflict with the land laws. Though for a long time Thakur claims of ownership were not disputed, beginning in the first half of the nineteenth century a series of laws was passed to limit ejections of cultivators from the land at the whim of the owner and to secure the rights of different types of tenants to remain on the land as long as the rent was paid or the promised services were performed. During the Independence movement, in order to obtain mass support from the land-hungry cultivators, the leaders of the National Congress Party made ringing commitments about land reform. They promised that the great estates of the reactionary rulers of the princely states would be broken up after Independence and that the land would be distributed to the landless. The absentee landlord would have to relinquish farm lands to the actual cultivator. The government would help finance a program of land acquisition and redistribution so that anyone who had cultivated a plot for many years would be entitled to purchase it and become the owner-cultivator.

In keeping with these promises, the various Indian states began to draw up land reform acts soon after Independence was achieved. In the state of Uttar Pradesh there were lengthy hearings, debates in the legislature, and much newspaper publicity about the subject. Since the Thakurs had many caste members in public life and since many of their group were literate, they knew exactly what was occurring and how fast matters were moving. They therefore had sufficient time to safeguard their interests. In some cases, where the total landholdings of a family were above the limit that was being considered, there was a legal partition of the family so that no branch would have a surplus that could be seized by the government. When a family owned land in a village of Dobhi other than the family seat (and this was a common feature of Thakur land ownership), a family member or a branch of the family was sent to reside in that village and manage the land so that the cry of absentee landlordism could not be raised. Or, in the absence of anyone to take up residence at the other site, the land might be sold to a Thakur who lived close to it or might be traded to a family with a similar problem for land more conveniently located. Praja, parjunia, and tenants who had farmed the same plots for many successive years were asked to accept other pieces of land so that the Thakur would not run foul of the continuous occupancy rule. Tenants were shifted to a sharecropper or daily laborer status. In many cases, even if the work relations were not disturbed, the literate and forceful Thakur saw to it that the name of the actual cultivator did not appear as tenant or cultivator on the land map and in the reports of the land records officer. When

the land records were put in final form in order to inaugurate the application of the new land laws, many low-caste cultivators were embittered to learn that their legitimate claims to the land they had been tilling for so many years had been extinguished. In order to assert their rights they would have had to contradict their Thakurs publicly before government officers sent to the villages to adjust conflicting claims. Some, to the astonishment and chagrin of the Thakurs, actually did so. Most, however, knowing that they were in debt to the Thakurs and that they courted retaliation by defying them, simply suffered silently and helplessly while the political promises of land redistribution to the landless were virtually nullified. Because one low-caste group had a literate and politically conscious leader who had repeatedly examined the land records, marginal lands at the north of one village remained in the hands of a caste that had reclaimed them. Some occupancy tenants were able to continue to cultivate their plots. Ultimately they paid rent to the government instead of to the Thakurs, and a few even bought the land from the government and became landowners or bhumidar. Yet, because of the forewarning they had received and the countermeasures they took, the Thakurs lost relatively little land. The real victims of the land reform laws in the Dobhi area were the low-caste cultivators. Most of them were reduced to the status of agricultural laborers working for a daily wage.

Although the Thakurs preserved most of their land and certainly the best portions, they did so at the cost of relationships that had been central to their conception of themselves and to their way of life. The praja, parjunia, and tenants who had cultivated plots of their land had shown them feudal-type loyalty and deference. The Thakur depended on these followers to support him in any dispute. Now this support fell away; the disillusioned agricultural wage-laborers, especially the younger ones, had no special warm feelings for their employers. The Thakurs were used to obtaining free labor at peak agricultural periods from those to whom they had given land for their own cultivation. They were used to receiving ritual services of one kind or another from these same people, as well. Some of them realized that the basis for these "extras" had been cut away by the new practices in land utilization. Others still tried to extract their feudal dues from unwilling employees. Many workers, on the other hand, still expected the presents and the economic and social help at difficult times which had been part of the old jajmani and praja ties. Curtailments and resistances on both sides have led to charges and countercharges of disloyalty and selfishness.

The deterioration of the relations between landlords and tenants has occurred during a period of increasing population pressures. The Dobhi tract may have been sparsely populated when the Rajputs assumed control of it in the seventeenth century, but this is certainly not the case now. The density of population is over one thousand per square mile, and the

population is still expanding, though at a slower rate than formerly. With the growth of population the estates of the Rajputs have decreased in size. The inheritance laws, which provided equal shares to all sons, spurred fragmentation. Only the cheap labor and the free labor of their economically depressed workers enabled the Rajputs to maintain fairly high living standards. As the increasingly liberalized land laws created problems for them and as their praja and parjunia became more politically conscious and independent, the Rajputs recognized the need for income other than that derived from agriculture and for vocations other than land management. Since they did have a tradition for the education of boys, at least through the primary level, they pressed this still further and by the early part of the twentieth century began to give their sons sufficient education to qualify them for government service, for teaching posts, and for positions in business and industry outside the village. Some of these Thakurs who have left Dobhi for work elsewhere can no longer be considered residents of the Taluka. They may visit relatives occasionally or make a donation to a local cause on appeal, but they have taken their immediate families with them and do not remit money regularly to their village kinsmen. Their departure has nevertheless relieved some of the population pressure and the strain on the resources of the area. The majority of Thakurs who work outside the Taluka, however, still maintain close ties with their former households. If they are married, their wives and children remain in the village, and they visit their homes whenever they can. They expect to return eventually to their village of origin, and they contribute to the support of the joint family in which they retain membership. As their numbers have increased and their positions have improved, their financial contributions have become an important factor in the village economy. As a result, the material condition of the Thakurs of Dobhi has improved markedly in recent years. Many larger, better-built houses have been constructed. Clothing of finer quality is worn. A much greater variety of commodity goods is in evidence. There is no doubt that this is due to money remitted by persons working outside the tract. A study, just concluded, of two villages of Dobhi indicates that in the last ten years real agricultural income has decreased but that a very substantial income from villagers working away from home has more than made up for this (Simon 1966).

Other castes of Dobhi have also been led by loss of land and increased population to seek alternatives outside their villages of origin. Some have been forced out of their villages permanently. The larger population to be maintained has encouraged the Thakurs to utilize all possible, even marginal, land for agriculture. The need for food grains to feed the allied armies during World War II and the high prices paid for such grains moved them in the same direction.

The increase in money in circulation led to a greater demand for commodity goods. In the inflationary postwar period when consumer goods were more plentiful, there was a greater desire for a cash crop such as sugar cane to provide the money required for their purchase. Yet the foodstuffs for local consumption still had to be raised. Ponds were filled with earth and farmed, lanes were invaded, orchards were sacrificed, common lands were divided for cultivation, and pasture was ploughed under for crops. This inevitably dispossessed the sheep-herders and the cattle-herders, many of whom soon had the grim alternative of going father afield to find pasture or of finding other employment elsewhere. Actually, they have had recourse to both of these solutions as opportunities arose.

As contact with the towns and cities grew and the preference for factory-made goods and utensils became obvious, artisans and craftsmen such as weavers and potters found the demand for their wares shrinking. They, too, had to consider going to the urban centers to work or finding some other means of livelihood.

When the Thakurs grew fearful of losing lands occupied by tenants and began to remove anyone from their lands who might conceivably lay claim to them, the low-caste agriculturalists also found themselves in a very precarious position and began to look for alternatives and for outside income. Many of them sought and obtained work in mines and factories far from Dobhi. Initially most of them who left for outside employment retained their village ties and remitted funds to their families and kinsmen back home, just as the Thakurs did. As a result, the pressure on local resources has lessened, and the outside income has improved the financial condition of the low-caste people. Recently some of them have formed groups to carry on building or earth-working tasks on contract in the general region.

The dependence on outside work in towns and cities to produce income for the village areas is at best a temporary solution and one that is not very satisfactory, even for the time being. It aggravates urban slum conditions by creating a large group of men who will exist for some time in dismal surroundings in order to save money to remit to the villages. It simply drains one sector of the economy to alleviate the most acute problems of another sector. As a permanent urban labor force becomes established and as workers decide to sever their ties with the countryside and remain in the towns and cities, this source of income from which the villages have benefited will be drastically reduced.

It is clear that the present population of many rural areas of India--and Dobhi is an example of this--can no longer be supported by the yield from agriculture alone. Land consolidation laws, which are now being implemented and which will encourage the purchase and use of more efficient equipment, will further reduce the demand for agricultural labor.

Also, since the subdivision of consolidated landholdings will not be permitted, as the families of the present owners expand, some of their members will have to seek a calling elsewhere. Everything points to an increased departure of villagers for urban industrial centers unless opportunity and industry can be brought to the rural sections. A good many Indians--and this sentiment is especially prevalent among the Gandhians of the National Congress Party and among the Socialists--feel that there should be a major effort to do just this. As a consequence, every Indian state government has a department with the function of encouraging small-scale industry, especially in the countryside. Uttar Pradesh, for example, has a unit called the Small-Scale Industries Institute to help with the planning and implementation of such ventures. The sugar mill which was being planned when Dr. Cohn visited Dobhi in 1959 was the result of all these historical, demographic, socio-economic, and political forces.

New developments in education, mobility, and transportation paved the way for the sugar mill and the other enterprises associated with it. One of the educated men of Dobhi obtained a position on a Banaras newspaper. His own assignment was literary in nature, but he became aware of how much space was given to reporting programs and grants through which the government was attempting to stimulate the economic development of the rural regions. And since this man had relatives active in political life, he had sources of information about plans in the making for this general purpose. He traveled a good deal between Banaras and Dobhi and had ample opportunity to know that the Banaras-Azamgarh road, which runs through Dobhi, had been greatly improved and was now much used by buses and trucks to link the major center of Banaras with the rural region to the north. The Gumti River, over which people and vehicles came by ferry and pontoon bridge, was still a formidable barrier, but he knew that there were firm plans to build a bridge that would overcome this difficulty. He was well aware of the increasing reliance of the farmers of Dobhi on a money economy and on a cash crop, sugar cane. He was aware of the inefficiency of the method by which they pressed their sugar cane and boiled the juice to make gur or brown sugar. He was sure that Banaras would be a ready market for all the refined sugar that the Dobhi area could supply. He resolved to see whether the Dobhi producers of sugar cane could be formed into a sugar cooperative which, with government help, might establish a local sugar refinery. He is still a devoted advocate of the sugar factory and has been its storekeeper since its beginning. He works at a financial sacrifice, for he will accept no more than Rs. 60 a month for his services.[2]

In his initial talks with prominent leaders and sugar-producers of Dobhi this enthusiastic spokesman for the sugar mill met a polite but decidedly lukewarm response. No one

doubted his sincerity; but he was not experienced in farm management and business, and his past interests and record did not inspire confidence in his judgment about the kind of project he proposed. He made relatively little headway until he gained the active support of another educated Thakur of Dobhi, one with a decidedly different background. This man was a substantial landowner of Dobhi and a fairly large grower of sugar cane. He had been educated abroad and was associated with the Planning Department of the government of Uttar Pradesh. He felt that more job opportunities had to be created in the rural regions for the agriculturalists displaced by land laws, technological improvement, and the burgeoning population. He agreed that Banaras was the logical market for surpluses that the residents of Dobhi could provide. He undertook to interest the Small Industries Division of the U. P. government in the possibilities of Dobhi and of this particular plan.

Once a person with a reputation for practical undertakings had thrown his weight behind the proposal, there was a much more positive response. A cooperative named "The Sugar Processors' Society, Ltd., of Dobhi, Bajrangnagar" was formed, and Rs. 50,000 were collected from its members. In October, 1964, there were 336 individual shareholders. The price of a share was set at Rs. 100; no member could own more than ten shares. Regardless of the number of shares owned, each member was to have one vote at the annual meeting to elect new members of the Board of Directors and to ratify the actions of the Board. The raising of Rs. 50,000 locally permitted the state government to invest a matching amount in the enterprise. Later the state investment was raised to Rs. 75,000. Additional funds were borrowed from the Central Cooperative Bank, for the cost of the factory came to Rs. 173,000, and extra funds were needed for initial running expenses.

The assistance of the state government was much more than financial. Having determined that the general plan was feasible and that the local response was satisfactory, its Planning Department helped in a number of other ways. One of its units actually drew up the plans for the installation. The facility was named a pilot project of the state's Planning Research and Action Institute. To insure adequate direction, the state provided a trained manager and offered to pay his salary for the first year. To encourage the youthful enterprise, it continued this aid for a second year. It was agreed that, because of its strong financial and policy interest in the development, the state should name two of the eleven members of the Board of Directors. Actually, the State Registrar of Cooperative Societies selects the state's representatives on the Board. One of the state's nominees has each year been the Development Officer of the National Extension Development Block of the area. Thus the state's interest in the sugar factory is tied in with general agricultural and developmental problems of the area. The manager

of the refinery sits on the Board of Directors but does not vote. For a long time the state government had been perplexed over the serious problems of its eastern section, an area of dense population, low agricultural productivity, land erosion, appalling land fragmentation, and slow technological progress. It was determined to see whether this venture into small-scale industry as a strategic intervention offered a solution to some of the difficulties.

There was general agreement over where the facility should be located. The main artery through Dobhi is a graveled road running north and south and connecting the tract with the city of Azamgarh to the north and the major city of Banaras to the south. The Gumti River, which bounds Dobhi on the south, has been a formidable barrier to contact with Banaras, especially in the rainy season; but a large, sturdy bridge which will span the river is now under construction, and the troublesome ferry and makeshift pontoon bridge will soon be a memory. Buses and trucks have piled this road in increasing numbers in recent years, and the completion of the bridge is certain to spur both commercial and ordinary traffic. The historic, religious, and economic ties between Dobhi and Banaras are especially close, and easier access can be expected to heighten this relationship. The improved road through Dobhi intersects a meter-gauge rail line, the North Eastern Railroad, from which one can reach the district capital, Jaunpur, to the west, Ghazipur to the east, and Mau to the north. Mau, incidentially, is the location of the grid from which power was to be obtained for running the machinery of the plant. The grid at Mau had begun to supply electricity for new tube wells in Dobhi. Many villagers, through their assemblies and leaders, had requested tube wells from the state government for the irrigation of their lands. One of these tube wells had been sunk along the main highway just north of the site that was favored for the sugar factory. A word about the background of this site may be in order.

In the northeastern part of Dobhi, along both sides of the main road at the junction of lands belonging to the villages of Bishanpur and Ailiya, there is a stretch of alkaline land which has been considered worthless for agriculture. This place is 22 miles north of Banaras and 3 miles north of Dobhi station on the North Eastern Railroad line. Some time ago a religious mendicant from the Punjab came there and made it his headquarters. It became known as "Sadhu ki kuti" ("Retreat of the holy man"). The sadhu slowly improved and expanded his site. He found a stone image of the god Hanuman, who is much worshipped in Dobhi, and installed it in a small shrine. He continued to develop the surroundings and constructed a small temple, dug a well, planted trees, and built a dwelling for himself. At this point three disciples joined him. The place began to be called "Bajrangnagar" ("City of Hanuman"). Villagers came

frequently to worship there and to obtain religious advice from the holy man and his disciples. Since the temple was becoming a meeting place and was located along a much-traveled route, it was not long before a few small stores were built there. Then a primary school, which had been in existence since 1916 but which had been shifted from village to village in the vicinity, was finally located there. Consequently the place was well known and was bound to be considered as a possible site for the project. One of the most persuasive arguments for choosing Bajrangnagar was the poor quality of the soil and the lack of value of the land; it would take no precious land out of cultivation, and the acquisition of the land would not be costly. The man who had initiated the whole idea had been born and reared in Bishanpur and was, of course, eager to see the factory built at the edge of his natal village. The case for Bajrangnagar was a strong one; in addition to its other advantages, it lay in the heart of a prominent sugar-cane-producing section of Dobhi. The matter was decided when the legislative assemblies of the two villages, Bishanpur and Ailiya, donated the land for the sugar factory. In this bit of philanthropy they were very farsighted. They were making certain that their inhabitants would have easy access to the mill and any associated industries that grew up near it and that they would be in an excellent position to benefit from any employment opportunities or other advantages that close proximity would provide. Their donation of land has been a wise investment, for their adjoining lands, equally infertile, have increased enormously in value as they have been sought for house and business sites.

Once the land was acquired and the technical asistance of the Planning Department assured, events moved rapidly. The foundation stone was laid in March, 1961. By 1962 the sugar factory was in operation. It has now been in existence long enough so that it is possible to discuss some of its accomplishments and some of the difficulties which must be overcome before maximum benefits can be reaped from such a strategic intervention.

The evidence so far indicates that small-scale industrial ventures of this kind in the rural region are economically feasible and helpful to the region. Because of a late start the first year only about 1,000 tons of sugar cane were processed. As a result of drought and crop failure during the second year, not much more sugar cane was brought to the factory. Since then the figures have nearly doubled, reaching approximately 1,800 tons in the 1964-65 season. This is far from the total capacity of 4,800 tons, but it allowed a profit of Rs. 26,000.

Even though no dividend has been declared yet (for reserves have to be built up and debts paid), the cultivator-suppliers have benefited substantially. They have received considerably more for their cane than if they had made brown

sugar out of it by crude and wasteful home-manufacturing techniques. They have not had to deal with any middleman, and they have received their payments promptly. They have been freed from the time-consuming task of processing their sugar cane and can spend more time on irrigating and cultivating. They have not had problems of storage, nor have they run risks of loss from rodents or insects.

The ready market and good prices that the sugar factory represents have encouraged the cultivator to plant more sugar cane, for this is his important cash crop. Consequently, he is being influenced to produce for the market rather than to continue subsistence farming. He knows that all the sugar so far manufactured has been purchased for the Banaras market and that much more could be sold there.

In the sugar-cane-pressing and sugar-making season, which lasts from three to four months beginning in December, eighty to a hundred men are employed at the sugar factory. The work is seasonal, but it comes at a time of proverbial hardship and want for the farm laborer and helps tide him over until the spring harvest. During the rest of the year only the manager, mechanic, storekeeper, auditor, and watchman are necessary to the functioning of the sugar refinery. The employees of the sugar refinery fall into three groups: those who are hired on a daily basis, those who work at a monthly salary for the season, and those who are permanent staff members. The total wages paid in a year at the present level of operations is over Rs. 16,000, a sum that can have an impact on a small rural area.

Because the manufacture of sugar is carried on seasonally, subsidiary uses of the power and plant have been sought for the rest of the year. The first addition was a flour-milling unit. Later an oil-seed press and a cotton-ginning unit were added.[3] When everything is in operation, the plant uses an installed load of 93 horsepower. Seventy-five to 80 horsepower runs the sugar mill; the other 13 to 18 horsepower serves the auxiliary units. The flour mill and the presses for oil and cotton seed are increasingly patronized and offer employment to a few persons on a full-year basis. In connection with these services the factory does not buy the raw material but only processes the product brought by the farmer for a price. The price is reasonable, however, and the process much less wasteful than could be managed at home. These additions to the scope of operations have been very profitable to the factory; the clear profits in 1964 amounted to over Rs. 4,600. The flow of visitors these services bring throughout the year is very important to the subsidiary shops and enterprises which have grown up around the sugar refinery.

Because of the presence of the factory, a large number of other shops and businesses have been added to the two or three that existed at Bajrangnagar in 1961. In 1965 there were thirty-one business establishments and seven houses

lining both sides of the road in the vicinity of the sugar factory. In addition, there were a number of very small stalls or box shops selling betel preparations, food, or trinkets. A good deal of construction, aided by government loans at low interest rates, was still in progress, so the count may be considerably higher now. A survey revealed that the construction costs of homes and places of business already existing in 1965 varied from Rs. 150 to Rs. 8,000 and that Rs. 66,000 had been thus invested by this time. Besides the sugar factory the little settlement now boasts a doctor's office, a commission house, a shop for manufacturing wooden toys, restaurants, several general stores, a bicycle repair shop, a tea shop, an office for staff engaged in land consolidation work in surrounding villages, a shoe repair shop, and stores that sell cloth, grain, agricultural implements, building materials, fruits and vegetables, tobacco, kerosene, spices, stationery, and candy. More than fifty persons already live permanently at Bajrangnagar, and the number is certain to grow as accommodations become available and business establishments multiply. Although the Thakurs are the principal suppliers for the sugar factory and the major shareholders, they do not dominate the business complex that has grown up around the factory to the same extent. Despite the fact that the Thakurs, who own nine of the shops, have the most representation, members of fourteen other castes have established businesses in the little bazaar. Other developments, too, are in the making. A girls' school has been established nearby, and there are plans to enlarge and develop it. A meeting place for village assemblies and public forums has recently been built, something that suggests the degree to which the site is becoming a center for varied activities.

Because it is a cooperative and the number of shares permitted to any shareholder is strictly limited, the sugar factory is not a very likely outlet for large investments.[4] But the presence of a modern factory in a region that has been conspicuously unindustrialized has caused those who have money to invest to think about the prospects for privately financed industries. The main hurdle is not the financing but the guarantee of a reliable supply of power. There is no coal field nearby, wood is scarce, and the price of fuel oil is prohibitive. If an ample power supply can be provided at reasonable rates, there is talk of extending Bajrangnagar considerably and of making an industrial estate of it. A proposal to this effect is before the government now. Because of the inadequate supply, the present policy of the government is to limit the use of electrical power to the processing of food and fiber products. Some of the possible industries which have been considered, such as a canning factory for mangoes, peas, and other products which are plentiful in the area, would fall under this rubric. But others, such as a plant for manufacturing pottery and stoneware, would have to wait for some change in policy.

At any rate, an assessment of what can be manufactured in Dobhi has been touched off. There are a number of skills and possibilities to be drawn upon. For instance, several men who were originally from Dobhi and are still interested in the welfare of Dobhi became associated with an Indian branch of the Singer Sewing Machine Company. When high duties forced that firm to withdraw from India, these men pooled their resources and started the Shankar Sewing Machine Company. Their main plant is far from Dobhi and would continue to be, but they are cordial to the idea of having a factory located in Dobhi which could supply one or more parts needed for their machine. A number of persons from Dobhi have gone to Banaras and have become skilled workers in some of the manufactures for which Banaras is noted, such as silk weaving, metal work, and wooden toy production. They would prefer to carry on their trade in Dobhi if the proper facilities could be provided. A Dobhi man learned how to manufacture batteries while working in Calcutta. He now lives and works in Banaras, but he would like to transfer his business to Bajrangnagar if conditions were favorable. A plant for manufacturing cardboard has also been proposed. The raw materials required--straw, false hemp, and bamboo--are in plentiful supply in Dobhi. Still other enterprises, such as a mill and woodworking shop that would manufacture windows, doors, furniture, and furniture parts (e.g., the legs of stringed cots), have been suggested. There is also talk of establishing an agricultural implements factory. This whole subject of the encouragement and establishment of subsidiary industries at Bajrangnagar is being explored with the state government, and the decision is by no means certain; but there is a good possibility that the "pilot project" will achieve its objective and stimulate a good many parallel efforts.

Some other related consequences of the Bajrangnagar development should be noted. It has sharpened interest in better irrigation facilities, in improved roads leading through the village areas, and in land consolidation. Sugar cane requires a good deal of irrigation. A first-rate crop cannot be grown by the crude and wasteful method of bucket irrigation characteristic of the area. Extensive fields cannot be adequately watered by this means. Consequently there has been renewed clamor for more tube wells for irrigation purposes. Cultivators who have become interested in growing more sugar cane for the factory have a stronger interest in land consolidation. It is uneconomical for them to try to raise more sugar cane on small, scattered plots. They are much more congenial to the idea of sowing a substantial block of land to sugar cane if their farms can be consolidated. With the pressure on land and the fragmentation of land into small, irregular plots, the boundaries of fields have become blurred. Often cultivation has crept toward and invaded village lanes and passageways. At present it is at best toilsome and tedious and

sometimes impossible to drive a bullock cart laden with cane from the hinterland of Dobhi to Bajrangnagar. Land consolidation plans call for a squaring off of the fields and the providing of straight rural roads of ample and standard width. The difficulties encountered in bringing the cane to the sugar factory have resulted in considerable enthusiasm and respect for the land consolidation plans among previously antagonistic Thakurs.

The accomplishments at Bajrangnagar have been significant and should not be minimized; but the sugar refinery is a pilot project, and it was anticipated that problems would arise that would require analysis and adjustments. This has indeed been the case. Though the details may differ according to place and type of effort, it is very likely that the difficulties and questions encountered in the program of planned change at Bajrangnagar will be present in principle, if not in detail, in any attempts to carry out industrialization and modernization programs in the rural sections of modern India. Consequently, any conclusions reached or lessons learned may have wide application.

One of the vexing problems is that it has not been possible to procure enough raw material, in this case sugar cane, to keep the factory running at capacity during the cane-pressing season. The mill could use approximately 4,800 tons of sugar cane if it operated on a double shift for a hundred days of the year. Yet it has never needed to use a double shift; so far the largest number of days on which sugar cane has been pressed in a single season is sixty, and the greatest amount of sugar cane brought to the mill in a season has been 1,800 tons.

There are a number of reasons for this disappointing response. An obvious one is that the mill is not drawing from a large enough region. It mainly serves the area immediately around Bajrangnagar rather than all of Dobhi. Most of the shareholders come from villages close to the sugar refinery. The majority of the cultivators from whom the cane is procured are from villages near the plant. Thus, though the factory is associated by name with the whole of Dobhi, it tends to serve the northern part of the tract only. The condition of the feeder roads has a good deal to do with this, and land consolidation and the attendant improvement of the network of roads connecting villages should make a marked difference. As we have pointed out earlier, land consolidation may also help procurement by encouraging cultivators to devote larger acreages to sugar cane.

Here a note of caution must be injected. Both the government advisers and the active organizers assumed that the founding of the sugar mill would automatically influence the farmers of Dobhi to increase the acreage given over to sugar cane. Yet even in the northern area within easy reach

of the mill the increase has been slight. Practical and traditional factors have played a part in limiting the response. Sugar cane cultivation requires a good deal of irrigation. The producers are waiting for the government to install its long-promised tube wells before they increase their acreage significantly. Thus one important feature of change is dependent upon another and waits upon its implementation.[5]

It has been assumed that a high price at the mill for delivered sugar cane would quickly result in the planting of more sugar cane and a solving of the supply problem for the following year. Even an advance in price of more than a third for cane delivered at the mill did not immediately have the desired effect. Most of the farmers maintain a crop rotation cycle in respect to their fields. They are fearful of the consequences for the fertility of the soil of altering this drastically. Therefore they do not have too much option and flexibility about what shall be planted in the year to come. Probably as important as anything else is the fact that the cultivators of the region are subsistence farmers. They feel that before they can grow for the market they have to raise enough on their relatively small landholdings to provide the staple foods for their own larders. By the time they have planted enough wheat, barley, paddy, gram, potatoes, and corn to sustain their families, there is not much land left for the cultivation of sugar cane.

Moreover, many of the farmers are made cautious by the conditions of cultivation they confront. If they do not have adequate irrigation facilities, the sugar cane crop they raise will be poor and the loads they take to the mill will be light in weight. Plant diseases and insects now take too heavy a toll. Sugar cane responds well to generous applications of fertilizer, and in many instances better seed will insure a vastly superior crop. If the sugar mill could give technical advice to its suppliers and potential suppliers and could extend credit to them, it would probably obtain more and better sugar cane and a steady, guaranteed supply.

Even when sugar cane is grown by a member of the cooperative, it does not mean that all that he raises is brought to the refinery. A part of it is often withheld for home-processing into crude brown sugar. It is customary to feed agricultural workers as part of their wages, and brown sugar in one form or another is always a part of the diet at this time. Or the brown sugar may be kept for market, for its price fluctuates, and at times it brings a high return. As things stand now, many sugarcane growers in the procurement area, including a good many shareholders, are opportunistic enough to keep a sharp eye on the market. When brown sugar is bringing a generous price, they process

their cane at home. When the market value of brown sugar is low, they rush their cane to the sugar mill. Yet the success of the sugar mill depends on a steady and abundant flow of raw material to its doors. Some friends of the pilot project think that the mill is at a decided disadvantage in the situation. The mill is expected to pay a fixed rate throughout the season to the suppliers. The farmers on whom it depends for cane are under no such restriction. More than once it has been suggested that the only solution is for the government to forbid the sale of brown sugar. Here, again, an educational program aimed at building up some sense of identification with and loyalty to the enterprise at Bajrangnagar may be useful. Right now lack of reserves makes it impossible for the sugar cooperative to undertake the educational campaign, the extension of credit, and the technical work that would insure more and higher-grade cane for the refinery. Yet the building up of reserves waits on regular delivery of enough cane to run the mill at a level nearer capacity. A vicious circle exists which must somehow be broken if capacity production is to be achieved and greater enlightenment advanced.

There is some feeling among those close to the situation that broad government controls will have to be relaxed temporarily in its favor if a small industry of this kind in the rural region is to survive the competition against which it is pitted. In this instance the struggling young sugar mill is directed to purchase cane from the growers at the same high, fixed, seasonal price that is paid by much larger sugar mills elsewhere. On the other hand, the large mill is fully automatic and can effect savings that are not possible at Dobhi. It has the resources for extending credit and technical advice to its suppliers and therefore obtains a better product for its money. It is more efficient than the smaller unit and recovers more juice from the cane. At present the payment of the higher price cannot result in the procurement of much more sugar cane by the smaller enterprise because of the other intervening factors which have been mentioned. Thus the Dobhi factory is being held to standards based on the experience of much larger, better-established sugar mills. The financial difficulty is compounded because the Dobhi factory is now obliged by government policy to sell at a fixed price and therefore cannot take advantage of its storage facilities or of today's high prices on the open market.

Another drain on resources is the requirement that, to qualify for electrical power, an amount costing at least Rs.5,500 be purchased per year. So far the quantity actually used in any one year has not exceeded Rs. 4,000 in value. Yet the surplus power allotted to the plant for which it must pay may not be sold by the refinery to another business. A manufacturer of wooden toys whose shop adjoins the sugar factory would like to expand his operation and hire additional workers. At present only his family members work with him. If he is to

build something more than a family enterprise, however, he will have to mechanize his shop. He has applied to the Industries Department of the state government for power but with no success as yet. The factor next door has power to spare but may not sell any of it to him.

Though the sugar factory has ample power for its present level of operations, the quality of service is anything but satisfactory. Breakdowns and tripping are frequent; and when this occurs at certain stages in the sugar refining process, it results in waste and spoilage and in damage to the machinery. Fortunately there is a second potential source of power for the area, the Rihand Dam, which is now close to the point of producing and which it is hoped will furnish more dependable and abundant power for industrial purposes.

Breakdowns and losses occur not only as a consequence of power failure but also as a result of lack of experience with machinery on the part of the workers of the area. Any repairs judged to cost more than Rs. 50 have to be sanctioned by a representative of the Board of Directors. The chief mechanic complains that it is difficult to obtain permission to stop the machinery and make repairs until a major disaster has occurred. Defects that could be corrected at a slight cost in time and money end in long work stoppages and large expense when left to run their course. The chief mechanic comes from outside the area. His assistants, however, have been from Dobhi. He has been very unhappy over their performance and is unwilling to trust anything of importance to them. Even before the establishment of the factory there was a strong feeling on the part of some of the more energetic leaders that Dobhi needed more technically trained men. The problems posed by the sugar mill and the prospects of having more industry and machinery at Bajrangnagar have now stimulated an interest in founding an industrial training institute in the area or at least injecting more technical training into the curriculum of the Ganesh Rai Junior College, the major educational institution of Dobhi, located not too far from Bajrangnagar. This is a good example of how strategic intervention works--of how the accomplishment of one step leads to the need to make another forward move.

One of the incentives for the erection of the sugar refinery in Dobhi was to absorb manpower which could no longer be used in agricultural labor or traditional tasks in the countryside. Yet it is apparent that the sugar factory alone is far from a complete solution for the problems of overpopulation and underemployment in the area. The work at the refinery is seasonal, and even at peak periods a maximum of a hundred workers is employed. If the factory can attract enough cane to make it worth while to inaugurate a second shift, the numbers employed for the period of sugar-making would swell considerably. Often, under present operating conditions, as few as sixty persons are working in the plant.

And it is a question whether all of them are really needed. There is some evidence that new workers are sometimes hired not because they are desperately needed but because some prominent shareholder or member of the Board of Directors requested that they be considered. It is only because the factory is not fully automated that as many are employed as is the case. At certain points in the manufacturing process the juice is carried back and forth to the crystallization tanks by hand in buckets, with consequent loss of juice and efficiency. To accomplish this by pipes and pumps would require an additional investment of approximately Rs. 13,000. Yet, in order to meet competition by reducing labor costs and eliminating waste, the necessary equipment may have to be installed. If so, the work force will even be reduced though production may rise. Moreover, when speaking of the benefits of the sugar mill to labor, it must be remembered that most of the labor now required is unskilled and is paid at the rate of Rs. 1.25 a day ($.18 at the present exchange rate). It seems clear that at the moment the mill is of more benefit to the growers than to the landless workers of the area. Of course, by stimulating the economy and helping to make the region more prosperous, jobs may be created by the mill both in the agricultural and nonagricultural sectors; but this is an indirect, rather than a direct, attack on unemployment. Actually, the amount of employment created is likely to depend on the number and kind of additional industries that are attracted to Bajrangnagar rather than on the possibility that the work force of the sugar refinery will be greatly enlarged.

It will be remembered that in his article of 1959 Dr. Cohn wrote that "a local cooperative, formed by Thakurs of the area [was] planning the building of a sugar factory" (1959:965). Actually, residence in Dobhi is not a condition of membership in the cooperative, and a few persons who live outside Dobhi are shareholders. In fact, one shareholder lives in the city of Jaunpur. Nor are the Thakurs the only shareholders; shares are owned by members of a number of other castes, such as the carpenter-smiths, the cattle-herders, the vegetable-growers, the petty tradesmen, the washermen, the priests, the agricultural laborers, and others. Though the great majority of the members are Hindus, three Muslims own shares, too. In all, there are 60 non-Thakur members who have purchased 72 shares. But the predominant position of the Thakurs in Dobhi and in the affairs of the sugar factory is revealed by the figures, for there are 276 Thakur members of the cooperative, and they own 434 of the shares. There are eleven persons owning ten shares each, the maximum allowed, and all eleven are Thakurs. Eight out of the ten persons who own five shares each are also Thakurs. Consequently it is felt by some that the benefits and the responsibilities of the venture are not widely enough spread.

Since the Thakurs have such a commanding position in regard to the sugar mill and since the sugar mill overshadows anything yet attempted at Bajrangnagar, it is assumed by many that Thakur influence will guide further developments of the industrial estate, as well. This is seen as a mixed blessing. The backing of prominent Thakurs is essential, but it is feared that the proprietary attitude of the Thakurs toward Dobhi will discourage the use of outside talent and funds and will create a Thakur monopoly in the industry of the tract to replace the Thakur control of the lands of the Taluka challenged by the Zamindari Abolition laws. Non-Thakurs who have been associated with the sugar factory have complained that the Thakur lack of knowledge of machinery and machine industries and the Thakur lack of background in business have been a handicap at Bajrangnagar. They assert, too, that the Thakurs, jealous of their position and prerogatives in Dobhi, have not made it too easy for others to locate at Bajrangnagar. As is so often the case, it is difficult to structure measures for the improvement of economic conditions in a locality in such a way that those whose need is greatest benefit the most.

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India has found that its traditional agricultural economy cannot support its growing population and allow a surplus for development. Large-scale extension programs (the Community Development Program and the National Extension Service) and land reform movements have helped to expand agricultural productivity to some extent, but segments of the rural population have increasingly had to look to the industries of the urban centers for work opportunities The cities have grown enormously, and so have their problems of slums, sanitation, unemployment, and political unrest.

The development of power, especially hydroelectric power, by means of the building of dams throughout the country has raised the possibility of stimulating industry in smaller centers and even in the rural regions. The dams which have resulted in increased hydroelectric power were initially built mainly to assist agriculture by controlling flooding, providing water for irrigation, furnishing power for tube wells, etc. In order to prevent a flow of population to the cities that would overwhelm them and to assure added income and alternative work opportunities in rural areas, there is more and more interest in using the power also to establish small industries that can serve groups of villages.

Such enterprises are most likely to succeed when they are related to the resources and raw materials of the area. It made sense to have the industrial nucleus of Bajrangnagar a sugar refinery, since a good deal of sugar cane is raised in the vicinity.

A site for small-scale industries must be carefully chosen in regard to markets. In the case of the sugar refinery at Bajrangnagar the connections with the large population center of Banaras were excellent. Consequently, there has been no difficulty in marketing all of the sugar that the factory can produce. It is procurement of raw materials that has been the problem here.

In the rural sectors of an underdeveloped country the network of roads and the avenues of communication are likely to be poor throughout the region from which capital, raw materials, and labor are to be drawn for a small-scale industrial complex. This will restrict participation and response. It can be expected that the presence of the industrial complex will eventually stimulate the building of better roads and the development of channels of communication, but educational and extension work to accelerate the process is highly desirable.

Traditional habits of mind and older patterns of utilization of resources will continue for some time and will prevent all energies and assets from being thrown into the new venture immediately. Thus the crop rotation cycle, the feeling that farm laborers must be fed brown sugar, and the pride of the agriculturalist in raising the grains needed for his household consumption have reduced the amount of sugar cane grown for the refinery, even by its members and well-wishers. In estimating what can be expected, allowances must be made for these factors.

Industries based on the resources of agricultural regions, such as sugar refining, milling, canning, etc., are likely to be seasonal. Therefore a number of them should be combined if possible, with preference given to those which, when taken together, fill out the work year.

Even a small-scale industry will involve a substantial investment in machinery. The success of the venture may depend on the prevention of expensive stoppages, repairs, and replacements and on the efficiency with which the plant is run. A critical observer at Bajrangnagar pointed out that when the machinery was not operating properly, the tendency was to introduce more hand labor rather than to tackle and solve the mechanical problem. Mechanization requires a certain attitude of mind toward machines and a certain amount of experience with their operation and possibilities. Technical training should ideally precede the introduction of an industrial complex in an area. If this has not been possible, it should certainly accompany it.[6]

The social cohesiveness of the region in which a small-industries complex is situated should be a consideration. The development at Bajrangnagar is associated with a group of villages that have common interests and traditions. They have cooperated in the past, for example, in the establishment of Ganesh Rai Junior College. Their solidarity has made it possible to raise the necessary funds for the sugar refinery, to

induce politicians of the area to argue their cause in government circles, and to recruit prominent citizens of the region to serve on the Board of Directors. The fact that one group, the Thakurs, is so economically and politically powerful in the area raises the threat that the base in respect to investment, direction, and benefits will not be sufficiently broad. Here the government, which is a partner in the venture, must exert its influence to see that opportunities and rewards are widely spread. By encouraging members of various groups to locate businesses at Bajrangnagar, by making the factory a cooperative with membership open to all, by insisting on an employment policy of nondiscrimination, the U. P. government is seeking wide support for and participation in the industrial complex. It is still true, however, that the Thakurs of the region have the most money to invest, the education that qualifies them for the better openings, and a commanding position in the production of the raw material which the refinery needs for functioning and survival. Perhaps time and further democratization may alter this situation.

Some of the most instructive lessons of the development at Bajrangnagar are that its effect have been multiple (as one might expect in a truly strategic intervention), that they are interrelated, and that some of them were unforeseen and unexpected. The avowed purposes of the sugar factory were to provide more income for the producers of sugar cane and more employment for workers of the area. The sugar refinery has, indeed, made contributions along these lines, but it has done much else, in addition. It has aroused greater interest in and fostered more favorable attitudes toward land consolidation. It has drawn attention to the inadequacies of the feeder roads. It has resulted in a reassessment of prevailing educational practices and a demand for more technical training. In spite of the fact that agricultural practices in eastern U. P. are a stronghold of conservatism, it has had some effect on farming patterns and methods. Up to this time the movement of capital, of the educated people, and of those seeking employment has been from Dobhi to the outside world. Now an educated man has returned to be the storekeeper at the sugar refinery; another educated person has come back to Dobhi to retire and serves the factory as the auditor; successful sons of Dobhi are planning to return to start additional businesses and factories at Bajrangnagar;[7] and people of Dobhi who have learned trades and skills in Banaras, Calcutta, and Bombay are interested in carrying them on in Dobhi if an industrial estate is sanctioned and flourishes. Here in embryo are signs of a countermovement to contrast with and perhaps to modify the Indian urban migration which has seemed so massive and irreversible. It has not yet been demonstrated that small-scale industrial developments such as have been inaugurated at Bajrangnagar by the combined efforts of the local population and the government will greatly

alter the character and pace of industrialization in India or in other nations facing similar problems. What has already occurred in this pilot project seems significant and promising and may provide a pattern of action that could have far-reaching economic and social consequences.

FOOTNOTES

1. In the Hindu caste hierarchy the Rajputs are Kshatriyas and therefore are second only to the Brahmans in rank. Their traditional callings are soldiering and administration.

2. This man has earned more than Rs. 250 a month in his newspaper position. For a parallel Mexican case and a discussion of the type (conspicuous producer) of person who gets his satisfaction from a feeling of service in a development situation rather than from a monetary reward, see Erasmus (1961).

3. The Khadi Bhander, an organization that encourages hand-spinning and the weaving of cloth from hand-spun thread, has been active in Dobhi and purchases homespun yarn. The women of many households try to put their spare time to good use by spinning and have been earning enough to buy a good deal of the clothing they need. The presence of the cotton gin has given impetus to this activity of the women.

4. By state law, dividends are limited to 6 per cent. If there are profits to divide after dividends, they may be distributed as a bonus. To reward production for the sugar factory, only shareholders who are also suppliers of sugar cane may qualify for the bonus. To date, neither a dividend nor a bonus has been declared.

5. For a further illustration of the principle that innovators cannot control all factors, see Dobyns (1951).

6. For a discussion of the relationship between industrialization and technical training, see Harbison and Myers (1964).

7. The tendency for emigrants to return to their native homes when development programs have improved conditions has also been noted in Peru by Mario Vázquez (1963:98).

VII. CONCLUSIONS

The majority of our conclusions about the advantages of strategic interventions and the kinds of experiences that we have had in attempting to achieve them or in witnessing and reporting them in three developing nations have already been set forth in the preceding chapters. In this final chapter, we set down merely a few additional deductions drawn from our collective experiences which may be implicit in what we have stated previously, but which has not been too explicit.

Peasant Village Quarters

The advocate of social change who undertakes to work at the peasant village level will promptly discover, we believe, that a prime necessity from his own personal point of view is the provision of local quarters in the settlement. The fact is that many peasant villages in the world live so close to the margin of survival that they indeed lack any available unoccupied space where an outsider can stay. The needs of the research anthropologist who must live as intimately as possible with the people so as to understand their behavior may be met by emptying out a storeroom and painting or plastering it and applying insecticide liberally to the native fauna.

There are, as a matter of fact, cases on record of advocates of cultural change who appear to have succeeded impressively well in motivating people to adopt new behaviors in part because they lived in the style of the people with whom they worked. In evaluating the institution-building impact achieved by United States Peace Corps Volunteers in Andean Peru, we found that the volunteer with by far the best record was the only one in the sample studied who lived in a one-room Indian hut with minimal remodeling (Dobyns, Doughty & Holmberg 1965:153-159). Still, even this volunteer had to live some place and was able to rent quarters, however humble.

The experience of the Cornell University research and action programs in India, Thailand, and Peru has been that additional quarters had to be constructed to house Project personnel and to allow efficient research data processing, analagous to the record keeping and conferences involved in any organization engaged in fomenting social change.

Senapur. When the Cornell Project commenced in Senapur, it enjoyed the tremendous advantage of being introduced by a son of the village from its dominant caste, who was a

graduate student at Cornell University. In this case it was possible to rent a centrally located house from a widow who had been living in another village since her husband's death. At Rankhandi, after a period of tent life, a Project house was constructed. Envisioning an eventual departure, the Project arranged with the local authorities for land on which to build, with the understanding that the buildings would be turned over for school purposes once the Cornell group left. The additional facility has made it possible for the Rankhandi school to get matching support from the state government for the expansion of its educational program.

Bang Chan. After an initial period of Thai hospitality, in a series of village homes, the Cornell Project in Thailand found that it, too, would operate more efficiently in its own quarters. A headman whose son had recently married and then moved away was happy to receive a small rental for the new quarters he had built for the absent couple. Project members occupied these quarters continuously during the decade of research, obtaining prepared food from the landlord and taking advantage of an ideal central situation on the main village canal adjacent to the Buddhist temple and the primary school.

Vicos. During the base-line study of Vicos between 1949 and 1951, anthropologist Mario C. Vázquez lived with an Indian family. This very act immediately marked him off from the dominant group Mestizos of the region, as we remarked earlier in this discussion. When the Cornell Peru Project was launched, however, additional housing and offices were required by the very scale and nature of the program. The fact that Project Director Allan R. Holmberg took his wife and small children to Vicos to live with him contributed not insignificantly to establishing Vicosino confidence in and sympathy for him.

The group of personnel Holmberg led into the field was not large. Until Holmberg was able to bring his wife and children up the slope from Marcará, the Mestizo trading center where there were rooms to rent and even a pension, the staff consisted of the Director, Administrator Enrique Luna, bilingual anthropologist Mario C. Vázquez, and a Cornell student, Norman Pava. Holmberg attempted to keep Pava studying special scientific problems as long as possible. "What we have in hand is essentially the problem of directing a small society, together with the task of trying to study its development, so that hundreds of problems present themselves and we do not have sufficient trained personnel to resolve every problem completely."

Holmberg pointed out that, as bachelor students, Vázquez and Pava were able to live in Indian households, fixing up their rooms to be as comfortable as conditions allowed. Yet more technical cooperation was offered to the Cornell Peru Project during its first year than the staff could use. "The main reason why we have been unable to accept as yet all these

offers of collaboration is the fact that when our program began there were no housing facilities on the manor. We have done everything possible to remedy the situation. We have, for example, finished two small modern apartments, and we shall continue our construction program as soon as the weather and funds permit. We have also installed a water and sewage disposal system for the manor square" (Holmberg 1952:242).

Erecting program quarters constitutes one form of non-verbal communication to the people living where the quarters are built. Such quarters broadcast a variety of messages to the beholder. Probably the large-scale project with significant ties to the national government or a powerful development organization issues a message of optimism and hope that the quarters symbolize a serious effort toward change. If the natives favor change, well and good; but if they do not, the message is likely to be a negative one!

The drive to make oneself comfortable in foreign surroundings seems to be characteristic of United States citizens. U. S. soldiers during World War II were found by social scientists studying them to be continually trying to minimize their discomforts. We found this same characteristic among nearly all Peace Corps volunteers studied in highland Peru between 1962 and 1964. Homemaking was a conspicuous volunteer activity, which sometimes interfered with effective development work (Dobyns, Doughty & Holmberg 1965:66, 175, 264-266). The modifications which volunteers made in rented housing communicated the message that their standard of living was considerably higher than that of their landlords, whatever appearance of poverty the Peace Corps sought to achieve.

The provision of quarters for U. S. personnel in some kinds of business enterprises overseas communicates a clear message of social segregation and economic imperialism. A conspicuous example is the Peruvian company housing of the Cerro Corporation. Its U. S. personnel lives in La Oroya, for example, in U. S.-style bungalows across the river from the Peruvian part of the city, behind a high metal fence, with armed guards at the gates. Even the W. R. Grace Company, originally a Peruvian business, once housed its U. S. personnel on tree-shaded streets in a metal-fence-enclosed compound on its Paramonga sugar plantation. As a matter of fact, its Paramonga compound very closely resembled the territorial-style U. S. Bureau of Indian Affairs compound at Sells on the Papago Indian Reservation in souther Arizona.

When a social revolution occurs or a dependent territory attains political independence, the fenced-off compound of the colonial administrators, in the latter case, or of the company officers, in the former, typically falls rapid victim

to nationalism. Compounds of this kind were one of the irritants leading to the revolution in Cuba that resulted in eventual Communist government for that island. The United Fruit Company's Central Preston provides a good example of the process.

Since the Castro take-over, the Central has been renamed Guatemala, and its poor-quality housing continues to be overcrowded. The well-kept avenue where Southern-style homes were built for the executives was such a symbol of colonialism that the government moved the poorest families in town into these dwellings when the mill was nationalized in 1960. Like the Cerro Corporation compounds in Peru, this one had always had a guard at the entrance. Now some of the houses have burned down, the others are unpainted, the gardens are uncared for, and the pavement is cracked, but the common citizenry occupies the place (Yglesias 1967:8).

International Considerations in Culture Change

The advocate of social change who seeks to foster the process outside his own country quickly finds that a nation somewhat resembles a peasant village. The change advocate is likely to require a local roof over his head, so to speak. The role that the advocate of change plays becomes a critical matter when the innovations he seeks are such as to require governmental decisions. Sovereign nations tend to limit the degrees of freedom they allow to external advocates of change whose success would imply shifts in national policy.

Thailand. Embarked upon a policy of independence and resistance to any threats of aggression from neighbors, the government of Thailand has apparently welcomed recent United States initiatives, both public and private, in many spheres of national life which will inevitably produce sweeping cultural changes in the Thai kingdom.

Peru. Embarked upon a policy of economic, as well as political, nationalism while it strives mightily to integrate its own regionally diverse population, Peru lives in a state of recurrent tension over questions such as the expropriation of the International Petroleum Company, the Cerro Corporation, and other foreign-owned large corporate businesses. Regulatory legislation concerning management-labor relations, corporate financing of the education of workers' children, provision of hospital facilities, social workers, and many other benefits sharply circumscribes the corporate role in Peru.

The Cornell Peru Project perhaps exemplifies one of the most productive possible role structures for the external advocate of change--a formal linkage with the national government power structure for local citizens seeking changes in their own society. Cornell University could offer the Peruvian Indian Institute sorely needed and key technical services

in an area of great administrative concern to the Peruvian government, given the high proportion of Indians in the total population and their low level of participation in the economy and political life at the time. Such circumstances will not necessarily exist in other countries, or even in Peru at another period in time. The abortive Project Camelot financed by the U. S. Department of Defense aroused serious suspicions of United States social scientists in Peru, although the disclosures concerning this research program occurred in neighboring Chile.

In the aftermath of Latin American publicity given to Project Camelot and its cancellation, one United States research program operating in Peru with numerous Peruvian colleagues came under political attack. For, sorely as the external advocate of change may need local colleagues with whom to work, he always faces the consequent danger that their political enemies will single him out for attack in order to strike at them. Since any national society is bound to be composed of competing factions, colleagues in almost any scientific discipline or business endeavor are most likely to come ready-equipped with enemies of long standing. The advocate of change who chooses colleagues in a developing country typically finds himself furnished with instant enemies, in a manner of speaking.

Acceptable Roles: Missionary. Christian missionaries have ventured into virtually all quarters of the globe in the wake of the period of European discovery and conquest. They have acted as the precursors of colonialism, its handmaidens, its underminers, and its lingering heritage, depending upon circumstances. The role of the missionary as an advocate of cultural change is at least a relatively well defined and easily recognized one. This does allow for some ease of entry into a strange social situation where proselytization is still permitted or simply rules out any entry where it is not.

The degrees of freedom afforded the Christian missionary in independent India are limited. In fact, the number admitted into the country is carefully controlled. The Buddhist government of Thailand similarly restricts the range of action of the Christian missionary. The government of Peru welcomes Roman Catholic missionary priests and also nuns whose work approaches missionization. It does not turn away Protestant missionaries, so they are well represented in the country. In fact, one problem of the Peace Corps volunteer or other secular advocate of change in Peru frequently is to convince Peruvians that he or she is not a missionary.

Acceptable Roles: Scientist. As national socio-economic development efforts have come to occupy the attention of governments all over the world, the role of scientists acting

as technician, offering know-how on a long-term residence basis or advice on a short-term visit, has become progressively more familiar and better defined. A fairly abundant literature has already come into existence on this role. One point of agreement in this literature appears to be that the short-term visit of an expert that produces a written report or set of recommendations has usually very little effect on the country involved and its long-range development. We can at least agree that our long-range research and action projects in India, Thailand, and Peru have shown the utility of analyzing intensively and over significant periods of time some representative sample of a nation, so as to offer intelligent advice to its leaders.

To take the Peruvian case for sake of illustration, the Cornell Peru Project recommendation to the Ministry of Labor and Indian Affairs that Vicos be expropriated was based on four and a half years of accumulated experience in teaching the serfs of that estate the rudiments of literacy, the techniques of egalitarian discussion and majority decision-making, farm practices to make them self-sufficient in food and surplus-producing participants in the national market, etc. The recommendation was far from a programmatic recipe for national agrarian tenancy reform. It was a specific recommendation concerning one rural community where participant intervention had created very special circumstances that appeared to make tenancy reform both called for and predictably productive to the people involved and to the nation at large. That the Cornell Peru Project staff could make the recommendation as social scientists had a good deal to do with its acceptance by the Peruvian government.

Where scientists conduct themselves impartially and in an identifiably scientific manner, the scientific role affords significant leverage toward social change.

The Nature of Innovation

In an earlier monograph, we pointed out that the success or failure of attempts at cultural innovation depends in part upon the very nature of an innovation (Dobyns, Holmberg, Opler & Sharp 1967:59-67). This appears to us to be such an important principle that we wish to re-emphasize it here. The type and scale of intervention that is likely to be strategic varies with the nature of the social system it will modify and with the technological or sociological characteristics of the innovation or innovations involved.

To exemplify this statement, let us refer to water supply as one critical factor in crop production. The decision as to the type and scale of intervention that might affect this variable and lead to economic growth and cultural change in a given area depends upon the scale of the water-supply system found in that area.

In Senapur, for example, improving the irrigation system was an action requiring consensus among a number of families. It required mobilizing public sanctions to evict farmers who had encroached upon the water tank bottoms to cultivate them. It required mobilizing manpower to clean the tanks and the irrigation ditches. Finally, it required utilizing the tanks to store water for the dry season.

In Vicos, a rather parallel situation exists. There are prehistoric irrigation ditch systems in parts of the estate not currently under cultivation. To clean these ditches and link them with a presently flowing stream would require consensus among a number of families--at least among the members of the community council--and sufficient support from the residents to perform the labor involved. That is not the end of complexity, however, for the waters flowing into the Santa River are by national law strictly regulated for multiple uses, among which hydroelectric power generation and steel production far downstream are considered by the government more important than increased agricultural production upstream. So the Vicosinos are legally restricted from expanding their irrigated land area, and the consensus that would have to be reached would involve hundreds of powerful government officials and legislators.

In Bang Chan, the village perches on a small portion of an extremely large and complex river delta irrigation and drainage system. To undertake any significant hydraulic changes at Bang Chan would imply achieving a national consensus, because of the complicated functional interconnections between the many areas within the system. Significant improvement, as well as maintenance of the irrigation system on which Bang Chan depends, requires, as it has in the past, the large-scale intervention of the central government and its Royal Irrigation Department.

Unanticipated Consequences of Change

Let us return to the main theme of our discussion of strategic interventions in the cultural change process, namely, the functional interconnectedness of conventional understandings. This systemic linkage between conventional understandings is the characteristic of culture which makes strategic interventions in favor of economic growth or improved social conditions possible.

In the course of this monograph we have mentioned unanticipated consequences of change or attempts at change several times. In the Vicos instance, we have detailed the various efforts made to bring medical personnel and facilities to the Indian population so that scientific medicine would be at least geographically available. These attempts have not, over the long run, accomplished their

objective, and the contrast between the medical and the teaching professions in Peru discloses a good functional reason why. The difficulty in bringing doctors to Vicos ties directly into the number of medical schools in Peru. The country simply has not been producing a sufficient number of doctors to force members of the medical profession to leave the major cities in search of a livelihood.

The teaching profession has been improving rapidly, by way of contrast, in terms of the level of educational preparation of teachers, as well as their geographic distribution throughout Peru. The difference lies in the number of teacher-training institutions. Many years ago the Ministry of Education established a large number of normal schools of various kinds all over the country, and these institutions have been training teachers by the thousands, along with the Faculties of Education in all of the major Peruvian universities. As a consequence, the long-existing demand for more and more teachers was gradually filled, and by the middle of the present decade, there may have been more trained teachers than there were teaching positions. At any rate, when teachers struck for higher pay this year, hundreds of qualified applicants lined up to apply for their positions. Such an event would have been impossible only a few years ago. Consequently, the Ministry of Education has been able in recent years to raise its qualifications for teachers working in the various types of schools conducted in the country, substituting normal school graduates for secondary school graduates or even less well prepared teachers. When there is a professional surplus, the rural village can obtain teachers or doctors, but when there is a professional deficit, it cannot obtain them. National educational policy has a direct bearing upon rural development.

In India, national planners have tended to assume that relieving social discrimination against subordinate groups would bring them into the arena of political action. As discrimination against the Scheduled Castes has been decreased by governmental regulation, however, these groups have reacted not so much by mobilizing politically as by undertaking to rise in the caste hierarchy. They attempt to take on new names, learn new cultural patterns, behave in accord with higher caste customs, seek new occupations, and generally so busy themselves in striving for vertical social mobility by behavioral reform as to disregard politics.

In Thailand, the people of Bang Chan demonstrated considerable interest in local education and undertook to erect a new building to replace a school which had collapsed. Then the central government thought to reward such laudable local initiative and itself assumed the responsibility for rebuilding the local school. Bang Chan's interest in the physical environment provided for its school children promptly fell off as villagers relegated the school to the realm of governmental affairs best left to the professional bureaucrats and no longer a concern of the villagers.

Time after time, the response to intervention turns out to be unanticipated by the intervenors. We hope that the discussion in this monograph shows that social scientists have learned some basic things about the cultural change process and the integrated nature of cultures, so that they can identify opportunities for strategic interventions with some precision. We make no claims to scientific omnipotence. We have discussed in this monograph some examples of interventions planned by social scientists that turned out to be anything but strategic. Yet we hope that this discussion will have left our readers with the idea that social scientists do possess the scientific research tools with which to estimate the chances for an innovation to succeed or fail, when adequate time is taken to study the specific conditions under which advocates of change operate.

We believe that social science does have important insights and skills to offer the government-to-government program concerned with socio-economic development that equips a nation receiving technical assistance or capital infusions to institute strategic innovations which will, in turn, generate a continuing series of improvements, avoiding in the main the pitfalls of nationalistic rejection, unforeseen deleterious consequences of innovation, or initiatives that are not likely to bring desired results.

APPENDIX: BRIEF DESCRIPTIONS OF BANG CHAN (THAILAND), SENAPUR AND RANKHANDI (INDIA), AND VICOS (PERU)

Bang Chan

The village community of Bang Chan lies some twenty road miles northeast of central Bangkok in the heart of the populos flat plain which is the major commercial rice-producing area of Thailand. Here the geometric rice fields extend as far as the eye can see, divided only by low dykes or bunds to control the slow ebb and flow of water led into them through a network of canals eventually connecting with the great central river of the country, the Menam Chao Phraya. For the people of the plain, whose houses cluster in hamlets along the myriad canals which serve for irrigation and drainage and for transportation and a domestic water supply, the raising of rice has been not only a subsistence and commercial occupation, but a way of life (Sharp, et al. 1953; Janlekha 1957; Kaufman 1960; Phillips 1965).

A century ago, when the first few families moved out from Bangkok into the area that is now Bang Chan, the region was technically jungle or scrub in which wild elephants and tigers still roamed. During the 1830's and 1840's King Rama III, mindful of defense and commerce, had cut a broad waterway eastward from Bangkok toward Cambodia. Along the banks of this Saen Saeb Canal had settled some of the thousands of Chinese workers who had helped dig it, as well as some of the thousands of Malay Muslim prisoners of war taken in the years of fighting in the Malay States. These latter lost many of their Malayan ways, including their language, but retained Islam; the Chinese took Thai wives, learned Thai ways, and produced essentially Thai grandchildren.

The Thai from Bangkok and elsewhere who took up the empty Crown Lands under the good King Rama IV settled along the small Bang Chan stream about a mile north of its juncture with Saen Saeb Canal. They were perforce subsistence farmers, hoeing their rice fields at first because they lacked the traditional buffalo and thus could not plow, but augmenting their meager production with fish and vegetables and fruit. Slowly the empty, fenceless country began to fill up, and by the early 1900's the farmers of the region were benefiting from the government's Rangsit irrigation development to the north of them, were using traditional wet rice technology to produce abundant harvests, and were selling surplus rice to help meet the demands of an increasing foreign market. Although they could raise but one crop a year, cash flowed into the growing community; native handicrafts became moribund, since their own rising needs for new goods and services could be met by Chinese in the nearby market town and district seat of Minburi or

in Bangkok itself, reached by a day-long trip via Saen Saeb canal, or by purchase from the numerous Chinese vendors who plied the vast network of canals that by now dissected the entire central plain.

Bang Chan's proximity to the Thai capital combined with the traditional mobility of the Thai peasant to make the village community an integral part of the national society and polity. In the Central plain there had never been the local, semi-independent lords of the region (Chao Muang) as there were in the outer provinces of the south, north, and northeast from whom loyalties had to be transferred to a central government during the period of modern national consolidation and centralization. From Bangkok after the 1880's issued the administrative reform measures of the wise King Rama V, who personally bestowed a name on the Buddhist monastery or wat which Bang Chan was prosperous enough to build during the 1890's. Like the rest of the country, the village benefited from the market network, credit facilities, rice mills, communications, and other commercial resources built up at crucial points in the nation's social system by Chinese entrepreneurs in response to opportunities provided by a government now threatened by the West and eager to bind its provinces to the center, to satisfy the West's appetite for trade, and to modernize at least those institutions visible or or in contact with the Westerners. For the whole country, Bangkok screened the swelling flow of foreign goods and ideas which through Thai officials and the Chinese reached the village as though they were Thai.

Bang Chan received a village four-year primary school only two years after the elitist revolution of 1932, which established the constitutional monarchy and a government which devoted more than half the national budget to the expansion of a centralized, standardized system of education. Before World War II the crude radios of the village could easily pick up Bangkok broadcasts, which dispensed national forms of culture to the country. During the war, urban evacuees settled along Saen Saeb Canal near the villagers; this constituted the chief hardship they suffered from the Japanese occupation and the American bombing. A road projected by the Japanese to link Minburi with Bangkok passed through the southern hamlets of Bang Chan; in 1948 it was opened to traffic with a bus service which cheaply took Bang Chan farmers to Bangkok in an hour or started them on visits and pilgrimages to far corners of the Kingdom and which brought to them urban monks, politicians, salesmen, and--rarely--government servants as well as distant country cousins. By 1948, when the Cornell studies began, Bang Chan was well enmeshed in the norms of a modernizing national society (to which it had contributed an admiral, a banker, and a provincial governor); and the nearby national capital was its model of modernization, a model which would have increasing influence on other Thai villages, even those so distant that the model had to be mediated through provincial centers.

In 1948 some 1,600 persons in 300 households lived in Bang Chan, a population which by 1958 had increased to over 1,800 people in some 350 households. House lots and fields of the community spread over an area of about 8,000 rai (3,200 acres or about five square miles), giving each household head on the average the traditional 25 rai (10 acres) which had been allotted through the hierarchical ranking system to commoners for centuries of unchanging technology. A majority of households or family farms included landowners, with holdings ranging up to 90 rai. In 1948 all but a dozen of these households were involved in the raising of rice, whether as landowners, renters, or farm laborers, with up to 60 per cent of their production being sold as surplus. By 1958, many householders had given up farming; some operated small stores or coffee houses--indeed, a little market complete with barber shop had developed where the Minburi road crossed Bang Chan Canal bisecting the village; others commuted to work in the market town, Minburi, or had varied temporary jobs in Bangkok, whose northern purlieus had by now expanded to within a few miles of Bang Chan.

Whether in these new trading, craft, or unskilled labor activities, or in such new ventures as egg and mushroom production and marketing, or in government service providing security and salary in addition to rents, or in rice farming, an increasing number of Bang Chan families operated as small but independent business enterprises on their own initiative and without benefit of reciprocal neighborhood aid or traditional patrons. At the same time the community as such came to expect more aid from outside for its developing interests; for the provision of old or new community services there grew up a sense of insecure dependency on a central government. The officials of the government were generally felt to be energetic, benevolent, and pervasive but also quixotic, inefficient, and impersonal. In village affairs, instead of self-help, one looked to officials for aid, but could not count on them.

The local situation permitted a differential acquisition of new values and new status symbols derived from a modern environment which included not only Bangkok, government agencies, and the nation but also much of the world beyond. As urban and national artifacts, manners, and ideas became desirable to most villagers and were acquired by some but not by others, an embryonic class stratification began to emerge in Bang Chan which linked some of its households more closely into the developments of a dynamic national society.

For purposes of this sketch, we can consider the period of our research as an "ethographic present." The social center of the Bang Chan community, for Buddhists and the less than 10 per cent of village Muslims alike, is the Buddhist monastery with its abbot, monks, and novices, numbering from fifteen to fifty males, depending on the season.

The wat complex of buildings was built over a sixty-year period through local initiative, including organization, financing, and labor, and the community is proud of its creation. Activities sponsored by the monastery, which traditionally include fund-raising fairs, community fiestas such as boat races, and other secular activities as well as regular calendrical and special religious ceremonies, are organized and monitored by informal wat committees appointed by the abbot from an informal pool of respected men. Secular action under wat auspices acquires a religious aura, so that the monastic organization provides a potentially effective form of local government as a supplement to the ineffective official administration stemming from Bangkok.

Bang Chan is administered by the highly centralized Thai government through two district offices, one in Minburi, the other, which can be reached from the village only on footpaths or by boat, in Bangkapi on Saen Saeb Canal nearer Bangkok. The common boundary of these two districts happens to run through the middle of the natural Bang Chan community, creating administrative inconveniences and inefficiencies of which the inhabitants are only too conscious. Seven local headmen, each in charge of one of the hamlets which make up the community, report to these district offices, three to one and four to the other. There is no official way in which these seven can be organized to deal with matters on a community-wide level. The headmen, elected by all adults in their hamlets, are confirmed by the district officer, a central government civil service appointee, and are thus beholden to this official, who far outranks them. Once elected, headmen tend to retain their office indefinitely; even if an incompetent headman is not respected or is actively disliked by his hamlet, the Thai are unwilling to embarrass him publicly by seeking his removal except in some devious manner by which he will not lose face. When a headman does finally leave office, he is commonly succeeded by a person of his own choice who has been serving as his assistant and who is frequently a close kinsman.

The frustrating inefficiencies of this system of local administration have by no means been overcome by recent efforts towards improvement (Sharp et al. 1953:37-51). Communication down the administrative line is ineffective, while feedback from the village level upwards into the formal government channels is practically nonexistent. Villagers or their representatives can establish communication with needed central government agencies only by going around the local system, thus reinforcing the traditional search of lowly clients for patrons in positions of power.

The hamlets of Thailand, some fifty thousand in number, are organized into about five thousand communes (tambon). These may be natural villages or, as in the case of Bang Chan, they may be administrative artifacts, their boundaries perhaps determined by topographical or communication features

without functional relationship with the local social structure. The headmen of the five to fifteen hamlets in a commune elect one of their number as commune chief, an office of crucial importance in some preindustrial agrarian societies (Javanese and Japanese, e.g.), but almost without functional significance in Thailand. The commune and its chief can do little for villagers, whose headmen deal directly with short-tenured district officials, or if possible with higher bureaucrats. In effect, the hamlet and the commune constitute a single administrative level in the Thai local administrative organization and are so treated locally. The central government, on the other hand, continues to act as though these were two distinct and separate levels of administration; and in addition, frequently compounds the confusion by failing to recognize such natural communities as Bang Chan which happen to coincide with no formal administrative entities.

Above the hamlet-commune level are some four hundred and fifty districts (amphoe), staffed by central government civil servants. A district officer (nai amphoe) has supervisory authority over each district; normally he is shifted to another district every two or three years, often to a completely different region of the country, and is rarely appointed to districts in his home area. Through careful selection and new training programs the quality of these key officials of the Ministry of Interior has been improved radically since World War II. However, each district office is served by a field staff appointed by and representing a variety of central government ministries or agencies: agriculture, finance, defense, education, public health, and perhaps police or public welfare workers posted from other divisions of the Ministry of Interior. These officials under the direct authority of the district officer, also have direct responsibilities to the central government divisions or ministries on which they are dependent in their civil service careers. Compounding this structural confusion at the district level in recent years has been the mounting pressure on all district offices to implement a wide range of newly conceived technical improvement and development programs or special projects originating in the offices of the several ministries in Bangkok, which themselves may be under pressure from external advocates of change and notably, in these days, agencies of the United States government. With inadequate facilities, budget, and staff--and that staff placed in an anomalous and often ambivalent administrative structural situation--and without political or social support from the village constituency it is supposed to serve, the district office in Thailand is itself a dependent and underdeveloped territory which badly needs technical aid.

The districts of Thailand are organized into seventy-two provinces, each supervised by a governor, who is aided by a council of other senior civil servants posted to the province by his own Ministry of Interior and other ministries and by a provincial assembly made up of at least two dozen appointed or elected members with chiefly advisory powers.

Since 1952 the Ministry of Interior has made some use of an organization of nine regions (phag), over which it appoints commissioners with a field staff, but these have not replaced the province as the main intermediate administrative level between Bangkok and the districts.

The Thai administrative organization from the center out and down to the district level (and, in the Ministry of Education, to the village school) is operated by a massive national bureaucracy of civil servants, whose modern recruitment and training began after 1900, who now number almost half a million persons or 2 per cent of the country's population, and whose salaries constitute almost 70 per cent of the national budget. Imbued with a strong traditional sense of hierarchy expressed in patron-client relations--but having acquired little sense of public service--and recruited and stratified through the expanding formal educational system, this increasing mass of officials (or "servants of the King") carries on the business of government in a loyal and stable, if not wholly efficient, fashion.

The Thai civil servant shows little involvement in his bureaucratic role, and this self-containment or detachment permits of easy vertical or horizontal mobility in the Thai bureaucracy. Although he may have to serve in a staff capacity, he is most concerned with the line organization with which he is affiliated at any given time, serving his superior or patron faithfully, if uncritically, but feeling responsibility only for his own clients or those inferiors who may be able to return him benefits. Only in recent years has he developed any concern for those outside his own patron-client group (phag tua); traditionally he could practically ignore the general public and particularly the distant and inferior peasantry, who in turn need show only a generalized or ritual respect for him.

The bureaucracy is the government of Thailand, having a monopoly of power, operating without benefit of an effective legislature, and subject only to the informal sanctions of the opinions of a small articulate political public. Policies are determined by an extremely small elite of benevolent supervisors supported by military power and are directed toward the formation of a "modern" state on Western models, one which maintains all usual public services, improves the general public welfare, and retains the respect of international opinion. The government theoretically serves the people, with whom it shares a common intense and, in part, magically based loyalty to the King, the theoretical patron of the nation. With few resources such as trained personnel, bureaucratic effectiveness, planning capacity, or material assets, the government must nonetheless cope with an ever-increasing number of claims for services made by the nation's citizens and by the world outside and accepted at least nominally by the ruling clique as legitimate.

A traditional secular goal of Thai males has been entry into government service with its comfortably well-defined ranks and statuses, security, and potential for personal mobility. But an equally important aim of most Thai men is the building up of their karma (gam) in the religious system of merit mobility, particularly through entry into the Buddhist monkhood for a limited period. While bureaucratic inflation has been in part a response to an increasing demand for upward secular mobility for males, at least a quarter of a million Thai men in any given year are seeking upward spiritual mobility in the more than twenty thousand monasteries of the country. For the three months or more of their monkhood they are no longer ordinary people (khon), but become ong, as in the King.

The only way in which men can determine the amount of merit they have accumulated in this life or others is by the amount of power of various kinds which they are able to wield relative to that of others in their society (Hanks 1962). Obviously, the merit of the King is supreme. Political leaders, able to retain their positions regardless of their personal characteristics, are high in spiritual merit and are worthy of loyalty and respect in these terms. In such a system it has been difficult for the poor but honest would-be legislator to attract a following, whatever his potential for eventual power might be.

While men look to government and religion as areas in which their activities are most likely to lead to personal advancement, Thai women find scope for their energies in the area of economic activity. The ideal image is of the "nourishing mother" (mae liang), the adult women concerned for the material welfare of her family, who will advance in this world if the men of her family advance and whose merit toward reincarnation as a male is advanced by the religious activities of her sons. In the meantime, she is left with a great deal of freedom of action, suffering almost no secular social disabilities because of her sex. Traditionally, she holds the purse to which she and all members of her family contribute. If we look at the patterning of Thai occupational roles, using data for 61 per cent of the Thai work force provided by Skinner (1957:301-302), dividing them roughly into "economic," "political," and "residual" types, we find that in the first category women outnumber men three to one, while in the second, men outnumber women five to one. While men predominate in all statuses which can be labelled "political," women are more numerous in all important "economic" positions, the subcategories running from large business owners and managers down to hawkers and petty market sellers. While figures on ownership and management of private enterprises are not available for any large sample, it is clear that these roles are often performed by women, who predominate in these basic positions in the rural sector of Thai society. The orientation of men's interests

toward "political" and "religious" roles and of women's toward "economic" roles in both rural and urban Thailand has been wholly neglected in all Thai national development planning to date.

Another important but neglected segment of the Thai population are the Chinese, whose roles in the Thai economy are scarcely mentioned in the development program for Thailand suggested by a task force of the International Bank for Reconstruction and Development. Yet an argument can be made that the Chinese have played a more important part in Thailand's economic modernization than have either Thai or Westerners, although these latter two groups have held overall control of the polity and society. Here it need be pointed out only that the part played by Thai women and the Chinese in dealing with the "realities" of the country's economy has permitted Thai men to retain their traditional roles and their original Thai personality structure in the more "ritualistic" areas of government and religion.

Senapur and Rankhandi

The specific illustrations of strategic intervention for India are drawn from two villages of the north central part of that country, Senapur and Rankhandi. These two communities share many characteristics. There are also some interesting differences, however--differences of an order that cannot be ignored in applied endeavors.

In the first place, Rankhandi is a much larger community. Its population is more than five thousand, compared to the two thousand residents of Senapur. There is even greater disparity in acreage. Rankhandi covers nearly five thousand acres; Senapur is only a little more than one-fifth that large. Moreover, a higher percentage of Rankhandi's land can be cultivated; Senapur's agriculture is hampered by a considerable amount of badly eroded and saline land. Further, Rankhandi's irrigation facilities are superior. The Rankhandi cultivator draws water from the Ganges canal, a link in a massive irrigation system. His counterpart in Senapur depends on much more toilsome and less efficient well and tank irrigation. As a result of this combination of factors, in comparison with Senapur the farms of Rankhandi are in average larger, the yield is more certain, and fewer persons must be sustained from the harvests of an acre of land. As a result, there is more opportunity for the Rankhandi cultivator to raise a cash crop for market in addition to growing the food required for his household. For both villages the cash crop--and increasingly a money income is needed--is sugar cane, but many Senapur cultivators are severely limited in the degree to which they can escape being essentially subsistence farmers. Thus Rankhandi is a more prosperous village. The two communities reflect conditions of the areas in which they are found. Eastern Uttar Pradesh, where Senapur is located,

has a greater population density and a poorer ratio of cultivated land to people than has western Uttar Pradesh, the region in which Rankhandi is situated.

The villages also differ markedly in the amount of Muslim influence that is evident. Senapur has only about fifty resident Muslims, and they are all from a very depressed segment of the population. They are without means or influence. Rankhandi, on the other hand, lies in a region (90 miles north of the capital city of Delhi) which has been greatly affected by Mohammedan rule. It numbers over four hundred Muslims among its residents. Approximately one hundred of these are acknowledged to be descendants of highborn Rajputs, the ruling group in Rankhandi, and they are treated fraternally by the Hindu Rajputs. Religion (the protecting deity of the village is a Muslim saint), dress, and much else reflect this strong past contact with Muslim tradition in Rankhandi.

Variations in caste strength and constitution have important implications for these villages, too. The Rajputs of Rankhandi comprise nearly half of that village's population. They are by far the largest group of the community. The Thakurs (the local name for Rajputs) of Senapur do not constitute so large a fraction of the community. They are not the largest caste in the village, being outnumbered by the untouchable Chamars, who carry on agricultural field labor for them. Now that adult suffrage and representative local government have been introduced, sheer numbers can make a real difference. As long as they maintain reasonable solidarity, it will be most difficult to wrest political power from the hands of the Rajputs of Rankhandi. So far their rule has not even been challenged. The Thakurs of Senapur have been confronted with organized opposition, however, and have had to share political power more widely.

Another distinction that can be made between the villages has to do with the settlement pattern. Besides the central settlement, there are four sizable hamlets within Senapur's boundaries. Three of them house untouchable Chamars, who are not welcome to live in the central settlement. The fourth is occupied by a group which was formerly considered low caste but which recently has been struggling, with some success, to improve its status. There is one very small hamlet within Rankhandi's boundaries, but except for that its residents live in one sprawling settlement. On the whole, villages of western Uttar Pradesh tend to be more often consolidated than villages of eastern Uttar Pradesh. It is thought by some that the incessant warfare that occurred in the west from the thirteenth century on encouraged more compact residence patterns for safety and defense.

The similarities between Rankhandi and Senapur are much more numerous than the differences. Both are located on the level, fertile Gangetic plain, the so-called "breadbasket" of India. Each lies between two rivers: Rankhandi between the Ganges and the Jumana, and Senapur between the Ganges and the Gumti. Both are old, established villages. Senapur was probably founded in the last half of the sixteenth century, and Rankhandi is in all likelihood even older than that. The traditions of both villages trace their founding to the same general cause, to the forced movement and relocation of Kshatriya leaders (Rajputs, Thakurs) as a result of conflict with Muslim invaders.

Both villages have what has been called a "dominant" caste. In both instances it is a segment of the Kshatriya varna, or great social division of Hindu society. In both instances the power of this group flows from the circumstance that it stands high in the caste hierarchy (second only to the Brahmans or priests), that is strong in numbers, and that it claimed ownership of most of the land by virtue of conquest. In both instances these Kshatriyas, who consider their caste work to be soldiering and ruling, have been more interested in governing and managing estates than in cultivating the land. They have sought other castes to farm their land and to provide them with essential services. The paternalistic, hereditary, feudalistic arrangements which have been effected between landlord and tenant or servant are usually referred to as "the jajmani system." Its promise of protection, a home, and a share in the harvest in return for work on the land of another was geared to a subsistence economy and a strong sense of hierarchy. Land reform, production for the market, and democratization have seriously challenged the jajmani system, and both Kshatriyas and their servants and workers have been desperately trying to redefine their respective obligations while retaining as much support from the creaking economic and social apparatus as possible. The strain of this upon the economic and social fabric is felt in the two villages chosen as examples and, in fact, in most rural communities throughout India. It must not be thought that there is always a dominant caste in an Indian village or that the dominant caste, where it exists, is always of Kshatriya origin. A village adjoining Senapur is dominated by Brahmans. In a village near Rankhandi the Jats (a caste associated with intensive farming) constitute the dominant group. Many instances can be found where the entire village population is of one caste. Villages are known where prestige and power are rather evenly divided between two or three resident castes, a circumstance that sometimes leads to a strenuous political tug of war. These variations in organization have to be taken into account in culture change efforts. Nevertheless, it is probable that in the majority of cases there is a dominant caste in a village. In much of U.P.--and certainly in the vicinity of Senapur and Rankhandi--the Kshatriyas are extremely prominent.

Despite the central position of the Kshatriyas, both Senapur and Rankhandi are multicaste communities. Rankhandi has thirty-two resident castes, and Senapur twenty-three. Some of these castes are numerically strong in the village; some have only token representation. Most of the castes are identified with some particular line of work, thought many of its members no longer follow it or carry it on exclusively. Even so, all the skills and services required in a community cannot be satisfied within it, and workmen and vendors continually come to the village from the outside. By the same token, residents of Rankhandi and Senapur leave the village to work elsewhere. Senapur, for instance, has a large group of Noniyas, a caste skilled in moving earth, building mud walls, and molding bricks and tiles from clay. Since the village cannot absorb all this specialized labor, the Noniyas often accept contracts to work in groups in other communities of the area. In fact, as the demand for traditional work diminishes and new types of employment open up in towns and cities, there is an ever greater flow of workers out of the village to find employment elsewhere. Families increasingly try to supplement cash income by sending one of their members out of the village for gainful employment.

The existence of many castes in these villages and village areas makes for interesting patterns of interaction and separation. Since the land-owning Kshatriyas have employment, cash, house sites, and protection to offer, they command the services of many other groups. When the arrangements between them and others are long continued, they take on an almost feudal tinge. The servant or worker then depends on his jajman, or employer, for advice, aid in crises, loans of equipment, extensions of credit, etc., and the employer looks to his worker, or servant, for support in his village quarrels, for extra work at times of pressure, and for ceremonial as well as practical assistance. The hereditary servant is invited to the feast that marks any important ritual or social occasion at the home of his employer and is then given a present. The employer expects loyalty and deference in return. Low-caste workers, who have little money or favors to give to one another, usually solve their own economic problems and those of others by exchanging services. Persons of different castes are also brought together by the standard festivals and ceremonies which are celebrated on a village-wide basis and which often require the cooperation of all sectors of the population. In the modern context the schools, elections, and patriotic gatherings on national holidays cut across caste lines.

Such interaction and affiliation can be contrasted with the areas of exclusiveness that caste concepts impose. Intimate social relations--intermarriage, use of the same eating dishes, sharing of the same water pipe, etc.--are only possible between members of the same caste and often

only between members of certain defined subcastes. Each caste or subcaste supervises the conduct of its members and enforces standards of caste behavior. Violations which are considered injurious to the prestige of the group may be punished by fines, imposed penances, or even outcasting. An outcasted family can find no mates for its children, its members will not be invited to social functions of the brotherhood, and its right to carry on the caste work may even be suspended. Each caste or local section of a caste has its leader, who can call a caste assembly or a caste board of arbitration, or who can act to defend caste interests. Members of the same caste tend to cluster together in housing arrangements and sometimes even carry on unique rituals or at least have their own ritual emphases. Each caste has its own traditions and "origin story" explaining and justifying its status and its work habits. Special song and dance forms are associated with certain castes, and, in connection with the division of labor and caste work practices, special vocabularies or "trade languages" have arisen. In both of these villages activity is a mosaic of exclusiveness and common cause.

Neither of these villages stands alone. Each is associated with a number of other villages whose Kshatriyas claim common origins and ancestry. The villages of such clusters give each other strong support in times of trouble and hardship. A great deal of visiting and social exchange marks their relations.

For both of these villages the marriage relations form a significant link with the outside. Village exogamy prevails. A woman leaves her parental home at marriage and moves to her husband's home and village. Moreover, the woman must be from a different and inferior subsection of the caste. Thus an appropriate village network which defines marriage relations is established. A woman visits her parental home frequently, and her family continues to be concerned about her. It is her brother's duty to inquire after her welfare and to take an interest in her children. Consequently, families joined through marriage are in constant touch and constitute an important extravillage tie and resource for each other.

Purdah, or the seclusion of women, is practiced in both of the villages. It is most strictly enforced among high-caste women, who are pretty much confined to the inner house and courtyard of the home, especially while they are young. Low-caste women, who have to work in the fields and in the homes of others, must be able to move about more freely; but when their work is done, they cannot wander around the village at will without becoming the target of gossip. The restrictions upon women are at their maximum when they are in the village into which they have married and in the home of their husbands' parents. When they are in their natal village as a "daughter of the village," they can be much more free in behavior. The status of women, in spite of attempts to legislate equality for them, is inferior to that of men. The rationalization often offered for this is that the line is continued through males and that women leave their homes in marriage to become part of another social unit, while men remain with the parents

and care for them in their old age. Therefore it is the birth of a son that is greeted with rejoicing; a woman who does not bear sons may find her position in the family badly jeopardized. As may be expected from this, there is much more attention paid to the education of boys than of girls, and there is more concern over the health of boys than of girls.

In extended or joint families men and women occupy different parts of the residence. The men lounge and sleep on a front verandah or sitting place and come into the house mainly to eat or visit their wives at night. Sometimes the men live in separate structures situated at some distance from the residence of the women. This is more common in Rankhandi than in Senapur and is probably a function of greater wealth and space. Purdah requirements and the spatial separation of the sexes are much reduced for the low-caste villagers who do not have the common property and the large establishments that encourage extended families. Where there is a small or nuclear family, the husband and wife must be in constant contact and the woman must be allowed a good deal of freedom of action. Nevertheless, the low-caste people emulate high-caste practice and the joint family ideal as far as possible. For instance, when a bride of low caste comes to the village in marriage, she may stay in the house and refrain from field work for a short while. Economic necessity will force a change in behavior before long, but at least there has been token practice of purdah. The position of women in the Indian economy contrasts with that of Thai women. The Indian woman may join her husband in caste work; the house servant's wife may share the chores with her husband, and the wife of the agricultural field worker will help her husband harvest the crop. However, the woman does not have any important sphere or role of her own in the economy. The nearest approach to it is the role of the malkin, or senior woman of a joint family, who has charge of the household work of the women and of the stores of foodstuffs to be used in preparing meals for the family. Yet while the malkin can make the needs of the women and the household known, she depends on the men to supply them.

Still another similarity between Rankhandi and Senapur is the division of the settled areas into sections or wards. These are the neighborhoods which mark the homes of the founders of the main lines of the dominant caste. The descendants of these founding fathers continue to live in these sections. Rankhandi has seven such sections; Senapur has six. Those of Senapur are arranged in a north-south dichotomy, and mild rivalry relations exist between the moieties. Such sections are rallying points for political, social, and religious functions of all kinds.

An increased interest in education has marked the recent history of both Senapur and Rankhandi. These villages have had a primary school for many years. Within the last fifteen years both villages have established junior high schools. Rankhandi now has schools which carry boys through the twelfth grade, and Senapur has cooperated with other villages of its cluster to found a school of similar level in the vicinity. The education of girls and, except for lower primary education, the education of untouchables still lag badly.

Neither Senapur nor Rankhandi has any real business community. Both have a few small shops in which matches, kerosene oil, and a few other staples are sold. Rankhandi's residents make their major purchases in Deoband, the subdistrict headquarters with a population of over 25,000, which is six miles distant. The people of Senapur make frequent trips to Kerakat, their subdistrict headquarters, a fairly large town about five miles away. Senapur residents now also patronize the shopping center about two miles away which has grown up near the new sugar refinery.

The mainstay of the economy of both villages is, of course, agriculture. The climatic conditions which regulate the agricultural year are much the same for both villages. Both are dependent on the monsoon, which normally brings rain beginning in late June. The monsoon is over by September and is followed by a long dry period which gets progressively cooler. The farmers extend the agricultural season and make double cropping possible by irrigation. A short winter ends by the beginning of March. The heat and dust are extreme in April, May, and June until the onset of the rains.

Unlike the Thai peasant, these north Indian villagers do not depend upon one crop. They grow millets, barley, wheat, rice, sugar cane, gram, pulses, maize, mustard, legumes, potatoes, and many other crops. For insurance against drought or blight they often sow more than one crop in the same field. Contact with the outside through better roads, education, urban employment, and government programs has aroused an interest in available commodity goods and stimulated a desire for the money with which to buy them. Consequently, sugar cane is grown for the market, and the cane growers have taken an active interest in the operations of the sugar mills that have been established near them. In both village areas land consolidation programs have been in progress, and it is hoped that this will result in larger plots which can be more efficiently farmed. Cultivators who were unwilling to spend very much to prepare tiny, scattered parcels of land are much more amenable to using commercial fertilizer, the best grade of seed, and more efficient farm tools on their more easily worked and more easily protected consolidated lands. Meanwhile, the political sophistication that has attended adult suffrage and increased literacy is resulting in a greater awareness of the services available to the agriculturalist through district, state, and national agencies, and there is every reason to believe that experimentation with new products and methods of growing them will continue.

Vicos

The Peruvian settlement known as Vicos spreads over approximately 18,940 acres of Andean mountainsides on the eastern slopes of the intermontane valley called the Callejon de Huaylas. Nearly half the area, some 8,400 acres, is classed as waste land. Another 6,680 acres provide pasturage. About 3,515 acres can be dry-farmed, and 327 acres are irrigated (Gamero 1959) from ditches drawing from glacial streams. The estate lies on the north bank of the Marcara River, whose tributaries carry runoff from melting mountain glaciers on the summits of the peaks forming part of the Cordillera Blanca, or "White Range," which separates this high mountain valley from the Amazon Basin to the east.

The public square at Vicos is six kilometers by road from Marcara, a Mestizo trading center on the east bank of the Santa River, which drains the entire Callejon. The Marcara River empties into the Santa at this point, and its drainage funnels Vicos trade and travel toward the small town at its mouth. Thirty kilometers by winding road south on the Santa River lies Huaraz, a provincial city with perhaps 20,000 population, which is the capital of Ancash Department. The national capital, Lima, lies on the narrow Pacific Coastal littoral 440 kilometers, or 269 miles, away from Vicos via Conacocha Pass (Barnett 1960:13), from ten to twelve hours of automobile travel away.

The Marcara River basin has been inhabited for untold centuries. Test trenches sunk in the public square encountered artifacts and building walls from the colonial period and late prehistoric times. An Inca ruin stands on the summit of the ridge at the south edge of the basin. A Tiahuanacoid ruin of massive size extends over a large section of a subglacial tundra above present habitation overlooking the trans-Andean pass in the upper reaches of Vicos, known as the Quebrada Honda, or "Narrow Canyon." There is some evidence of preceramic Indian habitation in the basin. Thus, human land use has altered the local environment over a period of thousands of years. The local Indian population has been incorporated into or replaced through forced colonization by a series of native empires and finally by the Spanish conquest.

The Vicos area was linked to other parts of the Andes by well-built foot roads over which llama pack trains also moved by at least the period of Inca sovereignty. The Spaniards introduced horses, mules, and donkeys in the first third of the sixteenth century, but mounts remained beyond the economic capacity of local Indians, apparently, once the Spaniards allowed Indians to own horses. Spanish communication lines ran out to the Pacific coast, where coastal shipping carried goods and passengers more rapidly than horses or carriages could move overland. This pattern of communications did not alter appreciably until the modern revolution in mechanized land transport after the turn of

the present century. Even the railroads built during the latter decades of the nineteenth century were essentially mountain penetration routes striking inland from Pacific littoral ports to tap the agricultural resources of irrigated coastal valleys and the formidable highlands. Even after the introduction of motorized land vehicles, a parallel pattern of communication developed in Peru, with most traffic moving north and south along what became during World War II an almost completely paved link in the Pan-American highway joining the coastal cities. Andean settlements lack direct north-south highway links with one another, for penetration roads strike inland from the Pan-American highway parallel to the railways. The mountain road into the Callejon de Huaylas dates from the regime of Augusto Leguía from 1919 to 1930, and the final section of one-way truck trail into Vicos was built by the labor of Vicos Indians apparently early in the 1930's.

The construction of highways failed to break down very seriously the social isolation of the Vicos population from the rest of Peruvian society. When the Cornell Peru Project began, Vicos was a "little community" and not merely backward in a general sense, but in rather specific ways. At the beginning of 1952, the people of Vicos lived in a subsociety almost set apart from Peruvian national society and very small in scale (Wilson & Wilson 1945:25). The Vicos Indians were in effect attached to the land with about as much control over their social and natural environment as the English serf of a Norman lord about 1200 A. D. The Vicosinos were, therefore, quite representative of the large number of indigenous people of the Andean region who lived and--outside of Bolivia--still live in such circumstances (Vázquez 1961:7,9,54).

The theory of the relationship between serf and master was in Peru in 1952 an agrarian theory based on the fundamental assumption of inherent difference between Indian (serf) and Mestizo (master) (Holmberg 1960:65-72; Holmberg, Dobyns & Vázquez 1961:39). The serf was expected to labor for the master a specified number of days during the week, either on his fields or in specialized occupations or even outside the estate, to provide in addition a number of household and personal services, and always to render total social respect. The master, in return, granted the serf a subsistence plot to till during his unobligated time and protected him to some extent against outsiders.

The master of the Andean manor typically sought to exploit his serfs economically and socially. This meant that he kept them "barefoot and pregnant," to borrow a smile. He kept his serfs backward, not wanting to educate them "too much," or to modernize them. As a result, manorial agriculture remained as medieval as the social structure, and serfs living on an estate such as Vicos, where the population had grown markedly, sometimes failed to produce sufficient food

to feed themselves. At such times, they traded off the livestock they had managed to accumulate in order to purchase food, they hired out on their unobligated days, and they resorted to theft (Vázquez 1955).

At Vicos, the Indians were obligated to labor for the manor three days each week, or 156 days per year, on the fields exploited commercially by the manor management. In return for this labor, for which the serfs were legally entitled to twenty centavos daily, and additional free services as cooks, grooms, nursemaids, etc., at the manor house, the Indians received subsistence farming plots and house lots scattered over the steeper and less productive slopes of the estate and the privilege of grazing their livestock on manorial lands.

The serf settlement pattern closely paralleled that found in the U. S. Midwest, with scattered farmsteads, contrasting with the compact town sites the Spaniards built in the valley bottom lands subject to floods and avalanches occasioned by deglaciation. Only about 15 per cent of the arable land was available for commercial exploitation, the other 85 per cent having been cut up into serf subsistence plots by 1952 (Holmberg 1952:238). A maze of foot trails connected the hundreds of houses and thousands of fields.

Just how Vicos came to be a manor is not clear from the documentary record thus far discovered. It is clear that available documentation often records what its authors wished it to record, in any event, rather than what actually was happening at Vicos. At any rate, the area seems to have been engaged in livestock production by the end of the sixteenth century and to have been legally purchased from the Spanish crown during the final decade of the century. In 1611, Vicos passed into the ownership of a Lima hospital and was leased out to private entrepreneurs for exploitation throughout the colonial period.

Soon after Peruvian independence from Spain, the republican government established so-called Public Charity Societies to administer the hospitals, which were secularized, and their endowments. Vicos formed part of the rural endowment of the Lima Public Charity Society for almost a century, until it was expropriated in 1928. After a military coup ended the Leguía regime, however, the national parliament conveyed Vicos to the Public Charity Society of Huaraz, so that it remained in semipublic ownership and continued to be leased out to private exploiters.

Under these conditions, the powers of the lessee were exercised differentially by successive lessees. As a consequence, the serfs lived under a customary code that regulated much of their behavior independently of patronal mandate. Customary law governed inheritance of land, as long as the lessee did not directly intervene to reassign plots. Thus, each serf farmer came to have more than one plot situated at different altitudes with different microclimates.

While this forced serfs to spend considerable time simply walking from one plot to another, it apparently helped to stabilize the subsistence economy. A serf was not likely to suffer from a crop failure on all his fields in a given year even under extremely adverse conditions, and the variety of microclimate allowed for growing diversified crops for home consumption. At the lower altitudes maize could be grown, and at the highest altitudes permitting agriculture tuberous crops domesticated in the Andes dominated the fields. Differences in field locations that allowed several crops to be grown made the Vicos diet a seasonally varied one. Wheat and barley were on the table from July to October, green corn from March to June, etc. (Vázquez 1952:41).

Once harvested, the crops were in the hands of the women in a Vicos serf household. They distributed the food within the family as part of the sex division of labor. Men and women had respective rights, privileges, and duties in this little community. While males discharged the duties of officers in the socio-political hierarchy, for example, they needed the agreement of their wives to do so. Men carried out agricultural tasks except planting, sheared sheep, wove cloth and baskets, built houses, and played musical instruments. Women spun, washed, cooked, milked, and carried water.

Age played a major role in social stratification among the Indians. The elders who had passed through the series of socio-political offices gained grest esteem and respect. Vicosino age-role terminology recognized stages of development: nursing infants, crawlers from the time they began to eat solid foods and crawl, talkers from the time toddlers began to communicate and feed themselves, shepherds when they were old enough to watch over animals, workers from the time they could carry out farm chores and replace their fathers in manorial labors, adults able to carry on any activity, and elders (Vázquez 1952:44-45,47).

The Vicos serfs exchanged labor with one another on a reciprocity basis. The minka institution also functioned at times for welfare purposes such as cultivating a widow's field for her (Vázquez 1952:45).

Unlike the Thai villager in the Menam Chao Phraya delta, the Vicosinos were unaffected by overseas Chinese immigrants engaged in commerce. Peru attracted Chinese immigration during its railroad-building period and also used the Chinese to replace slaves on the coastal plantations (Barnett 1960: 2). The bulk of these immigrants settled in Peruvian cities, mostly in Lima. A few found their way into highland towns, where they engaged in commerce, but they did not penetrate to the level of the small provincial trading towns near Vicos. Local commerce was in the hands of Mestizo merchants, who themselves have only recently been caught up in the modern industrial world.

Under manorial conditions, Vicos serfs purchased few industrial products. They bought some salt produced and sold under Peruvian government monopoly, sugar grown and refined in Peru, and some coca leaves and tobacco also controlled by the government. The serfs bought small amounts of kerosene for their simple lamps, used sparingly, and the cheapest grade of cane alcohol for festive occasions. When short of grain, they purchased supplemental supplies (Vázquez 1952:44). Only occasionally could a serf afford to invest in a straight iron bar to use in agricultural tasks, particularly prying glacial boulders out of the fields. Every farmer purchased a long steel-bladed, short-handled hoe, but wooden plows contained no metal parts. Houses were built from local materials: sun-dried brick, stones, mud mortar, straw thatch, and locally made wooden doors produced by eight part-time carpenters (Vázquez 1952:42-43).

The lessees exploiting Vicos seldom bothered to visit it, hiring Mestizo overseers to manage it for them. The overseers selected subservient Indians as straw bosses and exercised a very thorough-going power over the Indian serfs. The latter had by the middle of the present century come to accept the Mestizo evaluation of Indians in large part, even though they covertly fought the manorial administration at every opportunity, stealing from it as much of their own time and its agricultural production as possible. Still, the social milieu was such as to be extremely stressful for the Indians. Both patron and serfs employed strong boundary-maintaining mechanisms to isolate Vicos from Peruvian national society. Serf women and children actually fled in fright from strangers, and the Indians pelted strangers whom they feared with rocks in order to avoid meaningful interaction.

As a consequence of manorial conditions, Vicos and its immediate environs constituted the meaningful social world of most Vicosinos at mid-century. Many Vicosinos recognized neither the name of the country in which they lived nor the name of its president. Most had not traveled outside the narrow confines of the Marcará River basin. They believed in and feared Mestizo witches, termed pishtacos in their Quechua dialect, who waylaid innocent Indians on the trails in the dark and killed them to extract their body grease to lubricate the frightening engines the whites used to power their vehicles.

Geographic and social isolation was reinforced by linguistic isolation. The Vicos serfs were at mid-century virtually all monolingual in a local dialect of Quechua. They could not speak Spanish, the official language of Peru and its major trade language, nor could they understand very much spoken Spanish. Mestizo overseers were of necessity bilingual.

A base-line study of Vicos as a manor began in 1949. The Peruvian corporation then leasing the estate from the Public Charity Society of Huaraz found that it could not compete with European linen-producing areas and offered to sublease Vicos, which it had leased in order to grow flax and to utilize the serf labor supply in its factory. Cornell University's Professor Allan R. Holmberg, together with the President of the Peruvian Indian Institute, Dr. Carlos Monge Medrano, formed the Cornell Peru Project to conduct a five-year program in applied social science and socio-economic improvement at Vicos. The Project staff enumerated 1,703 persons, living in 363 households in Vicos, at the beginning of 1952 (Alers 1965:425).

As already implied in discussing field dispersion, this Indian population lived by mixed farming involving four major crops and animal husbandry.

Crop diversification on different fields is reflected in the proportion of families growing each of the major crops in 1952. Slightly less than 99 per cent of the families grew maize, a New World cereal, while 98.3 per cent grew wheat and a virtually equal percentage raised barley--both Old World small grains. Over 89 per cent planted potatoes (Alers 1965:444) despite repeated crop failures or partial failures in recent years. A parallel diversification of animal resources is reflected in ownership figures. Chickens were the most important resource, owned by 97 per cent of the families. Cattle followed, with just over 90 per cent of the families owning cows and 88 per cent owning sheep. Over 80 per cent raised pigs, and almost 85 per cent raised guinea pigs (Alers 1965:445). Chickens were mostly raised for sale, and egg production for sale, cattle as investments to be sold when cash was necessary, and sheep for both wool and sale. The production of eggs was a profitable side line. Guinea pigs provided the main animal protein in the serf diet, and the great bulk of the cereal and tuber production was consumed at home.

The serf population of Vicos did not live at a uniform economic level. Marked differences in wealth existed between serf families, fostered in part by great inequalities in the amount of agricultural land controlled by different individuals as a result of the customary inheritance system. A person's wealth was calculated in terms of the number of head of cattle he owned, the number of rooms and quality of his house, and the number of complete changes of clothing he possessed, as well as the number of his godchildren (Vázquez 1952:47). Cattle loomed largest in calculating wealth, since cow manure was the only form of field fertilization of which the serfs seem to have been conscious. Only cattle owners could fertilize their fields, whatever area they might control (Barnett 1960:22).

These differences in socio-economic position stemmed from an agrarian base, however, for commerce was very little developed within the manor. Only six serfs conducted very

small-scale retail stores in their homes, stocking the few consumers' items in constant demand: salt, sugar, coca, kerosene, and alcohol (Vázquez 1952:44). Vendors of all types numbered only twenty-one (Alers 1965:446), or a mere 5.8 per cent of the families, and these were farmers first and vendors second. Most commercial transactions serfs enetered into involved Mestizo merchants in Marcará rather than other serfs. The Marcará market constituted the principal Vicos window looking out at the wider world not controlled by the manorial regime (Vázquez 1952:45). Its merchants had access to power, so serfs sought them as godsibs within the Roman Catholic ritual kinship system. Whatever responsibilities Mestizo godparents discharged toward their godchildren, the godsib relationship involved economic as well as social obligations. The Indian godsib sold to the Mestizo godsib that part of his agricultural production or those chickens and cows or sheep he converted into cash at favorable prices, and the Mestizo godsib sold goods to him at a discount. Since the Indian godsib depended upon his Mestizo fictive kinsman for protection from the police and courts, his discounts were likely to be larger than those made by the merchants.

Thus the manorial patron or the merchant patron mediated between the Indian serf and almost all other individuals in Peruvian society. Serfs avoided government officials as much as possible. Encouraged by the lessees, they avoided conscription into the national army under Peru's compulsory universal military service law. Illiterate, the serfs lacked the personal identification documents required under Peruvian law, so males were subject to conscription at any time since they could not prove either that they had served in the army or were of exempt age.

The power and, to a considerable extent, the social focus in Vicos was the rather poor collection of sun-dried brick buildings scattered about the public square--really a more or less level, grass-covered area crossed by a stone-covered irrigation canal. The manor house stood on the downhill edge, with a Roman Catholic chapel on its left and a small mortuary chapel opposite. A one-room-and-corredor school and teacher's quarters had been built on the square by voluntary labor in 1940 (Vázquez 1965a:57). This area provided space for celebrating religious festivals (Vázquez 1952:41) as well as holding the weekly manor labor shape-up.

The parish priest from Marcará visited Vicos a couple of times a year to celebrate mass, but local chanters led regular Sunday rituals and officiated at frequent funerals. A set of local officials called varayoc, or staff-bearers, enforced church attendance. These officials held office for a year and received their symbolic staves of office from the patron. Thus their authority was derived from both the religious power of the parish priest and the civil power of

the lessee. They discharged a number of other duties, such as turning out the serfs for public works, road repair, and ditch and bridge maintenance. They sought out couples living in trial marriage for the annual Easter-season marriage ceremony in the chapel. The varayoc were organized in a hierarchy through which men moved by sponsoring festivals.

In terms of direct civil administration, Vicos formed part of the District of Marcará. A governor with a council made decisions within this smallest unit of civil government and appointed a lieutenant governor for Vicos, responsible in 1952 mainly for turning out a work party once a year to repair the roads and for helping to maintain the parish church (Barnett 1960:17). This district constituted a portion of Carhuaz Province, led by a subprefect with offices in the town of Carhuaz, thirteen kilometers by road from the Vicos square. The Province formed part of Ancash Department, presided over by a Prefect in Huaraz appointed by the administration in power in Lima, local elections having been suspended by Leguía many years before. Local branch offices of some government ministries operated in Huaraz, even fewer in Carhuaz, and almost none in Marcará. Peru is constitutionally divided into twenty-four departments (counting the Province of Callao). By mid-century there were over 150 provinces and more than 1,500 districts, as the members of parliament continually responded to local political pressures by creating new units of administration. The entire civil administration had very little to do with Vicos, however, except insofar as district or occasionally provincial officials utilized the apparatus of direct administration to intimidate the rustic Indian serfs.

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