HENRY T. LEWIS

ILOCANO IRRIGATION

THE CORPORATE RESOLUTION

Asian Studies at Hawaii, No. 37

Ilocano Irrigation
The Corporate Resolution

Henry T. Lewis

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To the memory of
William C. Beatty, Jr.,
an inspired and demanding
professor of anthropology

CONTENTS

What is involved in Chinese business success is not only motivation and sophistication, but also well-developed modes of concentrating and delegating authority which enable kinsmen to work together in enduring corporate groupings. Such modes seem to be largely absent in bilaterally organized southeast Asian societies, as many observers have noted in referring to them as "loosely structured," "individualistic," and "atomistic."

—Robert L. Winzler, "Ecology, Culture, Social Organization, and State Formation in Southeast Asia"

ACKNOWLEDGMENTS

Two periods of field research (January–June, 1976; April–August, 1978) were supported by a grant from the Social Sciences and Humanities Research Council of Canada. However, the conclusions and opinions expressed are my own and are not necessarily those of the SSHRC. I am most appreciative for the companionship and discussions with my son, Robert, who assisted me in the Philippines in 1978. Inge Bolin and Melanie Wiber, both former graduate students at the University of Alberta, were extremely helpful in the final preparation and editing of the manuscript.

Various people at the Institute of Philippine Culture, Ateneo de Manila University, assisted with logistical matters. Among those who were particularly helpful were Dr. Ricardo G. Abad, Dr. Wilfredo Arce, and Thelma G. Padero. Special mention must be made of the friendship and assistance given to me by Gerard Rixhon.

A very large number of people in the villages and town of Bacarra were helpful, especially those individuals in the five communal irrigation systems most closely examined. Elected officials from the Federation of Communal Irrigation Societies of Bacarra went to great pains to make sure that I was able to attend meetings of the federation, meet with officials of more isolated irrigation cooperatives, obtain copies of documents, attend ritual events, accompany them to supervise elections, and discuss the histories and current activities of their own irrigation groups. Four individuals from the federation deserve special thanks: Lorenzo Acoba, Mariano Bonoan, Tranquilino Galisa, and Alfredo Mercado. I am particularly grateful to these four and others for

patiently enduring the seemingly inordinate length of time it took me to learn enough to ask meaningful and intelligent questions and the number of occasions that I went over the same materials with them. They and numerous other knowledgeable members of irrigation societies in Bacarra are the true experts on the technology and ecology of local irrigation there.

Finally, I should like to note my great indebtedness to the late Fr. Frank Lynch, SJV, the organizer and original director of the Institute of Philippine Culture. This obligation goes back to 1962 when I first undertook research in the Philippines and the several times after that when he provided invaluable assistance on matters relating to my research. Anthropology and sociology in the Philippines are much the poorer for his untimely death; countless individuals like myself are much the better for his having been there.

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Regrettably, this monograph had its publication delayed by more than five years. As a result, some of the statements about individuals in Ilocos Norte and "current conditions" in the Philippines have changed since the manuscript's original acceptance for publication in the mid-1980s. It is also the case that new studies on communal irrigation, both within the Philippines and without, have come forward or are about to be released, and were this book being written today these studies would have to be considered. Nonetheless, despite the delay, what is said about communal irrigation and corporate principles of social organization in Ilocos Norte is as valid now as it was then. Other than making adjustments for a few time periods and current population estimates, the only formal change that I have made is in the dedication to the late Bill Beatty, who passed away early last year. As my first mentor in anthropology, I wish that he could have seen it.

Figure 1. Northern Luzon, with barrios of Buyon and Mambabanga indicated.

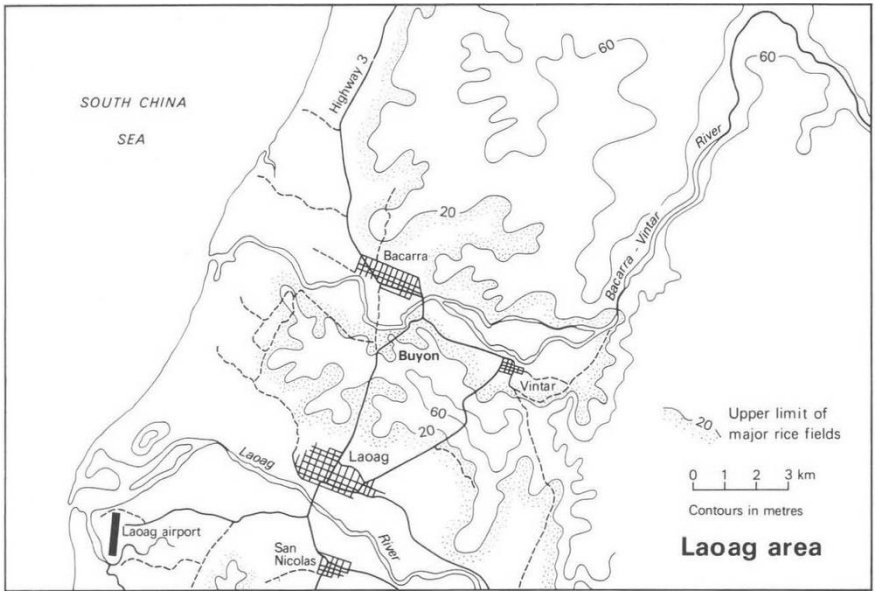


Figure 2. Laoag area, Ilocos Norte Province.

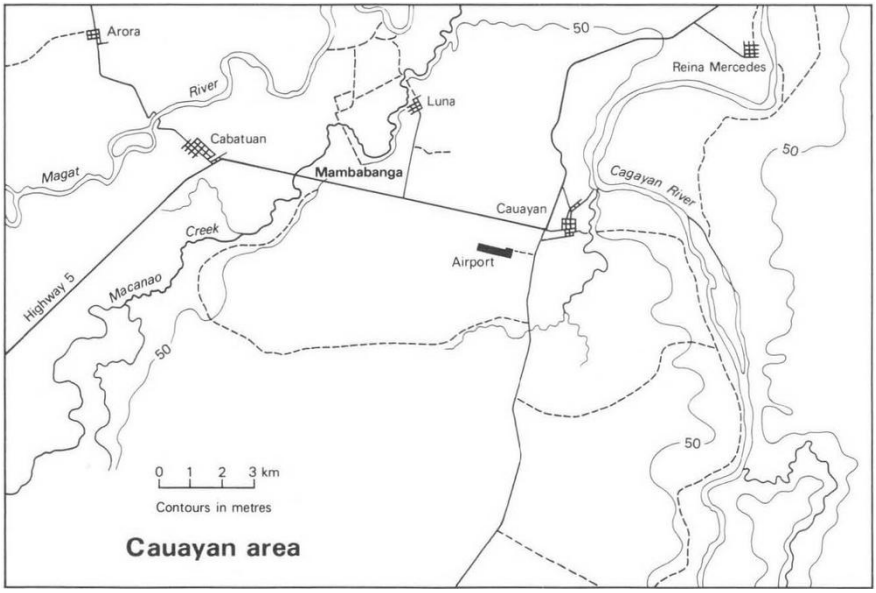
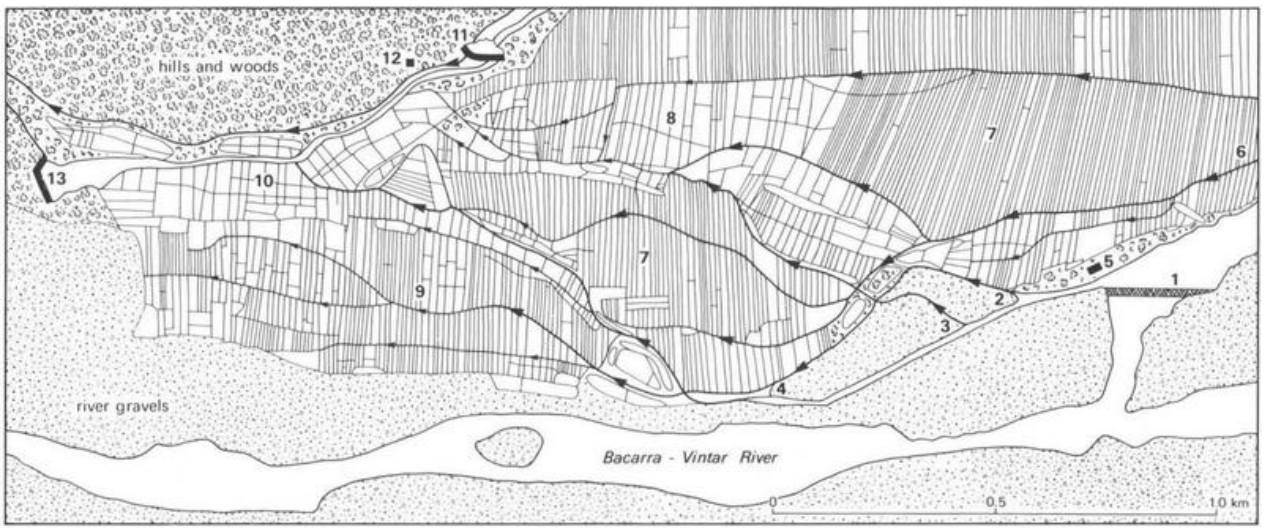


Figure 3. Cauayan area, Isabela Province.



1 Brush and rock weir *(padul)* in main river channel
2 Intake *(wawa ti kali)* and main canal *(kali)* for Zanjera A
3 Intake and main canal for Zanjera B
4 Intake and main canal for Zanjera C
5 Temporary shelter used by zanjeras when working nearby dam or main canals
6 Main canal from upstream system of Zanjera D
7 Communally owned *(atar)* lands of Zanjera D showing individual members' fields or shares *(bingay)*
8 Privately owned, non-member lands belonging to original landowners *(biang ti daga)* of Zanjera D
9 Individual member-owned lands *(inkalian)* of Zanjera A's members
10 Lands owned by "water buyers" *(inkapulo)* who pay Zanjera A 10% for each irrigated crop
11 Concrete dam *(puttot)* and reservoir *(libtong)* which provides supplementary water source for and feeds into main canal of Zanjera B
12 Meeting house *(kamarine* or *balay ti zanjera)* of Zanjera B
13 Concrete dam and reservoir which provides supplementary water for Zanjera C, located on same stream as that of Zanjera B's supplementary dam

Figure 4. Dams, canals, and fields involving four zanjeras in the municipality of Bacarra.

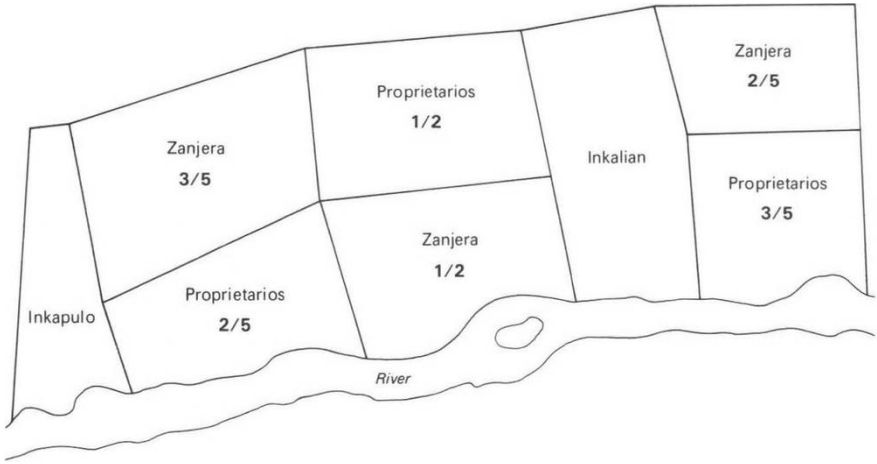


Figure 5. Block map showing division of land between zanjera and landowners *(proprietarios)*. *Inkalian* lands are those owned outright by zanjera members; *inkapulo* lands are those of water buyers.

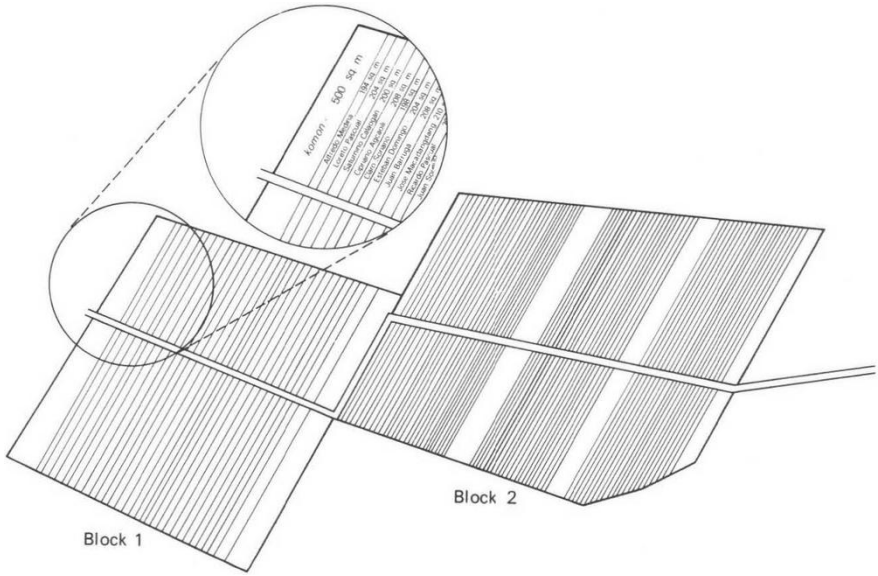


Figure 6. Parcel map showing two *atar* blocks with individual shares *(bingay)* of particular members and pieces of communally worked land *(komon)*.

Introduction

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IN MARCH 1963, Mr. Domingo, a village elder, retired farmer, and a pioneer settler, pointed to an acacia tree above the opposite bank of the Magat River as the place where the "battle with the headhunters" had begun.[1]

> Just below there the Kalingas[2] started to cross in their bangkas [wooden dugouts], four canoes with thirty or forty warriors, all yelling and waving their spears. On this bank there were about fifteen of us, plus a sergeant and four privates from the constabulary [detachment in Cauayan]. We had our bolos [machetes] and the soldiers had rifles. The sergeant had his men shoot into the air, and he yelled at the Kalingas to go back but they didn't stop. We had faced a small group of them earlier [in the month] and they said this was their land and we must leave. Now they wanted to fight; to take our heads, I suppose. When they were halfway across, the sergeant told his companions to stop firing and he aimed at one of the Kalingas standing in the first canoe. He shot him, in the chest, right through his [wooden] shield. The others stopped yelling, and stared at his body in the water, and then they went and got him. We never saw them again. And they never came back. We went to our camp, our families were waiting, and we celebrated with what little we had. We thanked God and the sergeant for the way it ended.
>
> We built our houses near the river, but after a bad flood some of us started a new barrio on the bluff overlooking the floodplains. We named it after the trees that grew there, a kind of wild coconut [*babanga*]. We

> called it Mambabanga—the place of wild coconuts. But there's nothing wild here now. It's been ours for almost fifty years. We Ilocanos, most of us from Bacarra and Vintar [Ilocos Norte], settled this area by clearing and draining the swamps, we drove away the Kalingas, we got sick with malaria and some people died, we built a dam and dug irrigation canals, and we made this a good place for growing rice. We were real pioneers, just like those people in the [American] movies, and we are very proud of that.

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Numbering over 6 million people, just over 10 percent of the more than 59,906,000 Filipinos (1989 estimate), Ilocanos are the third largest of eight major ethno-linguistic groups that make up the complex of Philippine lowland cultures. Ilocanos are less well known than the more numerous Tagalogs in and around Manila or the Visayans from the central Philippines, and are generally considered to be less typical of the Christian Filipinos. All lowland Christian populations differ in terms of language, religious practices and beliefs, food preferences, art forms, and material culture. However, with the exception of Ilocanos, lowland Filipino populations are strikingly similar in their general patterns of culture and their overall forms of social organization.

Once referred to as the "Yankees of the Philippines" by American officials who recruited them in large numbers to work in Hawaii and California, Ilocanos are said to be and see themselves as hard working, thrifty, industrious, pioneering, faithful to moral (and economic) obligations, possessing a reverence for the land, and fiercely loyal to friends and kin—characteristics that are similar to those expressed by other Filipino subcultures but exhibited by Ilocanos in greater measure. While other Filipinos may grudgingly acknowledge some of these virtues, they also will often add their disapproval by stating that Ilocanos are aggressive, overly assertive, stingy, land hungry, prone to violence (especially in politics), possessively jealous, and exceedingly provincial.

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As the owner of a general merchandise store in Ilagan, the capital of Isabela, the man was somewhat exceptional: he was neither Ilocano nor Chinese. He was an Ibanag, representing one of the two indigenous lowland peasant groups in the Cagayan Valley of northeast Luzon. Before the early years of this century the Ibanags and the Gaddangs had been numerically and, within the Spanish colonial system, politically dominant in the towns along the Cagayan and Magat rivers.

Perhaps because the storeowner was aware of my research on an

Ilocano community his comments about the subsequent domination of Cagayan Valley by Ilocano immigrants were somewhat tempered. However, even though some of his best friends were Ilocanos (almost his exact phrase), as were two sons-in-law, there was a touch of bitterness to his comments about the Ilocano occupation of the Ibanag homeland.

> Before the Ilocanos came there were Ibanags, Gaddangs, and Kalingas—those wild people. There were only a few people at that time. Those Ilocanos were very poor. They had nothing. They worked for us as tenants, but now many of them are the landlords. They worked very hard. They are that way.
>
> But they are aggressive, too. They assert themselves. Since the war [World War II] they have taken over everything. A lot of [Ilocano] lawyers came and brought their politics with them.
>
> We Ibanags are too easy going. Now we are just a part of the Ilocos. That's what the Ilocanos say.

With some truth and a degree of ethnic bias, the Ibanag storeowner attempted to characterize the success of Ilocano immigrants as something achieved at the expense of the established peasant populations in northeast Luzon. He was both philosophical and resentful, but most of all he was resigned to the fact that Isabela Province, in something less than 50 years, had become thoroughly "Ilocanoized."

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Both positive and negative attributes are interpreted by nonIlocano Filipinos—and Ilocanos alike—as related to differences in "race," environment, population pressure, and culture. As a part of what is supposed to make Ilocanos racially different, and somehow partly to explain their distinctiveness, other lowland Filipinos maintain that Ilocanos are physically "very dark," a biologically undesirable trait in the view of most Filipinos. Ilocanos, on the other hand, emphasize the environment of Luzon's northwest coast, one of the driest regions in the Philippines, as a severely limiting factor that has helped shape Ilocano culture and society. It is also recognized that the region is heavily overpopulated, given the environmental limitations of the Ilocos coast, and that pressures from overpopulation have helped to shape both Ilocano virtues and vices. One of the more distinctive features of life in the Ilocos is the overall economic impoverishment of the region, with the result that both upper and lower classes are poor relative to those in lowland areas in central and south Luzon. The view held by the more urbane of the Tagalogs and Visayans that Ilocanos are cultur-

ally unsophisticated and highly provincial, applies no less to upper-class Ilocanos than it does to peasant farmers.

The Ilocanos' lack of sophistication is said to be characterized by an addiction to gambling (particularly cockfighting), political feuding, artistic expressions, and a number of regional food preferences (such as dog meat) about which, their critics maintain, only Ilocanos and "Igorotes" (mountain people) are enthusiastic. The Ilocanos' parochialism is partly attributed to the social and physical isolation of Luzon's northwest coast, and is reflected in the fact that Ilocanos were historically much less involved in the Spanish and later American-influenced commercialism of Manila and other urban centers. Further related to this, Ilocanos have traditionally taken a much smaller part in the agrarian movements of rebellion and social unrest that preceded and followed World War II. More than 50 years ago, in obvious tones of ethnic and philosophical bias, one Tagalog writer described the Ilocos region as follows: "Here [the Ilocos coast] the people are still politically illiterate. They are still unaware of the labor struggles which are being waged all over the world; there is yet no feeling of the class consciousness or even discontent over the existing economical arrangement" (Lava 1938:8).

However, since World War II a disproportionate number of Philippine presidents have been Ilocanos: Elpidio Quirino from Ilocos Sur (vilified for corruption during his regime); Ramon Magasayay from central Luzon (a "part-Ilocano" and the country's most respected president); and Ferdinand Marcos (the Philippines' first dictator) from Ilocos Norte. Marcos has left an indelible stamp upon the political and economic arrangements of the Philippines and, despite his record of political repression and economic exploitation, is still widely—though not universally—revered in his home province where his supporters and the province as a whole benefitted from a patronage of gifts and graft.

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It was the fall of 1963 and a celebration was to be held in the dining room of a local hotel in the town of Laoag—the capital of Ilocos Norte Province—to initiate the reelection campaign of the province's senator. Invitations were extended to nearly everyone of note in the town. Being a "visiting scholar" of sorts (no matter that I was merely a graduate student without a doctoral degree, much less an academic position) I was included as a guest and throughout the evening introduced as "Doctor-Professor Lewis."

The senator was certain to be re-elected, even though he had numerous political enemies and detractors within the province. During the

party a lawyer, an ardent and loyal supporter of the incumbent, informed me that the senator was destined for "true greatness" in ways, he said, that were remarkably similar to the career of President John F. Kennedy: a successful legal background, a "glorious war record," service in the senate, great popular support, an attractive and ambitious wife, and Catholicism—common to all Philippine presidents. Less than two months later Kennedy was assassinated in Dallas while the senator went on to be re-elected to a second term, and subsequently to the presidency of the Philippines. There were no doubts in the minds of his supporters that, as the lawyer stated, "Senator Marcos will bring much credit and glory to Ilocos Norte, to all Ilocanos."

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"Discontent over the existing economical arrangement" was actually in evidence among Ilocanos well before the turn of the century in a different way, as shown by the migration of hundreds of thousands of people to other parts of the Philippines and, following American annexation of the Islands, overseas. Ilocanos have consistently made up the largest numbers of Filipino emigrants to the United States and they have also constituted the majority of settlers and migrant laborers in recently settled regions of the Philippines. Filipinos in the sugar and pineapple plantations of Hawaii, the lettuce fields of California's Salinas Valley, and the fish canneries of Alaska have largely come from the Ilocos coast, while the majority of people now living in the recently pioneered sections of northeast Luzon and parts of Mindinao are the descendants of Ilocano pioneers (Figure 2).

Ilocos Norte is considered by its residents to be the heartland of "Ilokandia," despite that the greater number of Ilocano speakers are found farther south in the provinces of Ilocos Sur, La Union, and Pangasinan. The argument of Ilocanos from Ilocos Norte is that the attributes that are characteristically Ilocano—that is, those traits considered commendable—are more evident in the northernmost part of the Ilocano ethnic region. In this respect, cultured pride and ethnic prejudice are not limited to non-Ilocanos. The greatest impact that Ilocanos have had on indigenous peoples resulted from their occupation of Cagayan Valley, specifically the provinces of Isabela and Cagayan, where populations of Ibanags, Christian Gaddangs, and others were either displaced or assimilated (Lewis 1984).

My research on Ilocanos began with a few weeks of preliminary work in Manila during late 1962 and, over the next 12 months, involved the study of two villages in northern Luzon: first in a pioneering community, Mambabanga, in the municipality of Luna, Isabela

Province, between January and June 1963; second in a homeland community, Buyon, in the municipality of Bacarra, Ilocos Norte Province, between July and November 1963 (Figures 1, 3, and 4). My more personal interests for doing research on Ilocanos derived from 18 months spent as an Army sergeant in the Philippines in the interval between World War II and the Korean War, first in Manila and later at Camp John Hay in Baguio City. A trip to the northernmost part of Luzon in 1949, from La Union through Ilocos Norte, had an influence on my decision to study Ilocanos in 1962–1963, and again in 1976 and 1978.

The anthropological justification for examining Ilocano social and economic organization is derived from my interest in understanding what kinds and degrees of social and economic change occur when peasant villagers move from a heavily populated, subsistence-based homeland (Ilocos Norte) to a less populated, relatively wealthier and more commercial frontier region (Isabela). The thesis and book that followed, *Ilocano Rice Farmers,* describes and compares the social and economic dimensions of life in Buyon and Mambabanga.

One of the major reasons for studying Ilocanos rather than other Filipino farmers was the presence of more than a thousand locally run, communal irrigation systems, called zanjeras, within the province of Ilocos Norte. According to the then limited information about Ilocano irrigation practices (Christie 1914), such groups were reported to have been in existence for a considerable length of time—at least 200 years. As one part of the original comparison between homeland and pioneering regions, the relative successes and failures that migrant Ilocanos had in adapting traditional irrigation systems to a new region involved questions important to agricultural practice and hydrological theory.

In this introduction the conclusions derived from the 1962–1963 study of the differing social and economic characteristics of Buyon and Mambabanga are briefly summarized. For a fuller explanation of how the two villages were organized and the social transformations involved in moving from Ilocos Norte to Isabela, the reader should consult *Ilocano Rice Farmers* (1971) as well as my subsequent publication on patterns of migration and resettlement in northern Luzon (Lewis 1984).

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It was my first day in Mambabanga, the start of my initiation to the "ritual of fieldwork" that apprentice anthropologists are expected to endure. On the way to examine part of the canal system that irrigated the rice paddies below the ridge on which Mambabanga is located, the barrio headman and I passed a large, brightly decorated cross. Set beside the path at the conjunction of four fields, it was festooned with

cloth tassels and other decorations and, set before it, were two bowls of food. Fascinated at my first encounter with something of "ritual significance," I asked my companion what it involved. With my poor use of Ilocano and his better use of English, it came out that it was to "frighten the bad *billit*." Certain that I had found my first example of a religious syncretism—in this case a mix of Christianity and Ilocano folk religion—I pressed on and asked, "*Billit?* Is it a kind of *anito* [spirit]?" Clearly nonplussed at my response, he answered, "No, it is for the *billit,* the rice birds. It is to scare them from the rice in the fields. It is a *banti* [scarecrow], a thing to keep the birds away."

"But, the food?" I asked, having all too eagerly and wrongfully leapt to the conclusion that it was a religious offering, "Isn't it an offering, by someone, for something?" Again puzzled by my choice of words in both languages, he replied, "It is an 'offering' for those people, there [he pointed], those people working in the field. It is their lunch." For me, having been anthropologically way out to lunch, it was an important lesson, one repeated several times in subsequent months and later years of fieldwork: be cautious about jumping to "obvious" conclusions and whenever possible allow, in fact, actively encourage, informants to test and correct your interpretations.

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Among Ilocano statements of regional ethnocentrism, the people of Ilocos Norte maintain that they have been more "peaceable" (that is, politically stable) than their Ilocano neighbors in Ilocos Sur and La Union, that they have constituted the largest number of pioneer settlers and overseas emigrants, and that they have developed cooperative irrigation on a scale unmatched anywhere else in the archipelago. Whereas communal irrigation is hardly unique to Ilocos Norte, its development there has been on a scale found nowhere else in the Philippines, nor, with the exception of Bali, in many other parts of Southeast Asia.

As with people everywhere, Ilocanos in Ilocos Norte are moved to exaggerate when given to self-imagery. Nonetheless, within the small valleys of this province are truly impressive numbers of locally developed, peasant-farmer operated, cooperative irrigation systems. Only Bali rivals Ilocos Norte in terms of the number and organizational development of communal irrigation systems. In contrast to the rice fields in Ilocos Norte, Balinese fields are steeply terraced, and, for us, are more aesthetically pleasing. In terms of Western cultural values, even for anthropologists who are ideally given to objectivity, Balinese society is more exotic and culturally attractive than is the Ilocos region or, for that matter, most other areas of the Philippines. But, as is noted

later in this volume, in terms of their effectiveness as irrigation systems, Ilocano zanjeras are no less technologically developed and no less organizationally sophisticated than are their Balinese counterparts.

In the spring of 1976 and again during the summer of 1978, I returned to Ilocos Norte for a total of 10 months, originally with a plan to focus my research on how farmers in Buyon had adjusted traditional farming practices to the introduction of the "Green Revolution"—the new, highly productive varieties of rice that replaced most traditional rice types during the late 1960s and early 1970s. However, because of problems in obtaining government permission initially to carry out and subsequently to release the results of an aerial survey of village lands, it was not possible to complete more than few of the planned interviews that would have shown how cropping patterns in particular paddy fields had changed in the 15 years since the first study.

During the first half of 1976, having initiated the aerial survey and the appropriate requests for government security clearances, I concentrated my efforts on examining irrigation cooperatives, notably on the role they played in the introduction and acceptance of the new and higher yielding varieties of rice. As this work progressed and the results of the aerial survey appeared to become further enmeshed in red tape, I began to focus on the organizational aspects of Ilocano irrigation. When on returning to Ilocos Norte in 1978 I discovered that further delays were involved with release of the photos, the study of how irrigation cooperatives functioned became the central part of my research, with questions regarding the Green Revolution reduced to secondary consideration. This required a different perspective from that of the earlier, village-level research because, as will be shown, irrigation groups are separate, both politically and socially, from the organization and operation of villages.

Consequently, the planned study for examining the relative successes and failures of the Green Revolution was only partially realized, and part of that information is included here. As with the organization and operation of irrigation systems, the Ilocano farmers' acceptance and modification of government programs for growing the so-called miracle rice types shows the local logic whereby Ilocano farmers accommodate new ideas and things (varieties of rice, fertilizers, pesticides, and mechanized tractors) to existing circumstances, often in ways that baffle agricultural experts.

As noted, zanjeras are organizationally unrelated to barrio governments and, like the flow of water itself, memberships cuts across village boundaries, involving people from two, three, and often more nearby communities, and with individuals occasionally belonging to

two or even more zanjeras. This in turn is related to the way that family land holdings are frequently divided into numerous (six or often more) widely separated field plots. At the same time, irrigation groups constitute a different kind of social formation than that of villages, and are based on the collective ownership of resources (water rights, dams, canals, and, in some instances, land) rather than merely residence—as is the case for villages throughout most of the Philippines.

Irrigation societies are what anthropologists and others refer to as corporate groups: social groups that control the use and inheritance of property, meet more or less regularly, and have representative leadership—but are not necessarily "democratic." At the local level irrigation groups are particularly interesting in terms of their social complexity and in the various solutions they have developed for obtaining and maintaining their resource of water. As examples of corporate group organization, they represent one of the important ways that humans in widely separate and culturally distinct societies have solved problems and created social structures for managing and protecting resources. That which is both culturally unique and humanly universal is ultimately the heart of anthropological inquiry.

Ilocano social life is based on a combination of egocentric (person centered) systems of reciprocity: the bilateral kin group of relatives from both male and female lines of descent, a spouse's kin, age-mates and friends, neighbors, work-mates, and ritual or "fictive" kin. This "bundle" of social relationships and reciprocal obligations varies from individual to individual, and it is neither stable nor fixed in membership. It lacks well-defined social boundaries—what social theorists call "corporate definition"—and except for the nuclear family, a great deal of flexibility exists in terms of individual selectivity, which alters and realters the range and intensity of a person's social relationships. Even the nuclear family does not include an unalterable set of social obligations. The establishment of new families, new circumstances, age of members, residence patterns, relative wealth, and other influences can result in the different extent of feelings and varying degrees of sibling and filial loyalty. The total network of interdependent, egocentered systems is similar to that found throughout the Philippines and has been designated an "alliance system." The concept of alliance system was first used in Philippines studies by Lynch (1959:49–55), and was later restated by Hollnsteiner (1963:63) who related it to political power:

> Where power is concerned, a network of supporters is crucial to the persons interested in gaining and maintaining power. These followers are provided through the alliance system, a network of reciprocal re-

> lationships whose members extend to one another and expect mutual assistance and loyalty.
>
> One is expected to go all out for an ally. He may be a kinsman, a compadre, a neighbor, or friend. These relationships in themselves do not guarantee membership in one's alliance. It is when a kinsman, compadre, neighbor, or friend is emotionally close, and therefore tagged as an ally, that he can really be counted on.

Alliance systems depend on the ability of individuals to reciprocate favors and assistance from particular individuals. In political life it involves the ability of leaders to provide services and remunerations for the numbers of individuals who make up the wider set of subsystems that in turn form their own larger alliance systems. The politically faithful can be rewarded from the personal wealth of the leader and from the wealth and patronage that go with holding political office. In addition the alliances are highly personalized, essentially feudal in terms of the obligations involved, and the leader of such a following needs to spend an exorbitant amount of time and effort gaining new support, maintaining that which he or she already has and, when they occur, mending breaks in the network of interpersonal relationships.

Neither the fundamental principles of social organization nor the related set of cultural themes are essentially different for the Ilocano than they are for other lowland Filipino groups. Yet the differences in behavior that distinguish Ilocanos from Tagalogs, Visayans, Pampangans, and others are significant. The fact that the Ilocano situation is different and Ilocano behavior is often distinct from that of other Filipino groups—while the cultural and social systems continue essentially unaltered—can be explained in essentially two ways. First, social, economic, and geographical settings (in addition to some locally important historical developments) have imposed considerable and varied pressures on the traditional social and cultural forms as they exist in northwest Luzon. Second, the social system and the pattern of cultural themes are so structured that they can undergo a great deal of stress without fundamentally being altered. All of this is reinforced by a set of cultural values or themes—cultural patterns that are shared by all Philippine subcultures.

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The roughly framed, embroidered message above the door read *Kaaroba Isu Ti Kabsatmo Wenno Kabagiam,* which translates as "a neighbor is the same as your relative or sibling." As one of the first people interviewed at the start of my house-to-house census in Mambabanga, Mrs. Acoba, a widow in her late sixties, explained,

> Your neighbors are not just people who live near you; they are people that you can count upon, they are like kinsmen, sometimes they are even [real] kinsmen. But if they aren't you still talk to them as kinsmen and call them "older sister," "older brother," "auntie," "uncle" or even "mother" or "father," "daughter" or "son." It is like you are part of a very large family.
>
> Like members of a family, being neighbors is doing things for each other, taking care of each other. You look after their children, you give neighbors extra food, you let them use your water buffalo when there is a need, you care for neighbors when someone is sick, when children are born, when someone dies. If the neighbor is already a kinsmen or perhaps an inlaw, then this makes the feelings towards that person, that family, even stronger. This is because there are debts involved, *utang,* though these are debts of the heart [moral obligations]: *utang iti nakem*.

Her own neighbors, she said, were not necessarily the same as those of this or that neighbor; different neighbors often have different "sets" of neighbors, and "sets" usually overlap. Being a kaaroba is a one-to-one, potentially very sociable and highly effective relationship. It is not simply based upon the close proximity of peoples' homes, although it is frequently the beginning or basis for being a kaaroba. Like other social ties, neighbor relationships vary in importance and effectiveness, and they are not without great disappointments, malice, envy, rivalry, and discord, depending upon the people and the circumstances involved.

But in the best of all possible circumstances, if your neighbor were kin as well as "field neighbor" (people who share or exchange their labor), and if you also consider that neighbor the equivalent of "best friend," then the added relationship of being a neighbor makes it the closest of all. If you were "only neighbors" you could strengthen the relationship by becoming comadres and compadres, and godparents of each others' children. In this way unrelated neighbors become "kin," closer to each other. Mrs. Acoba further added, "Sometimes, for different reasons, neighbors move away, and these are very sad times, and feelings are sometimes bad. Yet, the feelings for each other depend upon the people involved, as it does with relatives when they move away or when you must leave them."

Although there were none of her own kin in the barrio (she had married into the community), and although she had no children of her own, she said, "My neighbors are my kinsmen and their children are my children; neighbors are always there but your kinsmen can be far away." She knew that when death came to her—as it did in the late 1960s—her neighbors would make the funeral arrangements, they would say special prayers for her on the night of the ninth day after, and they would cry for her. And that's why neighbors are as kin.

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The emphases in Filipino cultures are upon social acceptance, the maintenance of self-esteem, and the avoidance of situations that can bring shame upon oneself or someone else. These cultural themes are not based on conformity to a set of rules or ideals or to an ethical system. Rather, they involve adjustments and flexibility in relating to other people in specific social situations. Filipino culture is proscriptive rather than ascriptive: one should normally avoid behavior that may generate conflict. At the same time, proscriptions stress social pragmatism with relation to the individuals concerned, the immediate and wider social setting, and future utility that may be derived from a particular relationship. Stress upon social pragmatism is reflected in the pattern of spirit beliefs. As one writer has noted, the spirit world is "peopled principally by spirits who are normally neither for nor against one, but dangerously able to do no end of harm if aroused and, therefore, it is eminently logical to take all means possible to discover what these spirits want one to do" (Lynch 1961:106).

These are the social and cultural resources that Ilocanos brought to solving and overcoming the organizational and technological problems involved in establishing cooperative irrigation systems. For more than 200 years in Ilocos Norte this has resulted in the development of something approaching 2,000 zanjeras.[3] Yet, while possessing the same social and cultural resources, Ilocanos in Isabela, and most of them from Ilocos Norte, constructed and maintained less than a dozen. Obviously, the motivation for and knowledge of irrigation system construction and management are not in themselves sufficient in establishing and perpetuating such forms of cooperation.

This volume examines some of the major factors—social, demographic, and environmental—that account for the success of communal irrigation in Ilocos Norte and, by implication, its absence in adjacent areas, other parts of the Philippines, and, more widely, in other parts of insular Southeast Asia. However, whether this explanation accounts for all the factors involved, or even adequately weighs those that are here discussed, is secondary to the main concern of this volume: corporate groups. What zanjeras show are repeated examples of how individual farmers, working in concert, developed and employed corporate principles to the solution of a common goal or problem. It is a kind of "solution" that has been widely and effectively employed in much of human history.

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The lawyer was born in Laoag, capital of Ilocos Norte, and although not from a landed-agricultural background, he owned a small number of rice fields worked by tenant farmers near Solsona. I explained that the reasons for my being in Ilocos Norte involved research, mostly concerned with understanding zanjeras. To my surprise, zanjera was not a term with which he was familiar, so I said that I was interested in the way that farmers organized and formed cooperative irrigation groups. He replied, "Oh yes, the way farmers get together and bring water to their fields. Isn't it the land owners that get them to do that?"

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Upon learning that I was interested in communal irrigation, the government civil engineer wanted to show me the largest of the dams owned by the zanjeras on the Bacarra-Vintar River, located several kilometers above the area I was studying, with primary canals that carried water to 8 zanjeras, the farthest of them more than 8 kilometers away. He noted,

> It's quite amazing when it washes out—and they do break down when it floods, sometimes once or even twice a year. The irrigation headmen will call out 800 to a 1,000 people to put it right again. All that work to put back another pile of rocks and bamboo. It's a very primitive kind of engineering. It must have to do with the way that peasants think about such things: that's the way their forefathers did it and that's the way they'll fix it up. And you can't convince them that the rational thing to do is to let the government help them to build a permanent dam, a structure of concrete and steel that won't wash away in the first big monsoon rain.

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The water master's job was to see that the farmers who took water from the government canal did so in an orderly way, and this required that he monitor water levels and coordinate delivery times to see that individual farmers got fair shares. I asked him if this wasn't a problem since water theft and the complaints of unfair allocations by "downstream" farmers seemed to be a perennial problem in the operation of irrigation systems.

He explained that it was not a problem for the farmers that he worked with because the people served by the government system had organized themselves to work with him and other water masters, similar to the way that zanjeras were organized. This was easy enough, he said, because most of them belonged to one or more zanjeras and they knew how to get such things done. His own father had been the head-

man, the *maestro,* of a zanjera in the same area. His job, he said, was easy because of the knowledge and organization that was already there.

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Mr. Barruga was head of one of the largest zanjeras in the municipality, as well as a member of two others. He was sometimes angered but more often simply puzzled by the way that government irrigation officials acted on matters relating to the zanjeras. He did not expect such officials to go so far as to ask zanjera leaders for advice, but he was very concerned when, without their being consulted, the government went ahead with projects that had important consequences for the zanjeras.

He pointed out a recently completed government intake system, built onto the river bank with reinforced concrete and with steel doors to control the flow of water. His and three neighboring zanjeras were supposed to link their communally shared bamboo and rock dam with the permanent water intake at the start of the wet season. Their plan was to stall as long as possible, since the four zanjeras had only recently, in response to a shift in the main river channel, moved the position of their rock and bamboo weir more than 100 meters farther down the river channel.

When I returned to Ilocos Norte two years later Mr. Barruga's zanjera and the three others were still using the same dam (albeit once replaced and several times repaired) but with the intake still in the position occupied in 1976. However, from where we stood I could no longer see the government intake. "Oh, that's gone. The water came [and cut] behind it and, anyway, the channel is now over there," he said, pointing some 70 meters from where the government had installed the intake. "Even if it hadn't broken, it wouldn't be any good to them now." He smiled, "It might be a few years before the water decides to go there again." And, he later added,

> The government people do things their way. They don't seem to think about what can happen for us later on. But it is not all their fault, they are paid to build those kinds of things. The river can wash away fields, but the government—they are getting harder and harder. We have to live with the river and the government, and we have to think ahead; we have to make plans for the future, for our children and our grandchildren, as our fathers and our grandfathers did for us.

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Corporate Groups

> A group may be spoken of as "corporate" when it possesses any one of a certain number of characters: if its members … come together occasionally to carry out some collective action …; if it has a chief or council, who are regarded as acting as the representatives of the groups as a collective….
>
> A. R. Radcliffe-Brown, Introduction to *African Systems of Kinship and Marriage*

IN ADDITION to collective action, representative leadership, and the shared ownership of property, the approach here employed considers relative degrees of corporate organization, since groups are not simply either corporate or not corporate. In Ilocos Norte both families and irrigation cooperatives exhibit gradations in corporate organization and closure. To borrow Orwell's phraseology, all family units and irrigation groups in Ilocos Norte are corporate but some are more corporate than others.

Anthropological studies of corporate organization have been concerned primarily with the analysis of groups such as lineages, clans, villages, and secret societies. Relatively little attention has been directed to the corporateness of domestic families, precisely those units that constitute the building blocks of larger social groups. An important exception to this pattern is found in the various works of George N. Appell (1965 et al.), whose ideas have been brought together in *The Societies of Borneo: Explorations in the Theory of Cognatic Social Structure* (1976).

Appell emphasizes the importance of shifting our traditional focus from considering principles of kinship and descent as the defining criteria of corporateness to emphasizing property relations as they involve social entities and scarce goods, since social structures are ultimately based upon the character of property relationships that obtain between family units.

> It has become apparent that the conjugal family, far from being a non-structural group, is in many societies the most important corporate social grouping and the most important structural unit. In fact it is the consistent and constant interrelations between such units with respect to property that provides much of the structure of such societies. (Appell 1976:7)

To illustrate the character of corporate relations found within family units in northwesternmost Luzon, a contrast is here made between the patterns of property ownership and property relationships in the homeland village of Buyon in Ilocos Norte, in which families are more corporate, and those of a technologically similar Ilocano community, Mambabanga, a village established seventy years ago in Isabela, in which families are generally less corporate. The following information concerning property relations and social structure in Ilocano families is drawn from the earlier study of these two communities (Lewis 1971).

Whereas there are degrees of corporate closure in both communities—and certainly a great deal of overlap between the least corporate families in Buyon and the most corporate families in Mambabanga—the comparison is made in terms of the most representative patterns found in each barrio. Overall, the differences are important because of the ways in which they relate to and influence two more complex forms of social organization—irrigation groups in Ilocos Norte, and villages in Isabela.

The Family as a Corporate Group

The major problem in considering families as corporate groups and, more specifically, families in bilateral societies, turns largely on the question of perpetuity—that families disappear with the marriages and deaths of their members. However, the question of perpetuity does not alter the fact that in all other respects the elementary family is a corporate unit: a social group that holds property (scarce goods or services) and relates to other families and to individuals as a recognized social entity. Appell stresses that it is essentially the control of property, not simply kinship, descent, or perpetuity that provides the basis for interpreting social relations within specific social groups.

> For the purposes of ethnographic description, a social grouping can only be isolated as corporate on the basis of its function within the specific system in which it is embedded, i.e., whether it has the power as a social entity to enter into jural relations. Whether it is a perpetual social en-

> tity or not has no relevance for those observational procedures by which we isolate such entities, for it is not a feature that is universally found cross-culturally. (Appell 1976:70)

Appell is also concerned with questions of change, either from unilineal systems to cognatic ones, or in the reverse direction. That the pattern of family organization and corresponding property relationships are historically more recent developments in Isabela, the pioneering region, than in Ilocos Norte, the established homeland area, is of no particular significance except that it shows that social relationships necessarily respond to altered conditions of resource use and control. Whereas the situation in Ilocos Norte undoubtedly involves changes from lesser to greater degrees of corporateness, it is not possible to delineate precise changes in cause-and-effect relationships. Certainly the most important factors of change are those that have influenced property relationships. Although historical evidence will probably never be sufficient to demonstrate the sBacarra-Vintar River. At this point the rivpecific changes of Ilocano social organization, the following comparison does indicate the major influences and shifts that must have been involved. The differences that have emerged in both Ilocos Norte and Isabela will be approached in terms of the kinds of developments Appell considers most important for understanding changes in social structure.

> New types of scarce goods and services are always being created, discovered, or traded into the society, and this entails the problem of modifying old forms of ownership or inventing new; of allocating the new types of property to already existent social isolates or devising new ones. (Appell 1976:vii)

Population pressures and the relative availability of land are important causal factors affecting differential family organizations and property relationships in Buyon and Mambabanga. Buyon, with a population of 543, has a density of 1,367 persons per square kilometer of arable farmland; Mambabanga, with a population of 383, has a comparable density of 367 persons per square kilometer. This difference between the two villages is also representative of the overall differences between the two provinces, specifically in the more populated rice-growing areas (Lewis 1971:18). The relative difference means that families on the northwest coast derive a living from only one-fourth the amount of land utilized by families in the southern portion of the Cagayan Valley.

Typically, a family in Buyon has 0.75 hectares of land divided into six

and often more small parcels (some no more than 100 sq m) from which subsistence is derived. This may be done in combinations as a tenant's share (50%–70% of the total crop), as an independent landowner-operator, and even sometimes as a landlord's share—when fields are too far removed to work economically. In contrast, a farmer in Mambabanga will derive his family's income from 3 hectares of land, subdivided into three equal plots, which he too may use in combinations of ownership, tenancy, and (less frequently) landlord arrangements.

Such differences between families in Buyon and Mambabanga highlight the highly variable conditions in cropping, soil fertility, availability of irrigation water, plant cover, topography, climate, transportation, marketing, and communication—all factors that affect agricultural differences in a number of interrelated, complex ways. For a more general summary of regional-comparative differences in the Philippines, consult Wernstedt and Spencer (1967).

It is not argued that Buyon and Mambabanga are precisely prototypical of communities in their respective provinces, but they do represent the general social and economic patterns of family life in Ilocos Norte and Isabela. It is not the overall community relations as such that make them important in this respect; rather, the intra-and interfamily relationships and attendant property rights are of central significance, involving 121 elementary families in Buyon and 62 in Mambabanga.

Social Networks

The social models with which Ilocanos in Ilocos Norte perceive and interpret social reality are not basically different from those found elsewhere in the Philippines. Kinship is reckoned bilaterally with inheritance perceived (but seldom if ever achieved) as being equal among all male and female offspring. The fundamental social unit is the family composed of two or three generations. The residential settings within which families live are sitios (hamlets without official status) and barrios (officially redesignated as *barrangay*), which are loosely structured on the basis of overlapping and interrelated networks of kinship, reciprocity, and propinquity. Among Ilocanos, one somewhat unique custom involves the use of a male land dowry, the *sabong,* by which property is transferred from parents to sons (Lewis 1971:89–92). Depending upon the extent and intensity of village sociability, the cohesiveness of community relationships is ritually expressed in the form of an annual barrio fiesta. At the sitio and barrio levels of community life one of the most significant differences between Ilocos Norte and other regions of the Philippines is evident.

Precise data are lacking, but most barrios in Ilocos Norte do not hold fiestas, though larger towns and economic centers frequently do. The absence of barrio fiestas, I have argued (Lewis 1971), reflects the fact that village-wide networks of reciprocal obligation are poorly developed and socially ineffective in Ilocos Norte. In the controlled comparison between Buyon and Mambabanga, I summarized the differences as follows:

> Buyon (Ilocos Norte) has the same normative social and cultural principles as Mambabanga (Isabela), but the total social fabric there is but weakly developed and maintained. This has resulted in a very fragile, tenuous barrio system existing in little more than name alone. The situation may be summed up by saying that, whereas the social and physical environment of Mambabanga encourages the use and extension of social ties, the equivalent environmental factors in Buyon act as virtual deterrents to the same social and cultural principles. Thus, although Buyon and Mambabanga are both formally designated barrios, they differ considerably in terms of their social "substance." (1971:179–180)[4]

As we shall see, the social relations and expressive rituals characteristic of irrigation organizations in Ilocos Norte are more circumscribed and follow more precise, corporate lines than do those which characterize the diffuse and poorly delineated limits of barrio relationships and fiesta participation found in other areas. Interpersonal relationships in Ilocos Norte do not simply accumulate to form the larger, socially open community structures characteristic of barrios elsewhere in the Philippines, or, more specifically, the similarly open network of those social relationships in Mambabanga.

Whereas more typical Filipino communities are based on egocentric networks of interrelated, reciprocal obligations (what Lynch [1959] called "alliance systems"), villages in Ilocos Norte are socially very limited, amounting to little more than place names on a map. Their existence is almost entirely imposed by political administrative entities—municipalities, provinces, and a national government—which require that they exist.

In both communities individual households are engaged in a network of social ties and obligations to kin, friends, neighbors, and workmates. However, not all kin are actively involved in an individual's alliance system, nor is the intensity of kinship ties based merely on genealogical distance. Though inoperative kin ties always have the potential for being activated, effective kin relationships are those based upon close association and regular reciprocal exchanges. The quality of all social relationships reflects the degree to which they are operational.

Relations with friends and neighbors, like those of kinship, are highly variable. Ties with neighbors, or *kaaroba,* can be complicated by the fact that some neighbors are often kin, relationships which further intensify the importance of being a neighbor. Though neighbors may not be kin, the relationship involves some of the same obligations that a person feels toward kin. The reciprocal obligations that exist are reflected in the forms of address used between unrelated neighbors—*manong* (older brother), *manang* (older sister), *ading* (younger sibling), *tata* (father), *nana* (mother).

In both Buyon and Mambabanga the reciprocity-based network of neighbors is extremely important and involves a range of goods and services that are regularly, sometimes daily, exchanged and shared. Based upon family-to-family ties and heavily influenced by propinquity, the set of participants varies from one family to another in a series of overlapping, open-ended relationships. The essence of interfamily ties between neighbors is seen in the broad range of things and favors that are exchanged: a great variety of foods, the loaning of money to meet an emergency, the care of individuals during times of emergency, watching over a neighbor's house and animals during absences, assisting with various kinds of work projects around the home, and other kinds of mutual assistance. A good neighbor, I was told, cares and is cared for.

Though less easily or directly referenced in the ways that genealogical links or residence sites can be, ties of friendship are influenced and nurtured by similar personal contacts. Along with these, both neighbor and friendship ties are recognized and intensified through the ritual bond of coparenthood, normally by becoming the godfather or godmother of a friend or neighbor's child at the time of baptism. The abstract categories of kin, neighbor, and friend are socially realized in the highly personal web of relationships linking individuals and families. The essential difference in neighbor relationships between Buyon and Mambabanga is the way in which the ties of neighbor and friend relate to other sets of obligations. In Mambabanga the individual relates to many people in a variety of roles; in Buyon, by contrast, the same kinds of social relationships are much more limited and impoverished.

As in other parts of the Philippines, villages are composed of domestic family units, but in Ilocos Norte families seem to coalesce more easily to form still other corporate organizations, the most notable and complete being irrigation cooperatives. Villages, the anthropologist's most cherished units of study, are simply the wrong foci for adequately understanding the more socially significant forms of organization in Ilocos Norte. Instead of the barrio, this study will focus on the ways in which families and irrigation groups relate to property (essentially property

rights in land and water), and the ways in which individuals and groups relate to each other in terms of such property rights and obligations.

Economic Units

In both Buyon and Mambabanga, families carry out marketing activities essentially as social isolates, in one-to-one exchanges that do not involve other families in reciprocal social obligations. The existence of larger amounts of economic surplus in Mambabanga and smaller ones in Buyon does not, in the contexts of marketing those surpluses, affect the networks of sociability in either setting. Surpluses of rice and corn in Mambabanga frequently result in regular customer-client arrangements, commercial exchanges with merchants from nearby towns. This involves relationships that depend on the continued supply of goods and extra services (cash advances, crop loans, transport, lower costs for the buyer), but as such they have little emotive significance for either party.

In both communities ad hoc arrangements are sometimes made with fellow villagers whereby one person, usually a woman neighbor or kin, will sell small surpluses of household garden produce for friends and relatives, and keep a percentage of the price obtained. Such arrangements are essentially irregular in occurrence, involve small turnovers, and are not in themselves the basis for further social obligations. In neither setting does the marketing of goods involve families in expanded, on-going networks of sociability, but only in disparate economic events that are essentially defined by immediate needs. In both barrios families act essentially as economically independent units in selling and buying both the items they produce and those they consume.

Buyon and Mambabanga do differ significantly in the way their respective families act as economic units in the production of agricultural goods. In Buyon individual families work plots of land in virtual isolation from one another; in Mambabanga agricultural production involves families in persisting networks of reciprocal obligation. Farm work in Isabela involves people in highly personalized, reciprocal work exchanges *(ammuyo)* whereby farmers assist field neighbors in a variety of tasks, the most labor-demanding of them being plowing, harrowing, transplanting, and harvesting. Work groups are egocentrically based systems with the particular sets of one-to-one obligations shifting from individual to individual (or family to family), and from one adjacent field to smother, forming essentially unending, open-ended socioeconomic links throughout a section of fields.

As with other community ties in Mambabanga, the system is socially open, limited only by the physical features that may set off one block of

land from another and the simple limits of distance within which individual families can farm economically. At the same time, these personalized ties of reciprocity are not of equal emotive significance since field neighbors may be siblings, cousins, house neighbors, friends, barrio mates, or even people from adjacent barrios. With three separate fields requiring a variety of tasks for two or even three different crops, the particular obligations actively involve families in extended networks of economic sociability, while reinforcing the social ties that already exist.

In Buyon the small size (100–500 sq m) and wide distribution of individual fields do not encourage work exchanges, but hamper them. If additional assistance is necessary, labor is hired, paid for in cash or rice, and the relationship has little more social significance than the casual marketing of goods. Each family is its own, self-contained unit of production. Agricultural work tends to isolate families from, rather than involve them with, other residents of the barrio.

In Mambabanga the continuity of reciprocal labor exchanges will often go back several generations to the original pioneer clearing and farming of lands that lasted until the 1930s. This persistence of economic sociability has continued to influence and help maintain the pattern of one-hectare-sized fields as a supportive social feature of the farming technology.

Whereas families in Mambabanga are drawn into larger, more diffuse communities partly as a result of the farming pattern, those in Buyon families are not. The part of the agricultural technology that so significantly affects social obligations in Buyon derives from the irrigation of lands and involves families in well-defined, highly specific social systems that have no direct relationship to barrio organization.

Property

In both communities families are the basic units that own and control property. The poorest families may have only the most limited real property consisting of just a few tools, and in some instances not even farm animals. They live on the land and work it at the sufferance of landlords while receiving the smallest possible shares of a harvest—50 percent or even smaller in Buyon, larger portions in Mambabanga. Their rights to use the land are extremely limited and, where the landlord-tenant relationship lacks emotive support, highly tenuous. Yet, however insignificant the amount of property or frail and transient their claim, it is the family that maintains the rights linking them to the “things” involved and the “other persons” concerned—tools, houses, land, and crop shares; landlords, kin, other

farmers, and merchants. All of it involves rights that are considered inviolate, if not always honored.

Slightly less-impoverished families own tools, draft animals, and perhaps a house and house lot while working as tenants for one or more village or town landlords. Still better-off families own at least some agricultural land and derive income from a variety of combinations as owner-operators, tenants, landlords, and casual laborers. A few families, the village elite, own twice as much land as the average villager: one or slightly more hectares in Buyon, six or more hectares in Mambabanga.

Whatever the relative levels of subsistence and cash incomes, or the degrees of possession or use rights to the property involved, the family is the basic unit of property ownership and control in both barrios. Family ownership is recognized in both custom and law throughout the Philippines. In both barrios there are similar ranges of variation between the poorest and the wealthiest peasant families, though the poorest in Mambabanga are not so materially impoverished as their counterparts in Buyon, and the wealthiest have considerably more land and real income than do the most affluent in Buyon. They are dissimilar in the needs and means that families have for maintaining property as integral units. However much divided into separate parcels, landholdings in Buyon are controlled as *family estates,* single units of property that are passed from generation to generation. In Mambabanga family lands are commonly divided with each generation. This difference relates to several interrelated conditions affecting the family structure and property relations in the two regions.

The networks of familial social obligations in Buyon are not as extensive as those in Mambabanga, where social ties branch out radially, overlapping and merging with the social networks of other families, all of which eventually—but loosely—make up village organization. The greater amounts of real income and family resources in Mambabanga make it desirable and possible to maintain such diffuse structures. There people can afford to, in fact must, invest in such networks of reciprocal exchange; in Buyon there is neither the technological need nor the economic means for broadly based social investments. The limitations of real income and family resources in Buyon make it necessary to conserve and constrain family resources, rather than allow them to be widely distributed throughout effectively weak social networks.

Differences in property and property relationships are further evident in relative land values. Merely with respect to supply and demand, the significance of land is much greater in Buyon than in Mambabanga. With one-fourth the population density of Ilocos Norte and as one of the

Philippines' major agricultural exporting provinces, Isabela as a whole is economically much better off and the possibilities for families to obtain additional land, if not to own at least to farm as tenants, are relatively greater. In Ilocos Norte, where the economic potential is much more limited, landholdings, however small, assume a disproportionate significance. In addition to the short supply, the demand for land has been further distorted as a result of monies sent or brought back to the region from overseas; several million dollars come in each year from the United States. With a seventy-five-year history of overseas migration, originally involving single males going to Hawaii and California as agricultural laborers (and more recently whole families emigrating), large amounts of capital are returned each year to the Ilocos and invested in land. All of this has inflated land costs far beyond the productive worth of the land for agriculture, with the result that land prices are ten to fifteen times higher than in Isabela.

Even the smallest landholding in Ilocos Norte has a market value quite out of proportion to its agricultural productive worth. Landless families have no hope of obtaining land, with even tenant-farmed fields in very limited supply and tenant shares of 50 percent being well below those offered in Isabela (70%). For families with small, one-quarter- to one-half-hectare holdings, land provides some measure of economic wherewithal, but it is a productive base that they can normally not afford either to buy or to sell. In Ilocos Norte the combination of scarce land and distorted values requires that families intensify agricultural production and avoid the diminution of existing holdings.

In Mambabanga the combined effects of social obligations, family resources, the relative availability of land, the need to exchange agricultural labor, and the possibility of either obtaining additional lease land or even gaining alternate sources of income, encourage the maintenance of the extended family ties that make up the larger network of kin, neighbors, friends, and workmates. Together, these individual family networks constitute the emotively important but structurally amorphous community of Mambabanga—a characteristic open-peasant community structure (Wolf 1957).

In Buyon the conditions relating to property controls and property relations encourage turning inward in order to conserve family resources. This *inwardness* has taken the form of becoming increasingly corporate in the maintenance and control of family assets. At the same time, the nature of interfamily relationships does not involve open-ended alliances but, rather, alliances with other well-defined corporate groups: other families and, on a larger scale, irrigation groups.

Unlike the open-peasant community structure of Mambabanga,

Buyon has no community structure other than that imposed upon it and required by the external political systems of municipality, province, and national government. The individual networks of family organization do not constitute a social community; they do not unite to provide the structural counterpoint to an open-peasant community, that is, a closed-corporate village. Other than being the place where its people reside and work, there is no village-wide, corporate-property base for such a community to exist. Instead, families conjoin as corporate units to form irrigation groups, still more complex corporate enterprises that further enhance the corporate interests of individual families through the enhancement of family lands. The ways in which property is maintained, how it is directed as a single unit over time, and the forms of alliances taken by individual families are especially evident in the patterns of inheritance and marital ties.

Inheritance and Marriage

In both Buyon and Mambabanga inheritance is ideally equal for all offspring, though property is seldom equally divided in either community. The ideal is more nearly approached in Mambabanga. Yet, even there, with land more abundant and the possibilities for obtaining additional tenancy arrangements considerably easier, equal inheritance is virtually impossible to achieve. A number of family considerations such as the amount of property, the needs of individual children, and the expectations of parents in their old age, all enter into the final decisions for dividing up family resources. For instance, as a part of the inheritance a daughter may receive extra assistance toward a higher education; a son may be given monetary and personal assistance in obtaining a government job; another son may be assisted in establishing his new family in a pioneer settlement area in the Sierra Madre to the east; a daughter who has married well may be provided a small cash settlement, a token only of her equal share. Equal inheritance is seldom easily or equitably arrived at. The essential difference is that in Mambabanga an amicable settlement can be more readily approximated, with some property or assistance provided to all offspring.

In Buyon there is simply much less available for amicable solutions and, with respect to land, the legacy cannot be further subdivided. The concern for maintaining family property as a single unit is especially important for parents since, like parents in Mambabanga, they must rely upon their children for support in later years. However, parental support will be dangerously imperiled if family lands are reduced in size below a total of one-half hectare. Whereas parents in

Mambabanga may depend primarily on one child, they can more easily obtain assistance from other children as well. As with other resources in Isabela, family resources can be used to benefit a larger number of family members than is generally the case in Ilocos Norte.

In Ilocos Norte the need to contain family resources, especially resources in land, is accomplished through giving a *sabong,* or male land dowry. The sabong is a written, contractual arrangement whereby parents of the groom bequeath family lands to the soon-to-be-married couple. The interfamily agreement is formally acknowledged when the sabong contract is signed by the bride-to-be and her parents. The lands owned are detailed as to size, location, and type, including a house and house lot—normally the home of the groom's parents or adjacent to it. The unwritten part of the contract, the obligation that is thoroughly understood, is that the newly married couple will assume the responsibility of taking care of the groom's parents. The sabong is a corporate strategy, an arrangement that, despite Ilocano custom and Philippine inheritance law, enables parents to avoid fragmenting the family estate and endangering their economic security in old age.

At the same time, like other cultural customs, the sabong is a social practice that varies considerably, from area to area and family to family. For the poorest families it may involve little more than the transfer of a house and possibly a house lot. For older Ilocano men who have returned from years of work abroad, the sabong may be offered in the form of a cash settlement, provided not by the groom's family but by the groom himself, from savings accumulated while working overseas. In these cases members of the groom's family (siblings or cousins) will act on his behalf in negotiations with the bride's family.[5] In Ilocos Sur the custom appears to be more restricted to considerations of status significance, especially those involving upper-class people (Raul Peritierra, personal communication). In Isabela, as part of the cultural tradition the sabong may be used in the marital arrangements of all male children (simply the promise that the son will eventually receive his inheritance) but, in terms of maintaining family resources as a unit, it has comparatively little significance. Even in Ilocos Norte where it does have special significance, the particular strategies show considerable variation, but the strategies are aimed at containing property, not using it to extend social relations as is more characteristic in Isabela.

In Buyon the practice favors the youngest son, resulting in something approaching patrilineal inheritance and ultimogeniture. Though it does not constitute a formalized pattern of unilineal descent, it does involve a conscious, corporate strategy for controlling and maintaining family property as a unit, or estate. In this significant respect the typical family

in Buyon is much more corporate than is its counterpart in Mambabanga, where family lands are divisible.

At the same time, the sabong provides a partial solution to the inheritance that female offspring may expect, since the families that can provide a sabong for a son are also those that can expect one for a daughter. This relates to the existing status-ranking system since families of relative wealth (however small in real terms) marry their children to those in roughly equivalent positions. In that marital ties link the two families involved, it is important that such alliances extend nuclear family ties without endangering them by having a daughter marry beneath her. For a woman, the land dowry gained at marriage is in effect her inheritance, and she would be considered very foolish to waste it on a husband economically and socially lower down the scale than her own family.

As with other social relationships in Mambabanga, marital ties further involve people in the community at large; marriages in Buyon are one-to-one, formalized arrangements between equally corporate family units. In Buyon the sabong contract represents a well-defined strategy of a corporate alliance, not that of an open, bilaterally structured alliance. Whatever the particular causal-historical circumstances that might account for its origin, the sabong is the key to maintaining the integrity of an estate and the corporate definition of a family.[6]

Families in Buyon also indicated that, more commonly in the past, family lands could be used to help finance a son to migrate to Cagayan Valley, to obtain work or some other economic role in Manila, or even to emigrate overseas. This was accomplished by mortgaging the land with the expectation (or at least the hope) that the son would pay off the debt at a future time. In Mambabanga, the greater availability of land, both for inheritances and for working under tenancy arrangements, means that individuals are less likely to move away. Residence histories and genealogies in Mambabanga show that siblings more frequently remain in the community than they do in Buyon where those not receiving a sabong are encouraged or forced to leave. The networks of reciprocal obligation in Mambabanga are more often than not able to assist those in need to find additional tenancy arrangements locally; in Buyon both social and material resources are inadequate to provide equivalent kinds of help.

The major export from Ilocos Norte, Ilocanos boast, is people, those with little or no hope of making an adequate living by remaining at home. Their departures tend to reduce the kinship networks for those that remain. The major export from Isabela is agricultural produce, the economics of which encourage individuals to participate in and maintain networks of social obligation. In Mambabanga, the systems

of kinship, neighborliness, friendship, work exchange, inheritance, and marriage promote community relations; in Buyon the same sets of factors do little to encourage village cohesiveness.

Family Savings

Thrift, specifically as evident in savings, is considered one of the more laudable Ilocano virtues; it is certainly thought to be so by the twenty-five banks and savings institutions in Laoag. Though no single bank manager could disclose the total figures in local savings accounts, several of them stated that of all Philippine centers only Manila, with thirty times the population, has greater amounts of savings than Laoag City. The ratio of savings-to-loan transactions in Laoag banks is 15:1, whereas in Santiago, the major financial center of Isabela Province, the ratio is 1:8, an impressive difference in magnitude of 120. Most savings in Ilocos Norte come from what bankers estimate to be approximately one million dollars (U.S.) arriving each week from overseas in the form of social security checks, pensions, bank transfers, and even cash.[7]

Three households in Buyon are those of *Hawaiianos,* Ilocanos who have worked overseas and subsequently returned to renew or establish family life in their home villages. During their absences (the longest had been for thirty years, the shortest for thirteen) they had sent money to wives, parents, or siblings, some to be banked and the rest to be used to purchase farmland. The custodial relatives of the Hawaiianos farmed newly purchased land virtually as their own and continued to farm it as tenants after the providers returned. After initial displays of wealth at homecoming parties and, for older bachelors, a wedding, Hawaiianos and their immediate family beneficiaries are careful in managing their assets. Like other villagers with resources to protect, they remain detached from wider social involvement. Though all families in Buyon have relatives who have left for overseas employment, pioneer settlement within the islands, or Manila's urban slums, only a few (perhaps no more than one in twenty) derive even the smallest assistance from family expatriates.

Whereas the great volume of savings derives from money originating outside Ilocos Norte, all local families attempt to set aside some savings, whatever small amounts can be derived from the sale of cash crops. These monies are important to have as some protection against sudden, unanticipated demands such as the need to replace draft animals, tools, housing materials, or to provide for family rituals associated with baptisms, marriages, and deaths. Given that they cannot easily call upon larger networks of mutual assistance, as in Mambabanga, family

savings assume a considerable, if not critical importance. In Mambabanga, on the other hand, money is "saved" by quite different means, a form of social investment not found in Buyon.

In addition to the interpersonal and interfamily obligations that may be called upon in Mambabanga, the people there participate in what I have called a "social savings association," which they call an *arayat* (Lewis 1971:147–155). An arayat is formed by women, representing the domestic units, who have reciprocally agreed to contribute small amounts of money and rice (e.g., 1 peso and 4–5 liters of rice) to other members of the association on the occasions of baptisms, marriages, funerals, and postfuneral rites. One woman acts as coordinator and keeps a record of individual contributions and payments. Each member's turn occurs as the events arise and the total contributions received by a member help, more or less adequately, to cover the considerable expenses involved. The women who participate in the arayat are of an age and status most actively involved in the social life of the village. Older couples with married children have decreasing needs for funds and, with one or two uncollected payments, cease to participate, awaiting only the final payments that they will have to call upon for the funeral and postfuneral rites of a spouse. At the same time, the youngest married couples may choose not to belong, in part because of the expense involved but also because they are able to use the unused share of a mother or mother-in-law.

Less than half of the people in Mambabanga belong to the association at any one time. It is an added type of socioeconomic insurance that people can take advantage of to partially offset ritual expenses. Yet it can also add extra expenses on ritual occasions because it means that all members of the arayat are automatically invited to such social events. Consequently, for those families in Mambabanga who can best afford to provide the necessary funds (and thereby more carefully pick and choose guests), and for those families who can least afford the financial costs, membership in the arayat is either unnecessary or unaffordable. The arayat is but another social mechanism that both expresses and reinforces the social ties already existing within the community.

Like the poorest families in Mambabanga, families in Buyon can afford neither the social nor the economic costs involved, and there are no extended networks of reciprocity from which such obligations would emerge. Instead, personal savings, not social investments, provide a small hedge against unanticipated ritual and material costs. The different means by which families in the two communities handle similar expenses further illustrate their different social contexts. As a central feature of social adaptation in Buyon, families are financially prudent

in the ways that they plan for contingencies. In Mambabanga they are socially provident in their selection of strategies for coping with like circumstances. The one setting favors a constriction of social boundaries, the other their extension.

Ritual

For Filipinos, ritual, like charity, begins at home. Baptisms, marriages, funerals, and postfuneral rites are the most important religious and social events that occur in a person's lifetime, and the social focus of these rituals is the family. Except for minor cultural distinctions, Ilocanos differ very little from other lowland, Christian Filipinos. The ways in which these family-centered ceremonies are performed and the emotional significance they have for the people involved are essentially the same in both Buyon and Mambabanga.

As with other aspects of social life, the two barrios differ in terms of the social involvement and the economic wherewithal that families can afford to invest in such rituals. Just as families in Mambabanga have more to spend and are correspondingly more involved with kin, neighbors, workmates, and friends, the people spend more on ritual occasions, go into greater debt (both monetarily and socially), and are involved in wider networks. Again, because people in Buyon must be frugal, cannot afford to go into debt, and are not so involved in extended social networks, equivalent rituals in Ilocos Norte are socially and materially more restricted.

A wedding of even one of the poorer families in Mambabanga can potentially (and may actually) involve people from the whole barrio and entail considerable expense. In Buyon smaller numbers of kin, friends, and neighbors are involved, and the amounts of food and beverage—though considerable by comparison with daily fare—will be much less ostentatious than in Mambabanga. From baptisms to special prayers for the dead, individuals ritually enter and depart the world of Ilocos Norte with less celebration and fewer celebrants than in Isabela.

In Mambabanga family rituals and community ritual converge to some extent in the annual barrio fiesta. Fiestas are the most characteristic community-wide rituals in the Philippines, expressive ceremonies that broadly reflect the social and emotive significance of obligations that unite families in larger social alliances. A fiesta committee and a fiesta *mayor* collect contributions, arrange for special events (a barrio "queen" contest, music, dances, entertainment, games, visits by town dignitaries, repair of the barrio chapel, a visit by a Catholic priest) and handle the considerable costs involved.

Community consciousness is symbolically expressed in honoring a barrio patron saint, with a special mass held at the village chapel on the night of the fiesta. Within the context of the fiesta, individual families arrange their own ritual events including the baptism of children born during the previous year, a family mass *(pamisa)* with prayers said for the deceased, the decoration of a family altar with special offerings of food for local spirits, and the preparation of a festive meal to which kinfolk, neighbors, and friends are invited. The total amount of money spent by families individually and the village collectively can involve hundreds of pesos for the more affluent and thousands for the village as a whole.

Paralleling the way in which the barrio is loosely organized, fiesta organization also lacks clear distinctions as to who should or should not participate. Former village residents return from nearby towns or even from as far away as Manila; relatives, friends, and workmates come from adjacent barrios; social involvement spills both into and out of the community with ritual boundaries set only by the extent and importance of interpersonal networks. The only limit to being involved is that of having *some* kind of active relationship with or invitation from someone in the barrio.

Though the fiesta is expressive of the extant social relationships within a community and involves a considerable amount of cooperative effort, it provides no organizational structure (social, political, economic, or otherwise) outside that context. It does not serve, probably could not serve, as the basis for other cooperative enterprise. It is a purely voluntary, special-purpose type of association that is all but devoid of corporate significance.

In Buyon there is no barrio fiesta, no barrio chapel, and no celebration of a patron saint. In effect, there is no social "reality" for a saint to be patron or guardian of. Family rituals are held as circumstances demand (e.g., funerals and postfuneral rites) or when time and money permit (e.g., baptisms and weddings), but they do not, of course cannot, take place within the larger ritual context of a fiesta as is often the case in Mambabanga. Family rites in Buyon occur within a narrower social world and do not link the family to the community at large. Families in Buyon are linked in smaller, relatively more isolated clusters of kin, friends, and neighbors; there is no larger, interrelated social constellation that forms a socially effective, village community.

All families in Mambabanga are ostensibly Catholic and the barrio chapel is used for the monthly, poorly attended visits of an American missionary priest. In contrast, there is no barrio chapel in Buyon, but a few families attend Catholic or Aglipayan services in the town of

Bacarra or the city of Laoag. Three families in Buyon belong to one of the Protestant churches, four others are members of fundamentalist sects—Seventh Day Adventists, Iglesia ni Christo, Church of the Latter Day Saints. Religious beliefs in both communities are highly syncretic, a mixture of formal religious tenets embedded in a folk cosmology characteristic of the Philippines as a whole. As the evidence shows, the essential difference between the two communities involves the respective social orientations exhibited in formal religious practice: the religious setting in Mambabanga is focused on the barrio and, for those that attend church, the barrio chapel; in Buyon the focus of religious practice lies outside.

Two-thirds of the families in Buyon belong to one or more irrigation groups and participate in annual ritual celebrations there. As with other religious practices in Buyon, the foci of ritual activities are outside the barrio context, the loci being variously associated with sites relevant to the social and physical dimensions of an irrigation system: parts of the ceremonies are held at the home of the leader, the local churches of nearby towns, alongside the dam and portions of the canal, and the field house or meetinghouse adjacent to the fields.

At the same time, irrigation ritual is markedly different in structure and orientation from that of the fiesta and is as unlike the barrio fiesta in form and content as the irrigation cooperative is unlike the barrio: the former being corporate and well defined, the latter open-ended and diffuse. As is subsequently examined in much greater detail, the complex of irrigation rituals involves a recurrent symbolic theme which emphasizes the corporate nexus of family and irrigation group, a relationship quite unlike that which connects family and barrio through the diffuse structure of a fiesta.

Relative Corporateness

In both Buyon and Mambabanga the degree of corporateness varies from family to family. Families in Mambabanga are in general better off in terms of measurable amounts of income and real property, while social adaptations have involved broad, open networks of reciprocal obligation between families. Pioneering circumstances in Isabela—settling an area together, clearing land cooperatively, the threat of "headhunters," debilitations from malaria, and a wide range of reciprocal types of mutual assistance—were responded to in terms of the more traditional Filipino peasant patterns of social organization. Certainly the greatest needs of individual families were for wider, highly flexible

sets of socioeconomic obligation to meet a potentially broad range of demands for reciprocal aid. Labor exchange arrangements were an important part of the pioneering technology and, as in much of the rest of the Philippines, continue to be important today.

In both communities the amount of property owned by individual families has a pronounced effect on the degree to which families act as corporate units. Within Mambabanga the relatively wealthier, higher status families are more corporate than are poorer families in that they are necessarily more involved in the management and maintenance of family resources, most importantly their resources in land. Poorer families are correspondingly less concerned as property owning, corporate units. However, given the wider socioeconomic setting of reciprocal family obligations within which all families in Mambabanga are involved, from the poorest to the most affluent, effective social closure and independent social action are less reasonable social options.

In Buyon similar relative differences in corporate circumstances are found between families with some property and those with little or none. However, as emphasized earlier, what characterizes Buyon is the absence of extended, open-ended networks of reciprocal obligations as the essential element of socioeconomic strategies. In Buyon it is necessary to husband family assets with great care and families are not involved in open-ended networks of reciprocal labor exchange. Whereas the most impoverished families in Buyon might wish to establish reciprocal obligations with better-endowed families, the latter have little need for labor exchange and nothing to gain by obligating themselves to those who have only their poverty to share. Socioeconomic circumstances in Buyon require that families with land, however limited the overall amount, conserve and constrain their resources.

The families that exhibit the greater degrees of corporateness in Buyon own or have use rights to irrigated land. Since irrigated land is four to five times more productive and has a market value ten times greater than that of nonirrigated land, membership in one or even more irrigation cooperatives significantly increases family resources. At the same time, as members of an irrigation group, the family is linked with other member families, not in poorly defined, open-ended social networks, but in well-defined relations as part of a larger, corporate entity. The obligations of member families are primarily to the irrigation cooperative, not to other families as such. The irrigation itself increases the value of the land and membership involves individuals in a demanding set of social obligations. The corporateness of both family and irrigation society exists in complementary relationship, with family units consti-

tuting the discrete, minimal components of the irrigation society. As with some families, some irrigation societies are more corporate than others.

The Zanjera as a Corporate Group

Irrigation cooperatives in Ilocos Norte are most frequently referred to by the Spanish-derived term *zanjera,* from *zanja* or ditch.[8] At the same time, they are equally well known to farmers by the Ilocano word *pasayak,* or irrigation. Some Spanish terms are also used to designate leadership positions, such as *maestro, segundo maestro, secretario.* However, for each Spanish term there is an equivalent Ilocano word and Ilocano is used exclusively for the hundreds of words which refer to day-to-day activities, the places and features within a system, and the tools and materials used by zanjeras. Though questions of origin are not requisite to questions about corporate organization, I see the use of some Spanish words as probably relating to the fact that prior to this century legal documents were necessarily written in the language of the colonial power. There remains a prestige to using Spanish because of its historical significance and because it is still one of the languages of the Philippine legal system.

Government agencies, such as the Bureau of Public Works and the National Irrigation Authority, keep records on the areas of land under communal irrigation in Ilocos Norte. Unfortunately, the various government estimates do not agree, not even those available from the same agency. In addition to the fact that government employees seldom actually measure the size of communal irrigation systems (other than ones they have helped establish and engineer), there are additional problems with the figures given by zanjera officials to outsiders—government officials and researchers alike. Figures provided by irrigation groups are often little more than their own rough approximations. Moreover, the lands of the zanjeras (i.e. the fields belonging to and worked by the members) may be only part of the total lands irrigated by the system of canals. The conditions that apply to the differences between member and nonmember lands are central to the questions of corporate organization. However, based on my own rough estimates of the average size of zanjeras in Bacarra (45 ha), plus the fact that there are proportionally many smaller zanjeras (2–10 ha) along the upper reaches of the river valleys, I would suggest the overall average size of irrigation systems for Ilocos Norte to be in the order of 25 hectares. From this I would

further estimate that the total area under communal irrigation in Ilocos Norte is between 18,000 and 20,000 hectares, with the difference perhaps representing an equivalent difference between areas irrigated during the dry and wet seasons. Whatever the precise figure may be, it represents an extensive development in small-scale, locally constructed, and cooperatively managed irrigation that is of interest to both social and agricultural studies.[9]

Within the municipality of Bacarra, most of the smaller zanjeras (10–20 ha) are concentrated along the margins of the valley, and derive water from small streams or springs. Although some sloping hillside terraces exist, they are very limited in comparison with the spectacular upland field systems of the Ifugaos, Bontoks, and Kalingas of the Cordillera Central. These famous high-mountain terraces are all located in areas where rainfall is heavier and more evenly distributed, and mountain springs are relatively abundant throughout the year. Because irrigation water in Ilocos Norte derives from low-lying rivers, streams, and springs, steep hillside terraces are precluded.

The larger zanjeras in Bacarra (the largest is estimated to be 975 ha) are those that derive water from the Bacarra-Vintar River. For these systems bamboo and rock weirs *(puttot)* are constructed in the main river channel and divert water to fields that may be five kilometers or more removed. The main canals *(kali)* constitute a maze of ditches that cut through the irrigated fields of more distant and, finally, neighboring zanjeras. Several zanjeras in Bacarra have dams located upriver in the municipality of Vintar, but, as with village boundaries, this has no bearing on the operation of systems.

Unlike the weirs in the main rivers, the dams on tributary streams are constructed of concrete or, where older structures persist, rock and cement that date from the Spanish colonial period. This type of dam *(padul)* may be designed simply to divert stream flow or it may also involve a small reservoir where a very limited amount of water storage is possible. In some cases supplementary sources (though for a few zanjeras they are the primary or only sources) come from the overflow water of adjacent, more inland zanjeras.

The amount of work required to maintain dams on the main river is considerably greater than that required for dams on the feeder streams leading into the valley. This is because the number of days individual members must work is largely determined by the amount of damage to dams and intake systems during the rainy season (June through September), as well as the regular maintenance required on primary and secondary canals. Those zanjeras with concrete dams require far

fewer days of work, both because they do not suffer the loss of their dams and they usually do not have extensive canal systems to maintain. Because brush weirs can be destroyed two or even three times during the rainy season, the zanjeras in the central valley may require as much as 60 to 90 work days from each member each year. By contrast, those systems with dams on tributary streams normally require no more than 30 days of their members.

The rivers of Ilocos Norte are braided with one, two, or even more channels cutting through broad beds of river cobble. The wide riverbeds absorb the high levels of wet-season runoff and the still higher levels that occur with typhoon rains. One of the primary considerations in having rock and bamboo weirs rather than concrete dams is that high water levels may result in channels being relocated at some distance from existing diversion sites. In these instances a concrete structure, even a permanent intake gate, would be left isolated and useless. What outsiders (e.g., Christie 1914) have seen as "primitive" rock and bamboo structures are technological features that can be quickly repositioned and built in response to shifting channel patterns. At the same time, when dams are washed away by high floodwaters, their collapse reduces the damage to canals and fields that would occur with permanent structures.

The zanjeras that divert water from the main river would much prefer not having to spend considerable amounts of time, effort, and money on repairing and relocating main canals. They are well aware that the zanjeras with concrete dams on the less turbulent, fixed-channel, tributary streams spend much less time on maintenance and repair work. However, putting in a permanent concrete structure on the main river, either a dam or an intake gate, is not a rational alternative for them. Bamboo and rock dams represent an adaptive technological response to environmental disruptions and the needs of rice agriculture, the production of which does not permit lengthy, high-cost disruptions to the continuous supply of water.

Depending upon the flow of water, the size of the area to be irrigated, and the location and effectiveness of the dam and intake system, the seasonal availability of irrigation water will carry over from the harvesting of the wet-season crop (invariably rice), to provide water during the dry season on alternating schedules for most or all of the second crop (usually garlic or tobacco), and the possibility of most fields within a system being alternately watered for a third crop (usually mung beans).[10] The particular pattern of multicropping and the specific varieties grown are further influenced by soil types and drainage, with the

overall pattern further rationalized by the individual needs of a farmer in terms of subsistence and marketing. Crop selection and the working of fields are decided by individual families within the overall regime set by the needs for irrigating rice during the wet season and market considerations.

With the complex networks of canals and the fields of one zanjera abutting those of another, the boundaries of a zanjera lack clear definition. As visible social entities, zanjeras are even more obscure since, unlike hamlets or villages, they have no residential referents, with members coming from two, three, or even more villages, and even villages in adjacent municipalities. Yet zanjeras, unlike villages, are socially well defined, corporate entities that possess tightly bounded organizational structures, in marked contrast to their lack of physical definition (Figure 4).

Legal Incorporation

Zanjeras are well known to leading municipal office holders, even to a few officials at the provincial level of government, politicians who appreciate the fact that zanjeras are potential sources of political support (Lewis 1971:138–142). A few lawyers, who provide the occasional legal services that may be required, have some knowledge of how zanjeras operate, though this largely involves matters relating to registrations as well as the laws and government regulations that apply to irrigation groups as legal corporate organizations. However, even these lawyers seem to have little knowledge of the day-to-day functioning of the zanjeras or even the complex systems of property rights involved. In general, zanjeras are unknown quantities to townspeople and are seen simply as "the way farmers get together and bring water to their fields," as one lawyer explained it to me.

Lawyers assist newly organized zanjeras in drawing up their constitutions and older, established zanjeras in revising and renewing them every fifty years as required by law. Constitutions are required as part of a zanjera's registration with the Philippines Securities and Exchange Commission. These charters provide information on the location, origins, and stated aims of the zanjera. They also include more detailed information (some are more than twenty pages overall) listing the duties and responsibilities of regular members and officers, the schedules and procedures for meetings and elections, the amounts and types of work involved, and the various penalties and fines assessed members who fail to meet their obligations. In some instances the charters are signed

(or thumb-printed by those who cannot write) by each member; in others they include only the signatures of the "Board of Directors," as the elected representatives are known. The constitutions are then properly certified by a notary public with the zanjeras becoming corporations in a true legal sense.

However detailed the constitutions may be, they do not include some of the most important information on the corporate-property aspects of zanjeras. Just as there is more to any business or industrial corporation than meets the public eye, the zanjeras are much more complex organizations than their articles of legal incorporation indicate. It is not merely that zanjeras are secretive and do not wish to disclose all of the features that make them corporate. The information provided in constitutions is that specifically required for the legal purposes of incorporation, but certainly not all of that which, for legal purposes, zanjeras consider important for their effectiveness as social groups.

Charters are now required by one or more agencies of government. In the past the impetus for having legally notarized charters seems to have come from the zanjeras themselves, especially the larger, centrally located zanjeras most concerned with protecting their rights to water and forms of communal property (Appendix 4). Currently, with a national government greatly concerned about agriculture, a much greater effort is made to see that all irrigation groups are registered with various agencies, ostensibly to better coordinate rural production from the national level. In any event, authorities ask for and receive only the kinds of information that they consider important for legal incorporation. That the folk or emic corporate structures of zanjeras might involve much more than is required by law is not a part of official comprehension.

Finally, most members of the zanjeras are unaware of what is actually in the charters, especially with most of them written in Spanish. Individual members learn from each other what the rules and expectations of membership include rather than from the incomplete information found in the constitutions. Constitutions are less important for what they say than for what they are: certified documents that verify communal water rights and the existence of the zanjera as a legal entity. For the older zanjeras the charters are important in that they substantiate the priority of their claim. Their claims to both place and time are important in terms of their relationships with outsiders: individual farmers, other zanjeras, and agencies of government.

For both families and zanjeras the primary features affecting corporate structure are the relationships pertaining to property. For families the relevant property rights and concomitant social relationships are

those that relate to freehold and leasehold farmland, and additional land rights (discussed below) that can derive from membership in a zanjera. The property and assets of a zanjera include rights to water, canals and canal rights-of-way, and meetinghouses. In some zanjeras they also include capital savings, various primary and secondary ownership rights to parcels of land, and in some instances secondary rights to whole blocks of irrigated fields. For zanjeras and families, water rights and land rights are intertwined and complementary to the corporate interests of both.

Membership, Ownership, Water, and Land

While the charters list and describe some, but not all, of the responsibilities of members, they do not include statements on the requirements for membership. Comments concerning "we the members" do not involve explanations of who may belong to a zanjera or how membership is achieved. Since membership entails rights of access to property (water and, in some cases, land), the rules which limit and define that access are crucial to the group's existence as a corporate enterprise.

One of the more simple distinctions involving membership concerns the admission of landlords. Though no references appear within the charters, each zanjera has unwritten but specific rules as to whether members must work the land themselves or whether they can also be landlords. Of the total of 47 zanjeras in Bacarra, 26 prohibit landlord participation, specifically with respect to voting or being eligible for positions of leadership. For these irrigation systems memberships are restricted to persons who actually farm the land, either as owner-operators or as tenants. The remaining 21 zanjeras permit landlords both to vote and to stand for office.

However, the category of landlord is not defined in terms of social class since the largest number of people deriving incomes in the form of landlord shares consists of fellow villagers, "peasant landlords" (Lewis 1971:119–127). In some instances, I was told, the rule of permitting landlord memberships exists to allow for the continuation in office of an older, highly valued member who no longer works land within the zanjera. On the other hand, the admission of upper-class landlords is seen as undesirable in that, as one peasant landlord remarked, "such people do not understand our problems." Leadership, it is argued, requires knowledge and experience that can only be gained sufficiently by an individual having worked his way up through the system. Not only would landlords lack experience and understanding, but members feel uncomfortable ("ashamed") when having to associate with them

on a person-to-person basis during occasions (work days, meetings, elections, and rituals) when interactions should be open and involve companionship.

Though none of the zanjeras in Bacarra have upper-class landlords in positions of leadership (though at least two did in the recent past), there are zanjeras in the nearby municipalities of Vintar and Pasuquian that have leading political figures as headmen. In the middle Laoag River valley, the maestro of one large zanjera was a high-ranking general and a relative of Ferdinand Marcos. Though officially listed as the maestros of these zanjeras, these particular individuals do not concern themselves with or engage in the actual work or direction of day-to-day activities. This is done by the segundo maestro, or vice president, who is acknowledged by the membership to be the effective leader. As far as could be determined, these cases represent the inclusion of socially or politically important individuals as honorific figures who attend the one or two major ritual events each year, and who have in the past or can in the future provide assistance.

Whatever the rules concerning working or nonworking members, the irreducible condition of membership is whether or not one's fields are irrigated by a zanjera. Simply enough, persons do not belong if their fields are not within the zanjera system. On the other hand, not all of the fields irrigated by a zanjera are actually those of its members. As much as half or even more of the land irrigated by a zanjera may belong to nonmembers. Memberships are distinct from two categories of nonmembers (the *inkapulo* and the *biang ti daga,* see below), whose lands are irrigated by the system. The conditions pertaining to nonmember water users are significant in terms of defining the precise corporate limits of a zanjera, for these are social boundaries that do not correlate with the physical layout of the irrigation system.

Inkapulo: the water buyers

One category of nonmembers that may receive water from zanjeras is referred to as the *inkapulo* people, the one-tenth or ten percenters. Just as often referred to as *razco* (from the Spanish *rasgo* or parcel of irrigated land), and even sometimes *porcientos* (percenters), inkapulo fields are those found in the lower and usually poorer irrigated sections of a system, areas in which water may be in relatively short or irregular supply during the dry season. Conversely, the fields may be in a waterlogged area which seldom completely drains, or have higher than desirable water levels, in which case only rice can be grown. Whatever the relative abundance of water in any given year, the razco water users pay ten percent (the inkapulo) of each irrigated crop to the zanjera.

They have no formal obligation to the zanjera other than this, though if an extreme emergency required extra labor they might be asked—and they would undoubtedly agree—to assist.

Because of their location at the margins of a system and not being regular members, their situation with respect to the reliability of a regular supply of water is uncertain. During periods of water shortage and limited water schedules for membership lands, the supply of water to inkapulo users may have to be cut off. The payment of ten percent rather than a fixed fee is automatically adjusted to the variable supply of water. If the number of inkapulo users is sufficiently large, they will select (or elect) their own representatives to deal with the zanjera. A central site, usually the home of an inkapulo representative, will be used as a central collection point for the zanjera's ten percent share of the crops.

The absence of inkapulo water buyers may mean only that a system has no surpluses, or that all overflow water is obligated to downstream zanjeras. As is discussed later, in some instances inkapulo users, for a variety of reasons, form their own zanjera and enter into a corporate-to-corporate, negotiated relationship with the parent group. Whether a group of inkapulo water users is able to create and maintain such a zanjera, which is necessarily dependent upon another, depends upon a range of social and hydrological conditions.

Though included within the total lands irrigated by a system, inkapulo lands and inkapulo users are both physically and socially peripheral to a zanjera, important mainly for the annual income they provide. This can amount to a few hundred or, for larger zanjeras, several thousand pesos a year, all of which helps to pay operational costs (e.g., bamboo, cement, equipment rentals, legal costs) as well as the considerable expenses associated with feeding work groups and carrying out ceremonial activities.

The relationship of a zanjera to its water buyers is much less significant to the internal structure and corporate organization of the group than are the relationships and circumstances that characterize the second category of people (the biang ti daga) whose lands are found within some of the larger zanjeras. These relationships are central to the property rights and corporate integrity of most large irrigation systems.

Biang ti daga: the original landowners

Within most larger zanjeras, those located along the Bacarra-Vintar River, there are parcels of land, sometimes whole blocks of fields, called *biang ti daga,* a term best translated as "the business (or concern) of the land." These fields derive from formal agreements with

landowners who, at the time a zanjera was established or subsequently expanded, gave up use rights to a portion of their land in exchange for a continuous supply of irrigation water. Depending on the difficulties and expenses expected with initially constructing a system (e.g., positioning the dam, the length and difficulty of routing the canal, problems of rights-of-way, leveling the land to be irrigated, potentials for providing water during the dry season, and so forth), zanjera officials negotiated for portions of the owners' lands, in some instances as much as two-thirds of the total land involved. The blocks of land obtained and those remaining to the landowners are set out in block maps (Figure 5) and covered by individual contracts (Appendix 1). The landowners' portions, the biang-ti-daga land, are provided water in perpetuity. In some cases no further obligations are involved; in others the landowners provide token, annual contributions of money or sugar-cane wine *(basi).*

Whatever the amounts of land gained in the initial exchange, the agreements are that the fields obtained by the zanjera are held corporately and used by individual members for only as long as the zanjera provides water. Should the zanjera fail to maintain a regular and sufficient supply—as the result of a major breakdown in the system or a preemption by a government irrigation scheme—the original landowners, still having the primary rights of ownership, can then reassert use rights to all of their land.

Because these agreements often go back for one or even two centuries, the original situation may have been greatly altered. Whereas there were larger landholdings in the past—negotiations for, say, twenty hectares of land might have involved no more than a single owner—inheritance and particularly the sale and resale of lands in this century have resulted in a highly complex, often confused situation of legal titles. The blocks of biang-ti-daga land have been subdivided by inheritance, sale, and resale over many generations. Also, there are instances where documents were lost or destroyed during World War II, others where individuals have failed or not wanted to change registered titles, and still others where records have simply disappeared as a consequence of the vicissitudes of time.

In a number of instances, I was told, zanjeras have legally consolidated their shares of the land when they learned that formal ownership rights had lapsed. In these instances a search of tax records had shown them that the descendants of the original biang-ti-daga landowners had become unaware or no longer cared about their primary claims to the corresponding zanjera blocks. In other instances, primary ownership rights were simply lost or ignored when the corresponding biang-ti-daga lands were sold, often several times over, to new owners. What-

ever the particulars of individual cases may have been, zanjeras seem to have quickly and quietly applied for absolute ownership to their blocks of land when opportunities presented themselves. One example of this type of corporate consolidation is shown in Appendix 2.

In many cases, the legal situations surrounding biang-ti-daga lands have become enormously complicated. Unlike the conditions pertaining to inkapulo lands, the initial and continued existence of the zanjeras depends upon their ability to provide water to the lands of the biang-ti-daga owners. The blocks of land obtained by a zanjera are fundamental corporate features of most systems in the central part of the valley, since they involve usufruct property that is communally controlled, and also property that is in potential jeopardy.

Atar: membership shares of land

A hundred years ago the situation was legally and administratively much simpler since zanjeras had only to deal with a few upper-class landlords. The historically recent diminution of larger holdings and the fact that peasants now own many of the fields that once belonged to the upper class (Lewis 1971:26–27) mean that the conditions relating to titles held by biang-ti-daga owners and the claims held by zanjeras are both complicated and uncertain. The zanjeras holding sizeable amounts of exchange land are well aware of this situation since acquired fields can constitute large portions or even all of the area worked by members of a zanjera.

The portion of land obtained in the exchange with the original landowners is called *atar,* which literally translates as "a newly cleared field," referring to the association of paddy construction and, sometimes, land-leveling with bringing irrigation to the area. Atar lands constitute the major part of the corporately controlled property, administered under a form of secondary ownership by the zanjera and allocated in nearly equivalent-sized parcels to individual members. The members themselves hold tertiary rights to their atar shares *(bingay),* rights that are passed from generation to generation as a part of a member's family estate and invariably listed as a part of a young man's land dowry, or sabong.

The total amounts of atar land and the size of the individual shares allocated to members vary from one zanjera to another depending upon the number of members involved and the overall amount of land obtained in the exchange of water for land. A common size for atar shares was originally about one-quarter hectare, though actual field plots were judged according to the amount of rice that a field would produce. Actual measures of land (given edaphic factors) might vary

from one atar block to another, or even from one field to another. Excepting that some of the founding officers were given larger, or additional, atar shares for their contributions in engineering the system or negotiating the exchange, atar parcels are viewed as equal membership shares: one bingay, one measure of work; one bingay, one vote.

A distinctive physical feature of atar lands is that the individual fields within a block are long and narrow, making atar plots noticeably different from surrounding, privately owned fields (either biang ti daga or inkapulo), which are the more typical squared or blocked shapes found throughout most of the Philippines (Figure 1). The exaggerated, rectangular pattern of atar fields relates to the practice by which zanjeras distribute equivalent bingay units to individual members (Figure 6).

As a simplified, hypothetical example, a membership of fifty persons, with a total land area of 25 hectares to be irrigated and the zanjera obtaining for itself one-half of this in the exchange agreement, the 12.5-hectare atar portion would be subdivided to give each member 2,500 square meters, one-quarter-hectare shares. Assuming the total atar block to be 200 by 625 meters, the officers of the zanjera would divide the longer measure by the number of members (50) to give each family an atar share measuring 12.5 by 200 meters. Each individual's bingay faces directly onto the main canal (on the short end), with no intervening fields to intersect the flow of water.[11]

For two reasons, however, the elongated strip seldom represents the total area of an atar share. First, as a result of inheritance or the selling of part shares, several kinsmen or other zanjera members will have divided the one-quarter-hectare lots into three, four, or more pieces. Some of these part-shares are as small as 100 square meters and each part-sharehold carries a proportionate obligation of work and portion of a vote. Secondly, and to complicate the matter still more, the overall amount of atar land may never have been obtained in a single, contiguous block of fields in the first place (Figures 5 and 6).

When lands were obtained from the original owners, two or more separate blocks of atar fields were often acquired, in part because the zanjeras initially dealt with a number of landowners and it was simply impossible to obtain all of the atar land in a single section. At the same time, sections of land differ in terms of being closer to the source of water, quality of soils, drainage, and so on. The separate blocks of atar land obtained by a zanjera represent the different areas negotiated for and the more or less desirable qualities of the lands involved. Larger zanjeras have greater numbers of atar blocks, each of which is identified by name (on the basis of their soil types or some other local feature) or by number.

In order to make shares equitable, members were allotted parcels in each section, the total number of separate parcels making up their atar share, or bingay. In these cases an individual's one-quarter-hectare share might be composed of three or four (or even more) paddy fields located throughout the irrigation system.[12] In addition to making individual holdings more or less equal in terms of soils and drainage patterns, such a distribution precludes a problem frequently encountered in irrigation groups where all of a water user's land is located in one section of the system: the greater reliability of water for fields at the head of a system than for those in more distant sections. Such inequities can lead to sectional disputes within an irrigation system. On the other hand, with individual shares subdivided and distributed throughout the system, it is in the interests of all members to see that each section of the zanjera is equitably provided for.

The corporate interests of both zanjera and member are inextricably linked through their respective rights to atar land, in addition to the zanjera's corporate rights to water, dams, and canals. The loss of water as a consequence of a system's inability to continue functioning would be a major loss where freehold lands are involved, but for an atar-based system it would mean the loss of the land as well. This feature of atar-based systems sets them apart from zanjeras in which all or the vast majority of lands are freehold. The presence of only member-owned, freehold land provides a different, somewhat less corporate basis for zanjera membership.

Inkalian: freely owned land

The majority of zanjeras in Bacarra, mostly the smaller irrigation societies located on the tributaries feeding into the valley, are not based on lands obtained in barters of water for land. Without blocks of atar land they have no corresponding areas of biang ti daga. The fields irrigated by these zanjeras are owned in freehold by the members themselves or are the fields of inkapulo water buyers. In these zanjeras corporate property is restricted to water rights, dams, canals, canal rights-of-way, meetinghouses, and, in some instances, small parcels of communal land, discussed below.

These zanjeras were organized by the landowners themselves who, as working farmers or landlords (i.e., with tenants doing the work), developed irrigation systems for their own lands. This procedure did not involve a water-for-land exchange as in atar-based systems. Member lands in these zanjeras are referred to as *inkalian,* from the base word *kali* (canal): the canal builders.

In zanjeras with only inkalian lands—an estimated 25 of the 47

surveyed—members own roughly unequal portions of land, with fields indistinguishable in shape from the surrounding paddies of nonmembers, or the biang-ti-daga fields within atar-based systems. They are thus different in physical form from the membership lands of atar-based systems.

Work requirements for inkalian members are based upon an agreed size (usually ⅛ ha, ¼ ha, or the amount of rice a field will produce) and individuals provide equivalent or proportional labor. However, average-sized shares are much less a precise concern and there is considerable variation from the mean. Whereas an individual may have two, three, or even more fields within a system, these zanjeras do not (cannot) have the highly rationalized systems of field distribution that characterize zanjeras with separate blocks of atar lands. Although there is the potential for claims of unequal access to water, these zanjeras are among the smaller ones (10–20 ha) within the municipality and this tends to moderate problems of sectionalism.

Inkalian-based systems are also those that permit landlords to be members. Several individuals suggested to me that the owners of larger holdings, both upper-class landlords and wealthier peasants, tend to play disproportionate political roles in the operation and management of inkalian-based systems. Given landlord participation and the absence of communal-corporate lands, inkalian-based zanjeras are less egalitarian or democratic than are those with blocks of atar land. However, none of the zanjeras are strictly egalitarian or devoid of the status-rank differences that make up rural peasant societies in the northern Philippines.

In only 6 of the 47 zanjeras surveyed do members have only atar land; an additional 12 have both atar and inkalian lands. Zanjeras with both types of membership were said to have developed where founding officers and wealthier members had owned freehold lands within the system *and* where they had also received shares of atar lands. In one instance I was told that the founding leaders were given pieces of freehold land for their initial contributions in establishing the zanjera, but whether such land was originally provided from the atar block or obtained in a clear exchange with the original landowners was unknown. In another instance it was said that several of the founding leaders had owned larger pieces of land, some of which were set aside as their biang ti daga while the remainder became part of the overall atar holdings. Their biang-ti-daga portion was said to have been “more favorable” (larger) than those of other landowners. As is the case today, the individual solutions that prevailed for any zanjera at a particular time were both highly specific in meet-

ing perceived needs and reasonably flexible for covering a number of contingencies. However, the current distribution of land types is far from being a precise guide to what happened more than fifty years ago. It appears that leaders often asked for and received special consideration but, because of elapsed time and the desire to downplay the importance of such rewards, details are imprecise.

The types and proportions of land in zanjeras today represent the group solutions that farmers initially arrived at and have since modified as new problems and opportunities arose for bringing irrigation to and maintaining it in specific areas. The conditions that now obtain are difficult to reconstruct precisely, partly because older documentation is limited, inadequately detailed (e.g., with the charters), or out of date. However, what is lacking in historical specifics is more generally evident from the corporate solutions found in extant situations. Clearly, zanjeras with larger amounts of different types of land involve greater degrees of corporateness. The final category of zanjera lands involves still other property-corporate concerns for large, atar-based systems.

Komon: communal property

In addition to irrigating inkapulo, atar, biang-ti-daga, and inkalian lands, zanjeras also include areas of *komon* land, after the Spanish *comun* or common. Thirty-two of the zanjeras in Bacarra have some komon land: the smallest reported was 50 square meters, the largest more than 8 hectares. The smallest communal holdings are not farm land but are the sites on which meetinghouses are located—the *balay ti zanjera,* the home of the zanjera or, as they are also commonly called, *kamarine,* from the Spanish *camarin* or meetinghouse. Smaller zanjeras will have only one meetinghouse, whereas larger ones may have two or more located at various places throughout the system.

Additional amounts of komon land are usually irrigated fields, lands that are farmed collectively by the membership, with part of the crops set aside for the food consumed on work days and on ritual occasions. Extra produce is sold and the money used to pay zanjera expenses. Irrigation groups that lack communally owned fields may make arrangements with one or more local landlords to farm plots as a group tenant, with the tenant's share going into the zanjera's treasury. On the other hand, if large amounts of komon land are available, a zanjera can set aside fields for the use of its officers, a kind of honorarium *(paglakay)* given them to farm for the duration of their office. Ideally, these fields accompany the office, though when they have been associated with a family line for several generations problems can arise over the reluctance of former officers to give them up (Siy 1982:77). An alternative,

and one that avoids such an issue, is where officials simply receive part-shares of the produce from the communally farmed plots of komon land or, in the poorest zanjeras, are compensated with "time off" from the labors required of regular members.

A few zanjeras have greater amounts of communal land than they need to cover expenses and honoraria. These surpluses provide a reserve of land that can be used for trading or, in emergencies, even selling should additional lands be required to relocate canals or meet other outstanding costs. All komon land can be used for such emergencies but systems with the largest holdings of komon land have the greatest margin of protection. At the same time, the wealthier zanjeras can use extra amounts of komon land to further increase zanjera funds and even assist some of their members. A few of the largest zanjeras make surplus komon lands available to members by lottery or by rotating their use among members. The members so selected work the plots as tenants with the landlord's share going into the zanjera's treasury.

Komon lands may be owned outright by the zanjera (fee simple) or, as with atar fields, may involve secondary rights (fee tail) with primary title still held by the biang-ti-daga owner. Fee-simple rights to komon land can be acquired in a number of ways: by direct purchase, if sufficient treasury funds exist; from land willed or given to the zanjera by an heirless member; from land reclaimed or rebuilt along the margins of the Bacarra-Vintar River; from land that was earlier a canal or canal right-of-way that had to be relocated; or from very old atar land for which the biang-ti-daga owners are no longer known and for which primary titles have lapsed (Appendix 2).

One particularly noteworthy example of how lands were reclaimed from the Bacarra-Vintar River was concluded during 1976 when officials of a zanjera contracted a bulldozer to level and fill a one-and-a-half-hectare area adjacent to a curve in the riverbed. Originally part of the biang-ti-daga lands within the system, it was included in a larger area destroyed by flood in 1936. A bar of river cobbles parallel to the bank had resulted in the formation of a slough that gradually filled with river sediments. In the years immediately following the flood, zanjera officials directed the planting of trees along the cobble bar to anchor the formation more firmly. Forty years later, with no subsequent flood damage and after the fields had been bulldozed to a level above the high-water mark, new fields were constructed. No work was undertaken, however, until a title search revealed that all claims to the area had lapsed. The fields are now farmed by zanjera members on a combination lottery-rotational arrangement.

The amounts of komon land, as well as the potential for obtaining

additional komon lands, are greatest in the larger zanjeras. The construction or reconstruction of new fields from abandoned canals, newly acquired unirrigated lands, or abandoned sloughs is greatly facilitated by having a large labor force, as well as having greater reserves of land and money to invest in such projects. Simply in terms of land, labor, and capital the larger zanjeras are in a better position to expand their corporate estate than are the smaller ones with fewer members and little to invest.

For the smaller zanjeras of inkalian owners, corporate-communal property other than water rights, dams, and canals may include only a meetinghouse and perhaps a small plot of komon land. Correlated with their smaller corporate estate they are correspondingly much simpler in organization and much less socially elaborate than the larger, atar-based systems. The existence of sizeable blocks of atar land and corresponding areas of biang ti daga necessitate much more complex systems of property control and formalized social relationships. Whereas all zanjeras are corporately based, the larger, atar-based systems are necessarily more corporate than are the smaller, inkalian-based systems.

At the same time, the differing degrees of corporate elaboration involve the respective members in somewhat different ways. In all zanjeras the rights of the group to water and the rights of the family to land are essentially complementary and mutually supportive relationships involving respective corporate interests that dovetail. However, in zanjeras that possess atar blocks and larger holdings of komon land, the dovetailing of family units into the structure of the zanjeras involves a more complicated network of rights and obligations. With atar lands, individual families can not only be deprived of water, but they can lose all rights (their tertiary rights) to the land. Differences in corporate structure are also evident in the contrasting patterns of organization and leadership that characterize the smaller inkalian and the larger atar-based systems.

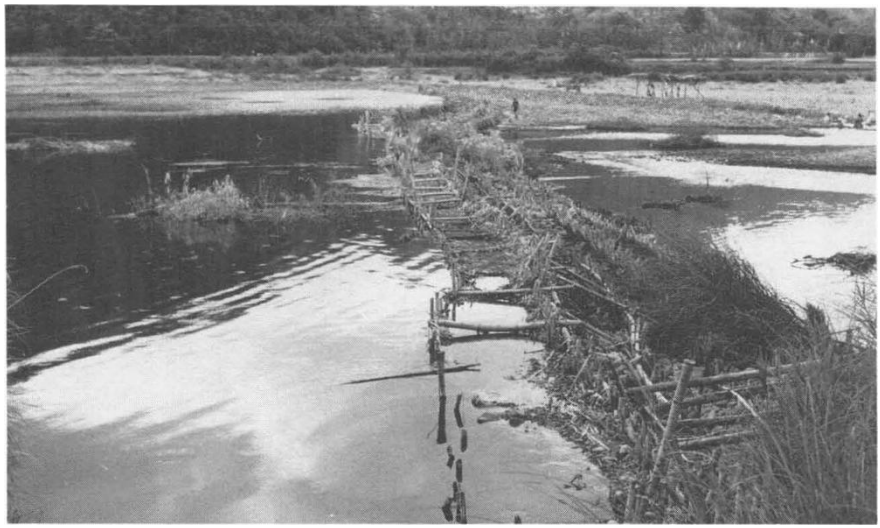
Organization and Leadership

The size of an irrigated area in large part determines the extent and complexity of zanjera organization, though total area is not the only factor involved. Large areas of inkapulo land serviced by a small membership can mean that a zanjera with a total irrigated area of fifty hectares has a smaller membership than one with the same area having only inkalian lands. In general, however, zanjeras with the greatest areas under irrigation have the largest memberships and the most elaborate leadership structures.

Memberships vary from the smallest zanjeras with as few as 20–30 farmers, to the largest with 300 on up to 1,000. Because his total farm may be divided into ten or more small, widely scattered plots totaling as little as one-half hectare (including dry-farmed hill plots and rainfed rice paddies), a farmer may belong to two or even three zanjeras, in addition to having one or more plots irrigated from a government system. Participation in a zanjera is always prescribed, but individuals are not precluded from having multiple memberships. It is even possible for an individual to be the leader of two groups (I know of at least one instance), though the demands of leadership make such multiple roles very difficult.

In general multiple memberships are limited, especially for individuals belonging to the largest zanjeras, because participation in two or more can involve farming more distant fields as well as working at conflicting times on dams and canals still further removed. The simple physical problems that dual memberships involve work against active participation in more than one zanjera. Individuals did not, however, see the problem as involving conflicts in social obligation. The leaders of six zanjeras, all farmers of high status and relative wealth (one hectare or slightly more of land), held land in neighboring zanjeras but all had arranged for tenants to work the fields in the more distant zanjeras. At the same time, however, three of these individuals worked lands as tenants for biang-ti-daga landowners within the zanjeras in which they were officials. Such variable practices of land use involving an individual in the multiple roles of independent farmer, tenant, and landlord are quite common in Ilocos Norte, Isabela, and probably other areas of the Philippines as well (Lewis 1971:119–127).

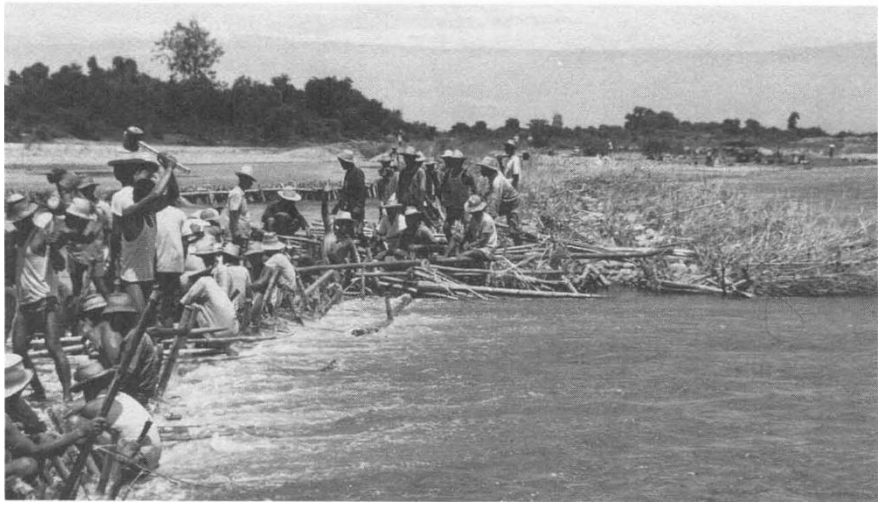
The admission of new members to a zanjera follows no fixed pattern. When more members are required, means will be arranged for admitting them. In zanjeras with only inkalian fields and no atar lands it is a much simpler process to admit new members since the zanjeras have no corporate controls over the lands owned and farmed by their members. If the individual applicant is already an inkapulo water buyer and his labor is needed, it may be arranged that he simply provide the required hours of work rather than the ten percent of his crops. If, on the other hand, the delivery system is being expanded and improved, new members may have to give up smaller portions of their land (10%, 20%, or even more) and these additions become part of the inkalian-based system's komon lands. The remaining portion of the new member's land is owned on the same basis as the land of other members. In each case the respective needs of the zanjera and those of the new member are negotiated through bartered exchanges of water, land, and labor.



This rock and brush weir *(padul),* shown here during the dry season, spans the entire Bacarra-Vintar River. At this point the river is a single channel over 100 meters across. The water, moving from left to right, is diverted into the intake (*wawa ti kali*—mouth of the canal) at the lower part of the photo. This single dam serves nine zanjeras with an area of more than 500 hectares and a main canal of 12 kilometers. This system and alliance of zanjeras has been described by Siy (1982).

Four weirs are visible in this aerial photo taken during the wet season. A total of six zanjeras derived water from these in 1963 (but in various other combinations in the years before and after). All of the irrigation groups work cooperatively on major repairs to the dams shared and those of neighboring dams. The white water at the left-hand side of the third dam shows where a breach has occurred, the result of a storm the day before. In addition, at most points where canals cross one another (right-center area) there are watergates *(pagbibinoludan)* for diverting water from higher to lower canals in emergencies such as the one shown here. The mix of long, narrow *atar* and wider *biang-ti-daga* fields is faintly visible above and below the road.

The core work unit within larger zanjeras is the *gunglo,* a group or gang of 20 to 30 members headed by a *panglakayen* (leader). Here a *gunglo* cleans grasses from a section of main canal. The man in the lower foreground is the *panglakayen* for this group. These individuals are elected from among the older, more experienced members of the *gunglo* or from the zanjera at large. A part of their responsibilities involves participation on the zanjera's "board of directors." In the larger zanjeras, *gunglos* provide the nucleus of close, interpersonal relationships for individual members. Within this context *panglakayens* assume much of the role of older brothers, are regularly addressed as such *(manong),* and, like other officers, share in the labor and comradery expected of all members.



Workers from five cooperating zanjeras repair a broken portion of a dam following the receding of waters after a wet season storm. Before this and shortly after the storm, a temporary weir *(pasarigsig)* was set in place near and running parallel to the river bank in order to maintain the flow of water in the main canal. This smaller structure is just visible behind the men at left-center. The water flows from left to right against six rows of lashed and interwoven bamboo, river cobbles, and branches of bamboo placed on the downstream side to reduce undercutting. This dam is wider than most because of the narrowness of the channel and the corresponding force of the current.

Three canals flow from top to bottom in this picture. The center canal, the lowest-lying and smallest of the three, is siphoned under the largest canal and exits to nearby fields at lower left. By means of two connecting gates *(pagbibinoludan)* located on each side of the wide ponding area at the center of the photo, and from what has now become the middle canal, emergency water can be diverted into the two adjacent systems. In a kind of reciprocal assistance, a steel gate can be lowered where the canal at the right passes beneath the road, water then backs up and raises by several feet, and a supply of emergency water is provided by the higher system.

The president and vice-president of a zanjera that derives its water from a tributary stream stand on a concrete dam *(puttot).* These structures are characteristic of small, less-turbulent water sources and require much less maintenance than the brush and rock weirs, which must be rebuilt and relocated as a result of flooding and shifting water channels in the main rivers. The intake and control gates are at the right-center.

Men from a zanjera transplant seedlings in one of the communally owned fields *(komon),* while behind them three other members harrow rice paddies that will again be flooded and transplanted from a nearby seedbed. Rice and dry season crops from these corporately controlled fields will be used to provide much of the food consumed on work days and at ritual feasts. A part of the produce, along with income that may be derived from the sale of surplus water, will be set aside and sold to cover zanjera expenses: cement, bamboo, lumber, hire of earth-moving equipment, special foods, and even legal fees. In the relatively wealthiest zanjeras there may even be a surplus sufficient to provide to members a kind of annual "bonus" *(pagraramanan)* from the income on *komon* lands and the sale of water.

A ritual offering *(umras)* is prepared and displayed in the home of a president or vice-president on the eve of the main ritual—the *pamisa* or mass—held before the onset of monsoon rains. In this picture the wives of zanjera officials stand beside plates of cakes and candied-puffed rice. At the center of the table are two plates, one of glutinous and the other of nonglutinous rice, each with an uncooked egg. Behind is a bottle of Coca Cola and one of San Miguel beer. At the rear of the table are carved and painted figures of saints, although zanjeras have no specific patron saints as such.

Ceremonies at the *kamarine* (field or meetinghouse) include a lavish feast. The sons who will eventually inherit their fathers' memberships and obligations are also included, a recognition of their future involvement, and they are the first to be served (upper-left). The president (third from right) is surrounded by the headmen of neighboring zanjeras and, after they and other special guests (e.g., public officials, lawyers, government representatives) have been served, the president and his zanjera members will eat.

One of the primary functions of the Federation of Zanjera Associations of Bacarra (FZAB) involves the supervision of individual zanjera elections. Depending on the size of the zanjera, two, three, or more officials from the federation will attend elections, speak to the assembled members to remind them of their responsibilities, distribute ballots, collect and count votes, and announce winners. Above, zanjera members record the votes—counted and read aloud by a federation representative—for the presidential candidates (top two rows on board), vice-presidents (following two rows), and seven candidates running for the five positions of *panglakayen*. Elections are also the occasion for feasting and drinking.

The most important reason for the existence of the Federation of Zanjera Associations of Bacarra (FZAB) involves presenting the concerns of its members to government officials and local politicians. In this photo, the president of the federation (seated right-center) listens to a representative—accompanied by two assistants from the Provincial Irrigation Office—as he explains that government rules state that each dam must represent one irrigation group. The president and his officers (only two of whom are shown at far right) explain that such a regulation cannot apply since dams are frequently shared by two or more zanjeras and, for those on the Bacarra-Vintar River, the number sharing a dam may change from year to year as channels shift and zanjeras relocate dams and intake systems. To support their claim of corporate independence they have brought along copies of their zanjera's constitution and their records of incorporation as they are listed with the Philippines Securities and Exchange Commission.

As mentioned earlier, inkapulo water buyers may be more or less organized themselves, with one or two individuals representing them to the zanjera, a convenience for both sides at the two or three times a year that the ten percent of production is collected. If, say, because of an improved delivery system a zanjera is able to expand its membership, the inkapulo users may be added to the zanjera as a group, further adding to the divisions of work groups *(gunglo)* that make up the zanjera as a whole. Whether or not new memberships are accepted in inkalian-based systems depends upon the perceived advantages to the zanjera, its ability to provide additional members with an adequate water supply, the willingness of individuals to accept the responsibilities of membership, and the possibility that some land may be bargained to the zanjera as well. Each case depends upon the merits of the situation for both parties. However, once agreed upon, the particular mechanism for including more members is a matter of relative ease. The perceived needs of the zanjera decide whether or not such action can be undertaken.

For the larger, atar-based zanjeras the admission of new members is more complicated since the presence of corporately owned or controlled lands involves different sets of property rights and obligations. Some zanjeras have sections of both atar and inkalian lands, and some individual members have both kinds. As one informant stated, “It is better to have all one kind of land [i.e., membership type], just like all members would be workers [and not landlords] since this makes us all the same.” In fact, however, this has not prevented the combining of atar and inkalian lands in a single system.

Because atar shares have been much divided into part-shares, zanjeras with atar lands normally have a considerable potential for internally expanding their labor force if new lands can be found to augment existing atar fields. Such a potentially expandable labor force is especially useful in the bigger zanjeras since large groups of men and capital assets can be brought together to extend irrigation to adjacent areas. The construction costs and labor requirements of such projects might be well beyond the resources of a smaller zanjera. Whether by small increments of one field at a time or by incorporating larger areas, expansions involve negotiating with individual landowners. If the zanjera obtains additional sections of atar land, the sections are partitioned and individual plots distributed among the membership. According to informants, however, this has not occurred “for a long time” (perhaps not since the early part of this century) because there are no larger sections of potentially irrigable lands that are not already under irrigation. Where additional lands are still being acquired, it is accomplished in

small increments (100–200 sq m) in negotiations with individual owners, and the plots are added to the komon rather than the atar land holdings (Appendix 1).

Because atar shares, or bingay, are already much subdivided and additional increments are small, new lands are distributed among the membership by lottery or on a rotational basis to compensate for earlier losses. Whatever the actual means used, land is invariably redistributed among existing members. Unlike the addition of inkalian lands, which necessarily brings new members, the addition of atar lands increases the corporate resources in land. Any increase in the number of members comes essentially from the inclusion of a member's close relatives and those who are not already full-share members. In a demographic setting where land is all too scarce and close kin ties always expandable, zanjeras can invariably be expanded internally. Consequently, adding outsiders to work atar lands seldom if ever becomes a problem. At the same time, adding new members with inkalian-freehold land to atar-based systems is not too difficult since their inclusion does not automatically give them access to atar lands.

Still another solution for increasing the overall size of the physical system (but not the zanjera) can be found in the establishment of an auxiliary zanjera, what Ilocanos call a *sapuyot* zanjera. The word sapuyot refers to a water barrier at the end of a canal, from which surplus water is passed on to other systems or to inkapulo water buyers. In the absence of mutual agreements to expand the existing zanjera to include a group of water buyers, the inkapulo group may form its own zanjera and come to constitute a separate though necessarily highly dependent group. Such a step will require extended negotiations with the parent zanjera and may involve the sapuyot group in making a payment of land, yearly payments (to make up for the loss of the ten-percent crop production), providing extra labor to work on the dam and main canal, or combinations of these. Taking the name of the parent group, the auxiliary zanjera will usually add the word sapuyot to the parent zanjera's name. For example, with an original zanjera named Pasayakan the new group would be called Sapuyot Pasayakan.

Smaller zanjeras of twenty to thirty members usually have a president (the Spanish term *maestro* is more commonly used than the Ilocano *pangolo*), a vice-president, a secretary, and possibly a treasurer. The three or four officers of these zanjeras plan activities, call members together, direct work parties, deal with government officials, interact with the officers of neighboring zanjeras, and organize and direct ritual activities. Since all members work together in consistent, face-to-face associations, the overall operation and decision-making process in-

volves the entire membership to a much greater degree than is the case with larger zanjeras.

The largest zanjeras (300 members or more) have more elaborate structures of official positions. They include a president, a vice-president, directors (one for each 25–30 members), a secretary (and possibly an assistant secretary), a treasurer (and possibly an assistant treasurer), two collectors (and possibly more), two organizers (and possibly more), several managers, cooks (several women organized into one or more crews), and an auditor (a lawyer or accountant hired by the zanjera). The president, vice-president, and directors constitute the elected, decision-making body, the zanjera's "board of directors." Though corporate charters may stipulate that they meet periodically (once a week or somewhat less frequently), officials normally get together only as circumstances require—frequently during the wet season, less frequently as problems decrease. Their discussions cover all important matters relating to internal activities (work plans, ritual activities, water schedules, financial matters, etc.) and those pertaining to outside groups (inkapulo water buyers, neighboring zanjeras, government agencies). Their consensus of activities to be undertaken is subsequently made known to the membership at large.

The two senior positions are filled by individuals who have previously served as directors, *panglakayen*. Since experience and a broad knowledge of zanjera procedures are considered prerequisites, the two top leadership positions virtually require that individuals have spent a number of years as a director, or as head of a *gunglo* or gang. Given that directors are themselves individuals with experience as regular members, the two senior leadership positions are usually occupied by men forty, fifty, or more years of age. While personal traits, relative wealth, and family ties are always factors that mediate the importance of age and experience (in some smaller zanjeras there are presidents in their late thirties), the hierarchical complexities and property relationships of the larger zanjeras demand broad experience of their officials.

Each director is responsible for both representing his gunglo and implementing the decisions of the board of directors. Though the directors hold higher positions of leadership, it is leadership by example, and in clearing canals and repairing dams they work closely with fellow gunglo members. In the role of panglakayen they stop regularly to note the overall progress of the group's activities, to signal or acknowledge work breaks, and to make suggestions to the youngest and least experienced of members. Within the gunglos of larger zanjeras they provide the same highly personalized, interactional leadership that the maestro of a small zanjera provides his twenty or thirty members.

Even the top leadership positions of the largest zanjeras are not

removed from person-to-person interaction with the regular members. On the one hand, their work as officers involves them in the planning and delegation of work, but on the other, as fellow members, *zanjeros,* they frequently participate in the day-to-day work of the group. Except for the women cooks and the auditor (a person whose class and occupation make him socially peripheral), zanjera officials are expected to work with regular members, "as one would work with his brothers," a member stated. Just as older and respected close friends and neighbors are called *manong* (older brother), the zanjera leaders are addressed in terms of close kinship and respect.

Rather than having them chosen by election at large, the president, vice-president, and directors commonly select individuals to fill the offices of secretary, treasurer, organizers, collectors, and managers on the basis of personal ability and character. The secretary must be able to read and write, often in two or more languages since documents and occasional correspondence may be in Ilocano, Tagalog, or even English or Spanish. The treasurer, who must also maintain a set of records, will be selected for essentially the same reasons. Residence, at least in reasonable proximity to the home of the president, may also be a consideration, since the secretary and the treasurer must consult more or less regularly with the senior officers, particularly in the larger zanjeras.

An organizer is responsible for notifying members of scheduled work parties and other official activities. In larger zanjeras, two or even three people may be required to notify the members or at least some representative members from various areas, and in emergencies (e.g., the loss of a dam) this must be accomplished quickly. Collectors are responsible for collecting and recording the payments made by inkapulo users, income from komon lands, and the fines members must pay for missing workdays. Though not an especially arduous task, collecting can be time consuming and, since zanjera funds are involved, the collectors must work closely with the treasurer and provide records for auditing at designated times of the year.

The one or more managers are responsible for organizing feasts and ritual events, activities that range from setting up field kitchens for larger work parties to arranging feasts for the entire membership when working on the main canal or on the repair of dams. The most important and demanding occasions of feasting are the annual or biannual ritual feasts (discussed below), which entail a considerable amount of planning and preparation. The managers must also work with the treasurers, as well as the collectors and cooks. On one other important occasion, the periodic elections (usually held every four years), they work with the president and vice-president.

Probably no two zanjeras have exactly the same number of offi-

cials. The size of the membership, the specific relationships with other zanjeras, the amounts of income derived from inkapulo water buyers, and the production derived from crops grown on komon lands all influence the particular structure of leadership in any particular irrigation group. At the same time, the degrees of status and honorific distinctions vary from zanjera to zanjera, and from individual to individual, and some leaders are more assertive and domineering than others. However, from the very smallest to the largest zanjeras, the emphasis is on maintaining close, personalized relationships between members, and between officials and members.

Whereas one-quarter-hectare atar shares may have been the norm when the larger zanjeras were formed, some one hundred or more years ago, individual bingay have by now been much reduced in size (from ¼ to ⅛ to $^{1}/_{16}$ ha) or shares have been subdivided among members and kinsmen. Where the reduction of share sizes has increased the overall workforce without corresponding increases in the area irrigated, kin share the work responsibilities for a share, acting as a corporation of part-members in terms of their tertiary rights to the atar share and in meeting their proportional obligations to the zanjera. It is up to individual members or membership-sharing groups to see that sufficient labor is supplied as requirements demand. How this is achieved by a particular family or extended family group is not dictated by the zanjera, which requires only that the obligations be met in terms of providing the assessed number of workers as scheduled.

In addition to members having to contribute work within a gunglo, there are alternate arrangements whereby gunglos provide one or more representative workers for maintenance and repair work on small projects involving the dam or primary canals. On these occasions, the work groups are composed of individuals drawn from gunglos throughout the system. The times for involving individuals in these cross-membership groups are usually arranged during the dry season when water schedules are necessary. Water schedules are determined by the senior officers and gunglo leaders from estimates of the water flow and the distances between water sources and fields. The involvement of directors from all sections, plus a cross section of workers from the crews involved, further assures the equitable distribution of irrigation water.

These practices, coupled with the fact that individuals have fields located in different blocks of atar land, reduce the possibilities of sectional divisiveness within the larger zanjeras. Whatever the initial historical considerations involved with such practices, zanjera officials are well aware of their consequences. As one official described it, “We are a big zanjera and like a big family we must all know and work with

one another. It is important that we also work together that way [i.e., in small, crosscutting groups]."

The problem of maintaining levels of sociability is in no small way affected by the emphasis given to the feasting carried out in the context of both small and large work projects. These events reflect just as much conscious concern for the importance of sociability as do the lunchtime meetings of business associates in the professional clubs of nearby Laoag City. As one leader explained, "We work very hard but we are not carabaos [water buffalos]; we eat and drink together and we have fun." However, unlike a business association (e.g., the Rotary or Kiwanis Club), the members of a zanjera share the ownership of important resources. For zanjeras with sizeable pieces of komon land and relatively important sources of income, especially from the sale of water to inkapulo buyers, the use of food produced by the zanjera is an important integrative feature of zanjera sociability and solidarity. One's membership in a hamlet or village provides nothing equivalent in terms of group property, sets of social interaction, or community-wide ritual.

In what is otherwise a somewhat impoverished social and economic environment, the zanjera provides direct economic benefits to individual families by increasing the value and productivity of their land, and it also provides important social occasions, specifically feasting, on the days when some or all of the members must work. Unlike a village, the zanjera generates group sociability, like group work, as a closed corporate unit rather than through individual, open networks of obligation.

Relationships with Other Zanjeras

None of the zanjeras in Bacarra are physically isolated. Because each shares at least one boundary with a neighboring system, the overlapping network of canals and the indistinct physical boundaries present a picture of merging, interlocking irrigation systems (Figure 4). Only the major blocks of irrigated land, each containing up to a dozen or more zanjeras, are clearly separated by physical barriers such as the Bacarra-Vintar River, larger tributary streams, the town, major roads, or intervening hills. This nexus of systems has important social and technological aspects involving a series of informal and formal relationships that bind zanjeras reciprocally in various important ways.

A shared dam, a jointly used section of primary or secondary canal, the overflow of one system going to another, the presence of connecting watergates for emergency water, mutual help on major work projects (e.g., rebuilding or relocating dams and primary canals)—all of these conditions can involve a zanjera with one or more other systems.

The specific number of arrangements may cover a variety of both formal and informal reciprocities. The sharing of more permanent features (e.g., a concrete dam on a small stream, access to a spring, a section of canal) will involve written contracts, whereas ad hoc, emergency assistance (or even in some instances the sharing of a rock-and-bamboo weir for a period of years) will more commonly entail only verbal acknowledgments between groups. As with all contractual arrangements, the obligations are those of a zanjera to one or more other zanjeras, each acting as a corporate body. At the same time, inter-zanjera cooperation does not diminish the autonomy of participating zanjeras, nor do the social arrangements represent forms of or moves toward consolidation. For example, in 1978, Zanjera Danao, located on the north side of the Bacarra-Vintar River and west of the municipio, shared a brush-and-rock weir with three other zanjeras: Daya, Lubo, and Laud.[13] However, when first observed in 1963 Danao had only one partner (Lubo); when observed briefly in 1970 there were two partners (Lubo and Daya); and at various times in the past, I was informed, Danao had not shared with any other zanjeras. Adjustments and readjustments of dam sites in response to shifting river channels and the need for relocating intakes have involved Danao in constant changes in its agreements with the one neighboring upstream system (Daya) and the two downstream systems (Lubo and Laud). At the time of my last visit in 1978 plans were made by the four zanjeras to reestablish three dams, with Danao again sharing with Lubo. Informants could recall only the major changes and rearrangements covering the past thirty to forty years. Earlier than that particular agreements are too removed for most individuals to recall with clarity.

For the historical moment, the situation for Danao in 1978 was that two hundred meters from the dam and intake a primary canal branched away to the fields of Zanjera Daya, the limits of which are east and upriver of the Danao field system. One hundred meters beyond the first water diversion, a second primary canal angled off to provide the primary source of water for the fields of both Danao and Lubo, with Lubo's field system located two kilometers further west and somewhat north of Danao. The remaining section of the intake canal passed through Danao's fields, paralleling the Danao-Lubo canal, and was the main canal of the fourth partner, Zanjera Laud, located one-half kilometer west of Danao. While it does not exactly conform, Figure 4 is based upon this association and shows some of the ways that water sources and canals interlock.

The three primary canals of Daya, Danao-and-Lubo (i.e., the section they share), and Laud cross at several points in the first kilometer,

and those of Lubo and Laud cross once again beyond the fields of Danao. There are also cross-overs involving the canals of three other zanjeras—one east and the other two west—which are not a part of the reciprocal alliances already described. At most of these crossings there are watergates *(pagbibinoludan)* for diverting emergency water from higher canals into lower ones. Moreover, where canals are adjacent to one another for short distances it is possible to put water from either system into the other. The reciprocal emergency exchange from a lower to a higher canal is done simply by dropping a water bar just beyond the connecting gate on the lower system, allowing the water to back up into the higher ditch. For the moment, for Danao and its three allies these systems of exchange are ineffective (at least those near the intake) because all four zanjeras take water from a single source. However, the plans to reestablish two or three dams would result in the watergates again becoming operable. Similar emergency exchange mechanisms are found throughout the valley and, when weirs are damaged or destroyed, emergency water can be supplied from other systems until repairs are carried out.

Danao's set of relationships is more complex still. An additional supply of water from a small creek is shared by Danao with Zanjera Laud, an arrangement that is entirely separate from Danao's sharing its main canal with Zanjera Lubo. Quite near its own fields Danao has built a small concrete diversion dam, just below where a hillside spring empties into the creek. This supplementary water goes directly to Danao's fields without entering the main canal shared with Zanjera Lubo. Additional water runs over a sluice channel of the dam into a reinforced stream-bed, and continues 100 meters to a second concrete dam owned by Zanjera Laud, from where it is directed into the Bacarra-Vintar River. This complex of water controls and diversions was initially constructed by the two zanjeras during the 1870s, apparently only a decade or so after Danao became established, and the two dams and reinforced stream channel have been improved and enlarged upon a number of times since. Consequently, Danao has a special contractual agreement with Zanjera Laud regarding the sharing of the stream-and-spring source of supplementary water; another agreement with Lubo for sharing a section of the main canal; and a combined set of agreements with Zanjeras Daya, Lubo, and Laud for sharing the same dam and intake system of the Bacarra-Vintar River. The first two of these arrangements exist in written, contractual form because, among other things, they concern property rights to land (the canal and canal rights-of-way) and a fixed source of water (the spring). The arrangements and rearrangements involving the sharing of the rock-and-brush weir on the Bacarra-Vin-

tar River exist on the bases of verbal agreements only, largely because changes are simply too frequent to warrant formalizing each case. Verbal agreements are not necessarily less obligatory or important.

With frequent changes of water channels and the necessity of relocating the shared dams (at least on that portion of the river), written documents would be out of date in a relatively short time. Consequently, the four participating zanjeras have not, in the last fifty years at least, formalized the relationships with legal documentation. In contrast, on portions of the river where channels are more stabilized, agreements are, I was told, formally documented. The absence of documentation between Daya, Danao, Lubo, and Laud in this instance is in no sense an indication of their being less concerned or committed to one another than those zanjeras that do formalize such agreements. It relates only to the dynamic reality of their situation, which necessitates *both* commitment and flexibility.

In addition to mutual cooperation, there is invariably a potential for conflict. Shared or disputed water sources and canals are the most frequently cited factors in inter-zanjera conflict. Though careful negotiations are entailed whenever two or more zanjeras agree to share a dam on the main river, a supplementary source of water, or a section of canal, there is a continual concern by the zanjeras furthest removed from the intake system about receiving proportionally fair shares of water during the dry season. There are no mechanisms equivalent to the redistribution of water to atar blocks within a system that will guarantee an equitable distribution between systems. Though irrigation schedules are carefully arranged and mutually agreed to by officials from the zanjeras involved, suspicion and dissatisfaction appear to be endemic.

Although the positioning of dams relative to those of neighboring groups can be a point of contention, argument over this aspect of water rights is less frequently an issue than it might be, as the examples noted above demonstrate. The four zanjeras are mutually supportive in providing water from connecting watergates and in using water bars, with the result that cooperative resolution of such a problem as relocating a dam is of primary concern. When it becomes necessary for a zanjera to relocate its dam to a point that would be disadvantageous to itself or to its neighbor, the two (or more) parties may simply agree to share a dam—and they do so without any loss of corporate integrity.

The number of dams and shifting arrangements noted since 1962 between the zanjeras Danao, Daya, Lubo, and Laud show how important these aspects of cooperation are. However, with most lowlying areas now under irrigation and the best river-diversion sites now in use, it would be very difficult for a new zanjera to establish a dam and network

of canals, especially where such a development would threaten an existing system and, by extension, the established network of alliances with other systems. Conflicts do arise (see next section) but the complexities of interdependence between established systems act as a strong moderating influence.

The circumstances for sharing water occur for reasons other than just the necessities of shifting dams and intake systems. For instance, the sapuyot systems have emerged as dependent zanjeras, having to bargain land, labor, and sometimes capital to gain access to and share water with a parent zanjera. Zanjera Palayas in the northern part of Bacarra is an atar-based system of some 200 hectares (approximately half of it biang-ti-daga land), which dates to 1830. On its western boundary is the much smaller zanjera, Sapuyot Palayas, consisting of approximately twenty hectares of member-owned inkalian land. All of the sapuyot's water is obtained from the overflow of Palayas, though it is sufficient only for the wet season and one dry-season crop.

Sapuyot Palayas emerged in the 1930s when the inkapulo buyers of Zanjera Palayas, wanting a more regular supply of water, bargained by offering an increased labor force plus two one-quarter-hectare parcels of land. Though Sapuyot Palayas has only 32 members—representing the landowners and not the actual numbers of farmers, most of whom are tenants—it must contribute labor on the basis of one-quarter-hectare plots, this being the size of atar shares within the parent atar-based system. This increased the labor force of Palayas, which has 340 members of its own, by an additional 80 workers. In keeping with the size of gunglos in Zanjera Palayas, which has seventeen with twenty workers in each, Sapuyot Palayas has four such groups. Although the two zanjeras work on major projects together, they maintain themselves as separate groups with separate field kitchens, just as they do when working with other zanjeras. Palayas does not join with the sapuyot in the formation of cross-gunglo work teams, nor do the sapuyot members participate in Palayas' annual ritual.

Though directly dependent upon Zanjera Palayas, the sapuyot is nonetheless a separate corporation with its own charter and elected officials. Palayas is concerned primarily with the reciprocal relationships and obligations between the two of them and does not involve itself directly in the internal affairs of Sapuyot Palayas; it does not have to. Though the members of Sapuyot Palayas would like to have water for a third crop, they accept the arrangement without overt criticism. At the same time, the issues that affect the parent group are ones that affect the sapuyot system and in this respect the latter is necessarily a loyal satellite.

In another case sharing occurred when a zanjera lost a section of its

main canal adjacent to the river as the result of erosion, which required that it ally with another zanjera (though not an immediate neighbor) to share the latter's canal where it passed through its own fields. Both zanjeras draw water from the Bacarra-Vintar River. As a result of negotiations, the second zanjera agreed to provide a measured flow of water from a secondary water source, a spring, from which water was diverted to the shared canal and eventually onto the fields of its partner. In still another instance a sharing agreement exists for only part of the year, the dry season, with the two zanjeras taking water from separate sites in a smaller, less turbulent side channel during the wet season but then, with the drying up of the smaller channel, pooling their efforts to get water from the deeper, more distant main channel. This arrangement requires that each year they rebuild the dry-season dam and dig out a 100-meter channel through river gravels.

All inter-zanjera cooperation derives from respective shared needs and perceived gains, most on the basis of emergency situations, others on longer-term considerations, plus whatever zanjeras are able and willing to negotiate. I found no cases where the sharing of a water source or canal led to the consolidation of systems, though, as with sapuyot zanjeras, larger parent systems may dominate the process of water allocation. The complex of corporate and individual rights makes the possibility of merging highly unlikely, especially for zanjeras with blocks of atar and biang-ti-daga land. Whereas all zanjeras want to improve the delivery of water or even expand the total area of corporate ownership—which nowadays is done only in very small increments if at all—none indicated a willingness or desire to give up their autonomy to become part of a larger entity. Only under the threat of losing all water (which for a zanjera having atar lands would mean the loss of its membership land-base as well) would such a suggestion be seriously entertained.

One alliance in Bacarra involves three small zanjeras, which are dominated by another that is larger than the three of them combined. This coalition has a long, complicated history including losses of dams and primary canal routes for the three smaller zanjeras. Though it is now impossible to learn what the original terms of the alliance involved, the three junior members gave up parcels of land (of an undisclosed amount) and agreed (according to them) to contribute higher levels of assistance than would normally have been expected. The three also claim that water is unevenly distributed, with two of them receiving very little during the dry season, though they acknowledge the priority of the senior member's claim and recognize that the system cannot deliver more than it already does.

In 1976, following upon a government regulation requiring that

no more than one irrigation cooperative can exist for each water source, the dominant zanjera initiated a revised constitution that would have subsumed the smaller zanjeras as parts of a single system. This move was strongly opposed by the three satellite systems with stated threats of court action, and the plan was dropped. According to the dominant member of the alliance, the provision of water to the three other members has involved major reconstruction and improvements of the original delivery system, an amount of work and expense that was not entirely offset by the addition of a larger work force or the amounts of land gained. The dominant zanjera required of its smaller associates labor and assets which it considered reasonable compensation and which the three junior members agreed to, however reluctantly. Though the association is said to be an unhappy one, even by outsiders, the smaller zanjeras are unlikely to do more than occasionally voice their discontent since gains appear to more than offset the losses that would be involved.

The most extensive example of zanjeras cooperating over the use of a single water source involves a confederation of nine zanjeras, the smallest with 14 hectares, the largest with 140 hectares, and an overall total of more than 500 hectares (Siy 1982:57–106). Here too, the alliance resulted from earlier changes in the Bacarra-Vintar River's course and corresponding disruptions to canal rights-of-way and, as with the above examples,

> linkages were developed during periods when the very existence and survival of several of these zanjeras were threatened; these arrangements did not come about simply to take advantage of the marginal benefits or economies of scale that such relationships offered. They were formed when the relevent organizations were left with little choice but to do so. (Siy 1982:63)

Relationships between zanjeras can alternate between friendly cooperation and discontent. However, the shared needs and interests of systems make for a considerable degree of cooperation and accord, even where recognized inequities exist in water distribution. As Siy has noted (1982:145–147) for his case as well, the complexities of intra-system organization and inter-zanjera relationships make major improvements extremely difficult, and organizational concerns are very important in the rational decision making that goes into questions of technological change. In addition, a perceived outside threat to the zanjeras of Bacarra is considered greater than any discontent or potential conflict that may divide them—the possibility of govern-

ment interference. For over fifty years this concern has centered on the existence of a government concrete diversion dam farther inland on the Bacarra-Vintar River and from which irrigation water is carried south via a major canal to fields in the lower Laoag River Valley. Though some lands in both Bacarra and Vintar are also irrigated from this system, and some zanjeras even benefit from overflow and seepage, the zanjeras of Bacarra are greatly disturbed by the removal of water that would otherwise be available to them during the dry season. This concern has led to the formation of a higher level of organizational cooperation for the zanjeras of Bacarra.

The Federation of Zanjera Associations of Bacarra

During the 1930s zanjeras situated in the central part of the municipality—those with brush-and-rock weirs on the main river, and those with blocks of atar and biang-ti-daga land—formed an association, the Federation of Zanjera Associations of Bacarra (FZAB).[14] The impetus for organizing this association came from an upper-class landlord, a lawyer-politician and relatively wealthy owner of biang-ti-daga lands in two different zanjeras. Subsequently made an honorary leader of one of the zanjeras, and head of the federation itself until his death in the late 1950s, this individual gave time, money, and considerable effort to the FZAB's drive to prevent the construction of the government diversion dam in nearby Vintar.

Though unsuccessful in preventing the dam's construction, the federation has remained an effective organization for expressing zanjera concerns to officials of municipal, provincial, and national governments. Until 1973 and the imposition of martial law in the Philippines, the federation enjoyed some measure of influence in its endorsements of political candidates—mayors, councillors, governors, congressional representatives, and senators (Lewis 1971:138–142). Though now largely deprived of the ability to influence officials through the ballot box, the federation is still listened to by officials because it does represent the concerns of a large number of people in Bacarra. It has also come to function as a mediating body in inter-zanjera relationships and even some intra-zanjera activities.

Since its formation in the mid-1930s the FZAB has grown to fifty zanjera members, though not all are entirely within the confines of the municipality. As with village boundaries, the canals and field systems cut across the territorial limits separating Bacarra from Laoag, Vintar, and Pasuquian. Similarly, not all zanjeras in Bacarra are equally active members of the federation; the smaller, more remote systems are

much less involved in matters that directly affect zanjeras in the central part of the municipality—almost always matters to do with government agencies.

The FZAB generally follows the organizational structure of a zanjera. Its officers include a president, vice-president, secretary, treasurer, auditor, and a board of twelve directors. There is a written constitution and elections are held every four years. Officers are elected from the membership at large, with each zanjera, irrespective of size, having one vote and represented by its president or a designated alternate. However, beyond this formal outline, the organization of the FZAB is quite different from those of individual zanjeras. Unlike a zanjera, the federation has no property, neither water rights nor land, and its only assets are its voluntary membership dues, which are not always regularly and enthusiastically paid by members. The smaller, poorer, and more isolated zanjeras are less concerned with the issues that confront the centrally located systems. With respect to property and the collective power related to the use of property, the federation has no corporate features or corresponding powers of coercion. Consequently, memberships are determined only by the willingness of individual zanjeras to belong or not belong. In all respects the federation is a voluntary association (Banton 1968).

The federation differs from the kinds of associations most commonly studied by anthropologists (Anderson 1971) in that its members are corporate groups, not individuals. A similar situation is described for corporate market vendors in the Philippines by Davis (1973). As with similar voluntary associations, the FZAB exists because its members share common interests and concerns, which are structured in terms of problems that are essentially external to the individual zanjeras involved.

Though the government dam east of Vintar has been operating for more than forty years, the federation is still very much concerned with government developments on the Bacarra-Vintar River. The governmental agency directly responsible for the maintenance of this dam and irrigation conditions in general (and this includes most situations involving the more than 1,000 zanjeras in the province) is the Provincial Irrigation Office (PIO). The PIO operates the government systems and deals directly with individual zanjeras and, sometimes, the FZAB.

Next in line of concern for zanjeras is the Bureau of Public Works, a national agency responsible for both developing new projects and for registering private irrigation groups. The general attitude of higher-ranking officials in these two agencies is one that tends to see the historical proliferation of zanjeras within the province as impressive, both in number and scale. But it also views them as technologically

backward. Largely composed of middle-and upper-class, university-trained professionals, these agencies seem to have little understanding of what zanjera irrigation entails technologically, much less socially. They see themselves as the agents of "progress" and "modernization"; and, as with farming practice in general, peasant technology is in essence tolerated only until it can be changed and improved upon by government experts.

Zanjera officials, and particularly the leaders of the federation, possess a much better understanding of the exogenous factors affecting the conditions of communal irrigation than do the representatives of government. Since it is the individual farmers who depend upon irrigation for their livelihood, and since it is collectively the zanjeras that must try and come to terms with government agencies rather than the reverse, zanjera officials must know when to give in, to be passive, or to resist by collective pressures. In this respect the federation attempts to educate and coordinate the farmers' responses. Zanjera leaders are well aware of the power government agencies have to help or disrupt their irrigation systems, and they perforce tread carefully and respectfully in their dealings with public officials. The government, in contrast, seems to be largely unaware of the physical and, still less, of the socioeconomic impact that its actions can have for zanjeras. Two examples of government efforts to improve irrigation illustrate the problems involved for zanjeras.

In a situation similar to that described for the zanjeras Danao, Daya, Lubo, and Laud, there are several (the actual number has varied from three to five at different times) zanjeras east of Bacarra that have variously shared the use of dams along a short stretch of water just within the municipal limits of Vintar. In 1975 engineers from the Provincial Irrigation Office announced that a single, concrete intake system would be constructed on the south bank of the river, and that it would serve the then four zanjeras taking water from three dams immediately above and below that point. Engineers argued that this modern structure, with controlled intake gates, would rationalize the existing network of dams and criss-crossing canals. Whereas a rock-and-brush dam was still to be employed and replaced when destroyed by flooding, the modern concrete intake would provide a permanent structure that would eliminate damage to and the excessive silting of the intake canal.

Completed in the spring and dry season of 1976, the concrete intake nonetheless required that the four zanjeras consolidate in a single dam (downstream) until it and connecting canals had been built. Just prior to the onset of the wet season the dam was relocated to the fixed position. Its utility was short-lived, however. A heavy run-

off resulting from a typhoon—a not uncommon event—cut the bank from behind the intake system and debris (apparently logs) destroyed the structure completely. The four zanjeras quickly rebuilt the single structure earlier abandoned downstream. Though still using the single intake location in 1978, this small alliance of four zanjeras planned once again to reestablish two or three dams.

It is not, as was suggested by a government official, that zanjeras are automatically or somehow innately opposed to the improvement of irrigation systems. They are opposed to what they see as poorly conceived improvements that involve greater risks and the loss of time, labor, and money. They are also opposed to changes which are forced on them, which experience tells them will not work, and which threaten the corporate system of relationships and property rights of their members. The dams and intake systems on the major rivers of Ilocos Norte are adapted to the very kinds of problems that a fixed, permanent structure is not—the constant shifting of river channels and bank erosion. In the case just described, zanjera officials, of the zanjeras involved and of the FZAB, did express their concern to PIO representatives, but well-meaning officials were determined to do what they considered to be best for the farmers. With the irrigation authorities insistent and with the government taking the capital risks involved (though almost all of the labor was contributed by the zanjeras), the zanjeras went along with the change deciding that they would make use of the structure for as long as it lasted. However, it lasted less than a full season.

Such small-scale modifications in government efforts to "modernize" existing systems can be more-or-less easily accommodated or, through inaction, subverted, though the work force that government agencies may require for construction can result in considerable demands on the time and labor of zanjera members. Much more threatening and potentially destructive are recent large-scale plans for expanding and rationalizing irrigation in the major river-valley systems of the province. Over the past decade the provincial government of Ilocos Norte has sought to develop a major irrigation project in the Laoag River Valley. Involving two or more dams and reservoirs, the argument put forward by provincial irrigation officers stresses that existing communal systems are inadequate and that irrigation would be improved by having a major delivery system eliminate the numerous canals and dams that now cover the area. The argument is based largely on the perception that an efficiency of scale and a centralization of authority would make for a much greater effectiveness than now exists.

Initially rejected for funding on technological grounds, the expansion and rationalization of irrigation in Ilocos Norte is still an important pri-

ority. Just as the expansion and modernization of roads, rural electrification, port facilities, agricultural productivity, and marketing conditions are important, the improvement of irrigation is an important goal of provincial and national officials. Unfortunately, it appears that there is little thought as to how such mega-irrigation schemes will affect the social dimensions of communal irrigation. Government proposals do little more than mention the fact that communal irrigation exists; they involve no detailed analysis of existing systems.

This type of change most concerns zanjeras, both for the physical impact on communal irrigation (making it large scale, impersonalized, and unable to respond quickly or effectively to local problems) and, more significantly, for what it would mean socially and economically. Socially this kind of change would destroy the organizational structures of zanjeras; economically it would mean the loss of lands for the individual members of the zanjeras with blocks of atar land. As has already happened in a few instances where zanjeras have been unable to continue diverting water and where an alternative supply of water was available from a government system, the original landowners have gone to court in order to get back the atar lands that were given up in exchange for the irrigation of their biang-ti-daga fields.[15] Since the original contracts in the exchange of water for land required the ongoing provision of water, the displacement of zanjera dams and canals by a government system means that atar fields can legally revert to the original landowners.

Whether such plans involve large-or small-scale governmental schemes for rationalizing irrigation, federation officials usually learn of them after decisions have been reached by government officials. Except for the one major development on the Bacarra-Vintar River during the 1930s, communal irrigation in Ilocos Norte has largely been shielded from outside interference in the past simply because of government inaction and indifference. Today, however, government intrusions are very real, and, especially with an authoritarian national government, the zanjeras realize that they have little hope of influencing major decisions that can directly and irreparably alter their lives. Meanwhile, they send delegations and make representations to local authorities and government agencies about their concerns. Whereas they do not bemoan the passing of political instability and the factional blood feuds that marked the years before the imposition of martial law (Lewis 1971:138–146), they do lament the loss of their ability to influence elected officials on issues that affect their well-being.

The primary function of the federation is to maintain relations with government agencies. As is normally the case in dealing with public

officials, relationships between zanjera leaders and government representatives are on a personal basis whenever possible. Both government and zanjera personnel prefer to relate on a person-to-person, highly social basis. Though the issues may be of great concern, and even imply a direct threat to the zanjeras, the meetings are invariably carried out in a cordial and sociable setting; it would be unthinkable for either party to assume an aggressive stance (unless thoroughly provoked) in such dealings. One example illustrates the patterns of interaction and the kinds of problems that concern the federation.

Government directives usually equate irrigation groups and particular sources of water: one dam, one irrigation system. In 1976 the Provincial Irrigation Office of Ilocos Norte listed 32 zanjeras for the municipality of Bacarra, whereas the Federation of Zanjera Associations of Bacarra counted their membership as being 47. When the provincial list was brought to the attention of FZAB officials (a consequence of my own inquiries), they asked for a meeting with one of the PIO engineers and an assistant. Because the assistant was a close relative of one of the federation officers and because they wanted the PIO representatives to be prepared to talk about the government's position, the concerns of the FZAB were made known to the engineer through the assistant before the meeting began. The federation representatives included the president, the secretary, two board members, and the past president of the federation—a highly respected man with a great deal of knowledge about earlier events and considerable experience in negotiating with PIO officials.

A sumptuous meal was provided at the home of the president that included a whole roast pig, a variety of special-occasion foods, and several kinds of alcoholic beverages. More than two hours passed before either side mentioned the issue that concerned them. Federation representatives began the discussion by noting that each zanjera was an independent, functioning unit and whether they shared a dam with one or more other zanjeras (as did the president's own zanjera), was immaterial to their recognition as separate and distinct legal entities. Besides, the president emphasized, they were all individually registered with the Securities and Exchange Commission; they all had constitutions attesting to their incorporation in the past. The documents for the alliance to which he belonged were shown to illustrate this position.

The engineer countered that it was unreasonable to consider zanjeras as separate when two, three, or even more used a single water source. The officers of the FZAB replied that, one, there were often secondary water sources that might not be shared with primary partners; and, two, sharing arrangements were not unchanging in any event,

since dams and partners shifted frequently in the matter of a few years. They stressed that a government policy could not abrogate the fact that they are recognized, legally incorporated groups, and that the identity and independence of each was important in terms of their internal and external relationships.

After much discussion the federation won its point, not because the official could or would alter the regulation, but simply because it was impossible to enforce under the circumstances. As with all of their interactions with municipal, provincial, and national government officials, and following the familiar pattern of social interaction throughout the Philippines, the federation officials made the occasion a social event. With municipal officials and representatives of both provincial and national governments, zanjera and federation officials make direct and personal approaches about matters that may possibly affect them.

Major ritual events (discussed below), especially the annual feast and religious services held at the end of the dry season, are occasions that may include as guests the mayor, vice-mayor, judges, representatives of the Provincial Irrigation Office and the Bureau of Public Works, lawyers (hired by the zanjeras), wealthier members of nearby villages, upper-class townspeople (the owners of biang-ti-daga lands), leaders of neighboring zanjeras, and one or more officers of the FZAB. Aside from their ritual importance, these occasions are useful for initiating and maintaining the relationship that individual zanjera leaders and federation officials consider important for furthering zanjera interests.

In addition to its dealing with local dignitaries and government officials, the federation is also concerned with inter-zanjera issues. Although the complex of reciprocal ties between neighboring irrigation systems serves to buffer or constrain disputes, one-to-one resolutions of conflicting interests are not always possible. When two or more zanjeras cannot reach agreement over an issue that separates them or, when in an alliance, a more powerful one cannot successfully coerce a junior partner (e.g., where a parent system dominates a sapuyot system), one or more of the zanjeras involved can ask the federation to arbitrate. Though not legally binding, the federation's recommendations carry some weight since, as fellow zanjeros, they are much more likely to understand the problems involved than would an upper-class judge—a person more likely to be moved by points of law and lacking appreciation of the relative merits of irrigation matters. The only restriction to a federation officer's being involved in arbitration is that he cannot be a member of either zanjera, nor can he, as head of a zanjera, be an important alliance partner of either adversary. If a dispute cannot be resolved to the satisfaction of all parties, court action may be taken as a last resort but, according to informants, it is seldom done.

One case that the federation was unsuccessful in arbitrating concerned the boundary between two zanjeras, a creek that separated the atar lands of the two systems. The creek is noted as the boundary in one or more legal documents. As a consequence of typhoon flooding the creekbed had shifted a considerable distance, resulting in the loss of several hectares of land to the offended party. This zanjera insisted that the affected land remain theirs, while the other zanjera maintained that the creek regardless of its present position, still marked the boundary. The federation recommended a compromise, with fields being returned to the offended party and with its neighbor receiving the space formerly occupied by the creekbed. Neither zanjera was willing to accept this recommendation and the matter was taken to court, where it was still unsettled in 1978. Federation officers were disappointed with both groups in this case. Though individual zanjeras are reluctant to let outsiders decide the merits of a dispute, the federation provides, if not an ideal arrangement, at least the best one available, offering relative fairness and an appreciation of the issues involved.

Shortly after it was formed, the federation began to provide a direct service to the individual member zanjeras, offering to supervise their elections, which are at times potentially divisive. Among the smaller zanjeras with privately owned landholdings, elections may be little more than pro forma events of general consensus and the federation is not asked to officiate. By contrast, the election of officers in the large, atar-based zanjeras is usually much more significant because of the greater variety and amounts of property and assets, as well as their greater size and structural complexity as social systems. The holding of zanjera office, particularly the highest office, entails considerable prestige and at least some economic rewards, usually in the form of the paglakay fields set aside for zanjera officials.

Federation officers supervise only the actual balloting, whereas election activities precede the event by several weeks, with candidates, especially those running for president, seeking support among the gunglo leaders and the general membership. Though offices are nominally open to all, candidates for the two main offices (president and vice-president) should meet certain criteria: they should be widely respected within the zanjera, have a broad background in zanjera activities (as a regular working member and, especially, as a gunglo leader), have the ability to articulate issues to both members and outsiders (and usually have some formal education), and be the kind of person who can represent the zanjera to politically and socially important people without being "ashamed" *(nabainen).* One example illustrates the procedures and some of the concerns about elections.

Zanjera Baknang is composed of more than two hundred members

and is divided into eight gunglos. Its president had served for three terms (elected by "everybody," I was told) but the election in 1978 involved two major candidates: the current vice-president and a relatively wealthy individual who had only returned to the village in which he lived some four years previously, bringing with him a small retirement and savings gained from working in Hawaii for almost thirty years. The vice-president was considerably poorer than his opponent, though he was better known to the zanjera members than the Hawaiiano.[16] Zanjera Baknang, unlike most zanjeras, permits landlords (both those owning inkalian lands and the use-right owners of atar lands) to vote. Their support was sought by the Hawaiiano candidate who was himself a nonworking member; the former vice-president depended upon his considerable experience as group headman and his direct relationships with working members.

In addition to each of the presidential candidates, there were two aspirants for the other major office of vice-president, each of whom was campaigning with one of the two senior candidates. The board of directors, the men who head the gunglos, were running on their own and were elected (in all cases re-elected except for one who was retiring) by their co-workers within their gunglos. Their election was much more like the consensus support given senior officials in the smaller zanjeras. The lesser offices of the zanjera—secretary, treasurer, organizers, collectors, cooks—in Baknang are essentially appointive; the holders of all of them, I was told, were "staying on."

A regulation required that before balloting began, the treasurer must note the existence of any outstanding debts by individual candidates. To the surprise and obvious embarrassment of the Hawaiiano, he was shown to owe approximately 200 pesos for absences accrued by members of his family (who in this case were his tenants) who had failed to appear for designated work parties at various times. Though he was personally upset by this revelation, it was not, I was assured, so damaging as to cost him significant numbers of votes, and he paid his debts before the voting began. Following this, the president of the federation addressed the members. As his comments emphasized, the essence of his thirty-minute speech concerned the obligations of zanjera members and official candidates to each other.

> You must remember that you are all brothers; you are part of the same [zanjera] family. When the election is over, those of you who have voted differently, must shake hands and love one another, just as brothers do. Strong [adverse] feelings will not be good for you or your zanjera. You must be as one family again.

The fact that some of the voters were landlords was of concern to the four federation officials, all of whom represented zanjeras in which only working members were allowed to vote.[17] Allowing landlords to vote was not considered desirable since working members would feel ashamed when interacting with upper-and middle-class townspeople who, it was argued, do not understand how a zanjera functions. Moreover, in Baknang's election, proxy votes were made on behalf of one-third of the members, where wives (of both working and non-working members) voted for their husbands. Although this too was considered undesirable by the federation officials ("the wife does not understand all of the problems; not like a husband"), the voting of working members' wives was considered much less contentious than the voting of landlords—wives or husbands.

The voting was held outside the home of the retiring president, and considerable amounts of food and drink (soft drinks, beer, sugar-cane wine [basi], and "gin"), were offered to members and guests, with a special indoor table set for the most prestigious guests and landlords. Members' names were checked off by both the zanjera secretary and one of the FZAB officials. Federation representatives supervised the distribution of printed ballots, the setting up of makeshift booths and ballot boxes, and the final tally of votes. Beginning in mid-morning, the balloting was completed by mid-afternoon and the votes were recorded on a board as they were read off by the FZAB representatives. When the votes were finally tabulated the former vice-president had won by a significant margin of four to one. With each vote recorded publicly and the decision quite obvious early in the count, the Hawaiiano left before the totals were complete, to avoid the embarrassment that his presence would mean to both himself and others. When the results were officially announced by the FZAB representatives, the president-elect made a short acceptance speech which, like that of the federation's president, emphasized the importance of the kinship and friendship of zanjera members. Later, it was said, he would go to the home of his defeated opponent "to make things right again."

The presence and involvement of federation representatives at elections was said to help allay any concerns about irregularities, an especially important consideration at elections, such as Baknang's which involved other than just working members. The election provided yet another setting for exchanges between zanjera leaders, FZAB leaders, and the dignitaries that attended. In all of the federation's activities the interactions between zanjera and government officials are important as channels of communication. The federation serves its members by gathering and distributing important informa-

tion. For instance, agricultural extension workers in Bacarra regularly make contacts with federation officials and individual zanjera leaders rather than work through village leaders. Extension workers are well aware that the interest and support of the federation can be an important first step in reaching and convincing individual farm families to promote new varieties of rice or similar technological innovations.

At the same time, the federation passes on what it considers to be significant information to its members, and filters out what it considers impractical or unimportant—largely by ignoring it. It also puts forward its collective interpretations of events and information that may affect irrigation farming. Such activity is not particularly coordinated, nor does the federation have a specific official to deal with informational matters. However, issues of direct concern (e.g., a tax on communal irrigation groups or a new government dam) will bring officers and concerned members together for a concerted, planned response. In addition to semiannual meetings, emergency meetings of segments or all of the federation membership may be called to deal with matters important to particular zanjeras, suballiances, federation members, or zanjeras in general.

An example of the federation's secondary role in making information available to its members was brought to my attention when I inquired about a type of rice observed growing in a block of fields. This rice was neither as tall as the traditional varieties (Lewis 1971:49–64), nor as short as the new, higher-yielding types—the so-called miracle rice. This particular variety is known locally as *gorospe,* an inappropriate name, for the new varieties have designations like IR-36, IR-38, C-4, C-10, and so on; quite obviously from its appearance this was not one of the traditional Ilocano varieties. Gorospe, I was told, is the name of a man who is a member of a zanjera in the Laoag River Valley. Mr. Gorospe had been growing one of the new types of rice (C-4) and noting—as farmers have for centuries—that there were several taller, mutant plants in his fields and those of his neighbors, he separated them from the rest and planted the seeds in one of his dry-season rice fields. Because of poor drainage, one or two of his fields remained flooded throughout the year, with the result that if there was an especially high water level during heavy monsoon rains the shorter-stemmed, high-yield varieties were sometimes drowned. By the following year he had planted his inundated fields with three crops of the new variety. As an officer of his zanjera he passed on this information to his fellow members and the officers of neighboring zanjeras, and, according to informants, since local mutants were available in all areas, gorospe was being grown in some water-logged fields of surrounding municipalities within a few years. In Bacarra the spread of this information was accelerated when

it came to the attention of federation officers, and this indigenous development from one of the higher-yielding rice types created at the International Rice Research Institute south of Manila, is now grown in some of the low-lying, poorly drained plots of central Ilocos Norte.

As a voluntary association of corporate, individual communal irrigation groups, the federation provides a variety of functions and is involved in activities that go well beyond its original aims. Despite its appearance of representing a higher lever of political organization, the federation has no powers of its own; the locus of power remains with the individual members. Its constituents recognize and emphasize that the FZAB has no authority over them, either to enforce its recommendations concerning intersystem conflict, or even to collect its membership dues. However, they also recognize that with respect to outsiders and external influences the federation provides a reasonably effective means of stating and pressing their individual and collective concerns. The federation does not diminish the corporateness of individual zanjeras; on the contrary, it strengthens and protects their autonomy and independence through its collective action.

Whereas federation officials meet more or less frequently as a group, usually in the home of one or other official where at least some refreshments will be served, these occasions are irregular and the costs are covered, not from a common fund, but from the willingness and ability of the host to provide. Unlike zanjera meetings, general meetings of the FZAB are not well attended, the most consistent absentees being the more distant and isolated zanjeras, the same groups that are less concerned with issues affecting the larger, atar-based zanjeras.

The federation differs from individual zanjeras in another important way: the absence of formalized ritual. As will be shown in detail in the next section, each zanjera has one, two, or even more major socioreligious ceremonial events each year. The federation has none. On the other hand, federation officials frequently do attend, as special and honored guests, the ritual events of individual zanjeras, both annual ceremonies and large work feasts. Aside from the prestige involved and the contacts made for their own zanjeras, these occasions represent one of the few rewards for holding office within the FZAB. This kind of ritual participation between zanjeras and with officers of the federation reflects the various levels of interaction that link the concerns and activities of individual groups. In speaking about the loose confederational features of the federation and its differences from individual zanjeras, one FZAB official stated,

> Of course we [the Federation officers] are all friends and we sometimes have a glass of basi together. But we have no *pamisa* [group ritual]; that

> would not be right.... Besides, we have no money to do that.... When the zanjeras, each of our zanjeras, has its *pamisa* then we are invited, and we invite them. In that way we celebrate, each of us with his companions [fellow zanjera members], and we invite the maestro and the segundo maestro of other zanjeras ... and of course the [other] officers of the Federation also.

Zanjera Ritual: A Fictitious Family

As previously mentioned, the pamisa is a family-centered ritual that includes prayers for the dead, the decoration of a family altar, offerings for local spirits, a festive meal to which kin, neighbors, and friends are invited, and visits to the cemetery—all of which are highly variable according to family circumstance. Normally pamisas are carried out in the larger ritual context of a barrio fiesta, though they are not limited to these occasions. For instance, in Mambabanga most pamisas are scheduled for one of the two biannual fiestas; in Buyon, which has no barrio fiesta, family pamisas are frequently associated with All Hallows' Eve and family visits to the cemetery.

It is thus somewhat paradoxical to find zanjeras employing the pamisa as a group ritual. The sense of this transformation from family setting to group setting is expressed in the way that members metaphorically talk about a zanjera. They employ a fiction, a corporate fiction, of the zanjera being a family. Both within and outside the formalized ritual context, members regularly affect the simile of the zanjera as constituting a family. As explicitly stated by one seventy-year-old zanjera leader, "The Zanjera Baknang *is* a family, established by our forefathers ... [and] in the zanjera we are all brothers."

In a way parallel to how family pamisas reflect corporate family organization, zanjera pamisas connote the corporate structure of irrigation groups. By contrast, the barrio fiesta reflects the lack of social cohesion and corresponding social openness of village organization—a mosaic of interlocking personal alliances.

Zanjera pamisas are held either during the first or second week of June, just prior to the onset of monsoon rains, or in mid-December in conjunction with what in the past was the harvesting of traditional rice varieties, or they are held on both occasions. I was told that approximately half of the zanjeras hold pamisas on both occasions. As with family pamisas, the opulence of zanjera ritual varies greatly according to circumstance.

The activities in and setting for the pamisa are divided over two days, beginning at the home of either the president or the vice-president, and when two pamisas are held in a year the burden will alternate between

the two senior officers. The pamisa begins with the ritual offering of special foods, an *umras* (from the Spanish *honras,* or obsequy for the dead), or *panglagip* (a remembrance) for the founding members and, additionally, as propitiation to local spirits *(anitos)* associated with and able to disrupt an irrigation system. The umras itself includes a variety of cakes and candies prepared by the cooks *(cocineras)* and made from glutinous rice. These are placed on a candlelit table or altar along with one plate of uncooked glutinous rice and another of uncooked nonglutinous rice (each with a whole uncooked egg set in the rice and, sometimes, individual bottles of beer and Coca Cola set nearby) and all of it backed with painted carvings of saints. However, the zanjera, unlike a barrio and its associated fiesta, normally has no specific patron saint.

Each member of the zanjera is given an equal portion of the sweet cakes, neatly wrapped in banana leaves, to take home to his family. Though women play a larger role in this part of the pamisa and in the special prayers made later, essentially only the wives of officers are involved. The wealthier zanjeras provide a feast at this time to which local dignitaries (municipal mayors, vice-mayors, judges, honorific maestros, officials of the Provincial Irrigation Office, the Bureau of Land Management, and usually the lawyer who represents them in legal matters) are invited and these guests are served at a special table, usually in the home of the pamisa organizer, while regular members and most officers eat out-of-doors.

Following the meal and the distribution of rice cakes, religious services are held with a special prayer said by a Catholic priest (or a clergyman of the Aglapayan Church, the Anglican Church, or even one of the Protestant churches). In some cases a zanjera will hire one or more chanters *(kantura)* who intone the mass for the deceased members of the zanjera. However, for most zanjeras, given the costs and problems of getting a religious person to attend, the wives of the zanjera officers go to the various churches of Buyon, make a contribution, and ask that special prayers be said for the deceased members of the zanjera. Fundamentalist churches (e.g., Mormon, Iglesia ni Christo, Jehovah's Witness, Seventh Day Adventist) are not included since these denominations do not perform special prayers of this type.

Except for the size of the zanjera "family" and the absence of a visit to the cemetery, the events on the first day of ceremonies differ relatively little from those of a pamisa held by a single household. The major difference for a zanjera pamisa is in the holding of events on the following day, when activities are shifted to the kamarine, the dam, and the main canal. In a sense, this is a substitute for the visits that a family would make to the graveyard, since the irrigation system (the dam, canals, and meetinghouse) is where the spirits of their ancestors are

found, at least with respect to matters relating to irrigation. The zanjera pamisa also differs in that it and the zanjera family are distinctively male-oriented, exhibiting a pronounced patriarchal bias from the more evenly balanced male-female relationships in Ilocano and Filipino families in general.

Early in the morning the officers and volunteer helpers go to the kamarine, which during the pamisa is emphasized as being the *balay ti zanjera* (the house and home of the zanjera), to prepare the feast for the members. One or more pigs are slaughtered early in the day and some of the blood either poured or directly bled into the main canal in order to "enrich the crops that grow in the fields." The meat is then cooked over an open fire and prepared as *lechon,* or whole roasted pig. The cooking is carried out primarily by the cocineras, the only women present during the day's festivities. A variety of other foods, which, both in kind and quantity, are quite festive and, except for rice, are not ordinary fare are prepared. At the same time, various kinds of beverage, both alcoholic and non-alcoholic, are available.

Before the meal is served at mid-day the head officers go to the mouth of the canal to release a small (50 × 25 cm) raft made earlier in the morning and constructed from four banana-tree stalks. The raft is covered with a variety of umras offerings—cooked portions of glutinous and nonglutinous rice in half-coconut shells, a half-shell of basi (sugarcane wine), a stick of barbecued pork, stewed pork, and (on an enamel plate) betel nut, homemade cigars, cigarettes, and a few coins amounting to less than one peso. At this point the president of the zanjera enters the water, ducks several times below the surface, and is ritually cleansed. He then releases the raft into the canal with the cry of *"Para-ayos, para-ayos, para-ayos!"* (Let the water flow, let the water flow, let the water flow!). The raft is allowed to float but a short distance down the canal before all but the offerings of meat and rice are removed and it is free to drift on.

Following this, the president and the officers go to the dam where, taking one of the heavy woody mallets used in repair work, the president drives in a sharpened bamboo stake to ritually initiate the irrigation year. By this act the president demonstrates to his fellow zanjeros his awareness and humility as a working member of the zanjera family.

With these actions completed, the officers return to the main area where they greet the guests from allied zanjeras. The food is then set out for the members. Individuals are accompanied by their sons, who at this time are asked to come forward and be served the first food, because, it is emphasized, they are the sons who will eventually inherit the obligations and privileges of the zanjera. The guests and regular

members are served by the officers, who are the last to eat. As with the display of humility by the president, this is to emphasize to their colleagues that they are one family, and that as officers they are like older brothers (manong). Members stay for shorter or longer periods throughout the afternoon.

Of the six pamisas I attended, no two were entirely alike. For the smaller and poorer zanjeras the feasting and ceremonial activities are much less elaborate. The specific umras items involved and the ways in which they are offered (instead of a raft they may be placed on a small platform or altar alongside the canal or dam, or simply put on rafters within the kamarine) vary from group to group. In three of the events observed, boys were not fed before adults, though in all cases the boys did attend. However, the general patterns of making offerings to the spirits of their ancestors and to propitiate local spirits are basically similar. In each case, the men dominate the activities, just as they dominate the work of irrigation. The zanjera "family" is composed primarily of men, followed by their sons, who will inherit their fathers' memberships. The zanjera "family" involves females in only minor, supportive roles—the few who serve as regular cooks and the wives of officers who say prayers and make umras during the pamisa. Girls, unlike boys, are virtual nonentities in the zanjera "family." Though the simile of a family is used, it is a ritual fiction that differs broadly from typical Filipino families in which females play much more important roles and have much more evenly balanced relationships with males.

One kind of spirit associated with irrigation systems is called a *masasarrat* (or sometimes *karkama,* both of which translate roughly as "ghost"), the apparitions of which take the form of either a man or an animal. These spirits become associated with particular places, though usually not the kamarine "because there are so many people there." They are more frequently found at the dam, reservoir, main canal, or at other important structures within the system. They are the ghosts of the founding members and require of current members that the system be well maintained. A failure to propitiate these spirits or properly care for the system can result in damage to the zanjera.

It is not, however, always easy to tell whether an apparition is an ancestral spirit or simply one of several kinds of anitos, local spirits that are potentially, though by no means necessarily harmful, but spirits who must nonetheless be dealt with. For instance, one kind of anito that is found in association with zanjera systems is called a *sanselmo,* an anito that is directly associated with water and is described as a "big light." This spirit can lead people either to being lost in the mountains or to death at sea.[18] The sanselmos are directly associated with water, but

are not dangerous to the system as such and the zanjera does not make offerings to them, although individuals may very well do so.

The major concern with supernatural beings attaches to the ancestral spirits that are directly and specifically involved in the operation of the system. The masasarrats, like any ghosts of people, are a part of the family tradition of the zanjera. Just as the sons of members are the link to the future of the zanjera, its ghosts are its link to the past.

A much less formal ritual occasion occurs when neighboring zanjeras meet to jointly construct or repair a dam or section of main canal that is shared. Such an event is called a *basbas* (literally a "repairing"). The repairs may be scheduled at regular times following or immediately preceding the wet season, or they may result from an emergency, most commonly in September when typhoon rains necessitate repair work on the dam or the main canal. Basbas that occur on a more regular, scheduled basis between two zanjeras are somewhat more formal.

Each zanjera provides its own food and kitchens are set up adjacent to one another, though they remain physically separated and supply only their own members and guests. Sometimes the members mix together while working and on those occasions the lines between gunglos and between different zanjeras are not maintained. However, with some zanjeras the separation of gunglos is strictly maintained. The scheduled, annual repairs may coincide with collections taken from the inkapulo people who, in addition to providing the ten percent of their crops, will bring sugar-cane wine or other alcoholic beverages. Some or even all of the representatives of the inkapulo users may be asked to participate in the feasting.

The only umras offering on these occasions is the placing of glutinous rice-cakes near the canal or dam where the work is being undertaken. Each participating zanjera provides its own offering, directed to the masasarrats of its founding members. Whether the basbas is regularly scheduled or only an ad hoc, emergency event, the associated rituals are much less elaborate than those of the annual or semiannual pamisas. Basbas exchanges and the accompanying shared work are much like the work exchanges between house neighbors in what Ilocanos call *tagnawa* (Lewis 1971:106–108).

Comparisons

Publications specifically on the structure and organization of locally developed, communal irrigation in the Philippines have been primarily limited to Ilocos Norte (here and the work of Siy 1982).[19] A number of

studies have focused on the role of irrigation systems from the perspective of or relative to village organization (Bacdayan 1974; Fegan 1979; Lewis 1971; Takahashi 1970) with the result that much of the more detailed information on the organization of irrigation systems, particularly the relationships between systems, seems to have been frequently overlooked. On the other hand, there has been a growing amount of research on the development and improvement of communal irrigation and the problems ("local constraints to rural development"—a common euphemism) encountered with its acceptance by peasant farmers (e.g., IRRI 1973). These applied studies have not undertaken any local logical and functional analysis of what established peasant systems are; rather, they have focused on what peasant irrigation systems *should be,* at least from the viewpoint of agricultural researchers and developmental agencies.

A difficulty for anthropologists is that irrigation frequently involves social alignments, coalitions, and confederations that go beyond and are independent of village organizations. While village organizational structures may provide the bases for irrigation systems—as examples below regarding mountain people in northern Luzon and northern Sumatra suggest (Bacdayan 1974; de los Reyes 1980; de los Reyes et al. 1980; Lando 1977)—it is erroneous to presume such a relationship or to assume that irrigation is but an epiphenomenon of village organization. The openness of lowland Filipino communities suggests that the research of irrigation systems is best served by starting with the property-resource interests of farm families and the ways in which they relate to other families and to irrigation societies as groups.

As I have argued here, the environmental and social factors that have affected irrigation in Ilocos Norte have also influenced the corporate structure of individual families. In comparing the relative successes of Filipino and Chinese businesses in Baguio, Davis has shown that whereas "the corporate nature of the Chinese kin group encourages collective economic behavior," Filipino families lack equivalent corporate definition and closure (1973:197–204). All families are relatively corporate, but I have shown that, compared to the conditions of Ilocanos in Isabela, families in Ilocos Norte are highly corporate and this social development has directly complemented the development and operation of communal irrigation systems.

Though directly comparable materials are lacking on irrigation groups in most other regions, enough information exists to make at least broad generalizations possible. The following examples include both Ilocano—and Ilocanos in adjacent homeland as well as more distant pioneering regions—and non-Ilocano areas. It is also possible to

compare Ilocos Norte to an important area outside the Philippines where indigenous irrigation systems have had a long history—the island of Bali.

Irrigation Systems in Ilocos Sur

A survey of 51 communal irrigation systems, all of them outside Ilocos Norte (de los Reyes 1980; de los Reyes et al. 1980), shows communal irrigation groups that are similar to the least corporate, inkalian-based zanjeras, with individuals owning their own land and the shared asset of the group being its access to water. Of the 51 systems, 5 are found within Ilocos Sur (de los Reyes 1980:5–41), and 4 of them approximate the inkalian model, while the fifth provides some evidence of having corporately owned blocks of atar land. Though this evidence is largely circumstantial, the example does indicate that the corporate principles of atar-based zanjeras are not necessarily restricted to Ilocos Norte. It can also show how similar information may indicate like systems elsewhere.

The Silag-Butir irrigation association is located in central Ilocos Sur within the municipality of Santa Maria, 35 kilometers south of Vigan and more than 120 kilometers south of Laoag. Of the five described for the province, it is both the oldest (formed in the "late 1800s") and the largest in terms of both membership and area (300 individuals on 115 ha). Members' holdings are reported as varying between 50 square meters (0.005 ha) and 1 hectare, a range that indicates neither individual nor corporate ownership, though the size of the smallest plots at least suggests the possibility of subdivided atar shares, a practice regularly encountered among zanjeras in Ilocos Norte.

Of particular interest is what de los Reyes describes as a category of "special members":

> In addition to the regular members, the association has 35 special members. Unfortunately, we were not able to determine how the system of special membership came about. We only know that the special members are not required to pay the irrigation fees nor are they to contribute labor in system maintenance, but they are allowed to use the system's water during the wet season. (de los Reyes 1980:39–40)

The exemptions from fees and work suggest the presence of biang-tidaga owners, the descendants of original landowners who continue to receive water and who are not required to meet obligations of membership.[20] None of the other fifty communal irrigation systems described

by de los Reyes exhibited a similar group of privileged individuals. In Ilocos Norte it is only in atar-based zanjeras that a category of people receive water without being assessed fees or work, all of this being fundamental to the original exchange of land for water. If the same is the case with Silag-Butir, then the "special members" are not members at all but are the biang-ti-daga owners who, nonetheless, have lands within the system.

Further, Silag-Butir is divided into four parts—"grassland," "wooded," "swampy," and "elevated" areas, with only the last receiving water during the dry season (de los Reyes 1980:39). This at least suggests the existence of atar blocks of land, which again are characteristic of the more corporate systems in Ilocos Norte. Moreover, the average-sized holding in each block is 0.38 hectare overall, based on 0.36 hectare for three of the areas and 0.42 hectare for the fourth. The separation of atar blocks based on geographical-soil characteristics, in order to provide members equivalent shares of the land types found throughout the system, has been noted as a regular feature of the larger atar-based zanjeras. With a total of 115 hectares, Silag-Butir is certainly within the range of the bigger atar systems in Ilocos Norte.

Unfortunately, no mention is made as to whether or not membership holdings are apportioned in the four different areas, nor do the data give any indication of whether the 115 ha include the lands of the "special members," though it is reasonable to assume that they do, whether the system is atar based or not. By itself the division of lands into four relatively equal areas is little more than a hint that there are corporately controlled blocks of atar land within Silag-Butir. However, when seen as a part of the other, more substantial evidence, it has a greater implication.

In her section on "Conflict and conflict management," de los Reyes (1980:39) makes no mention of disagreements over the fair distribution or theft of water, issues that are repeatedly referred to in the other fifty examples and that are perennial problems in systems this size. The two examples of conflict mentioned describe issues between the association and outsiders (the interference of local politicians and a contested ownership of the dam site), but no conflict between members or over issues involving water distribution. The absence of internal conflicts, especially when only one area within the system receives water during the dry season, supports the interpretation that Silag-Butir's lands are corporately controlled.

Finally, and most suggestive of all, Silag-Butir is the only one of all the fifty-one groups mentioned that has "rituals which are specifically focused on the use of irrigation" (de los Reyes 1980:40). As with

zanjera rituals in Ilocos Norte, these include a pamisa, the limited description of which is in keeping with practices in the north. A second ritual, the *paayos* (a variant of the Ilocos Norte term *parayos* or *para-ayos*), is held in June to encourage the flow of water. The author first states that rituals are performed to assure a good harvest and then adds "... the festivities are also held to honor the deceased persons who constructed the system. 'Our way of remembering them', as an informant puts it" (de los Reyes 1980:41).

Though the evidence for Silag-Butir being an atar-based system is limited, it does conform to many of the distinctive patterns exhibited by the most corporate zanjeras in Ilocos Norte. Though other questions about parallelism or diffusion cannot be considered on the basis of the available information, it does indicate that, in at least one instance, similar corporate arrangements are found outside Ilocos Norte. More intensive studies in other parts of Ilocos Sur and possibly La Union may well reveal a limited number of like organizations.

Of equal comparative interest to conditions on the Ilocos Coast are irrigation systems in areas of the Philippines that have been pioneered in recent decades by Ilocanos, especially by large numbers of immigrants from Ilocos Norte. In two of the most important resettlement areas—Cagayan Valley in northeastern Luzon and the Padada Valley of southeastern Mindanao—there are no indications of atar-based systems. Communal irrigation in these two areas is much limited and quite different from Ilocos Norte.

Irrigation Systems in Isabela

The precise number of truly communal irrigation systems in Isabela is difficult to determine. In 1963, for instance, the Provincial Irrigation Office listed 18 local irrigation groups for the whole province. Of these only 6 were effectively communal, in the sense that they involved a number of participating farm families and were not controlled by a single landowner, though, as one of the following cases shows, they may be dominated by one or more families. The six communal irrigation systems are situated in the central, rice-producing part of the province in the area between Santiago and Ilagan. Two of them are adjacent to the community that I studied and, consequently, more information is available on them than on others (Lewis 1971).

In terms of participation in the communal irrigation systems of Isabela, Mambabanga is probably exceptional in that there are members of both associations living in the barrio. The lands of the two irrigation systems are found on a secondary floodplain of the Magat River within

the municipality of Luna. Both draw water from the same source, Macanao Creek, which in turn is fed from springs at various points along the face of a small rise separating the secondary floodplain from the higher, less fertile tertiary floodplain.

The smaller of the two associations, the Society Mambabanga (150 ha), was initiated by the original settlers who had founded Barrio Mambabanga in 1918, at which time application was made for the water rights on the upper portion of Macanao Creek. However, it was not until 1938—and then only as a consequence of the efforts of one village elder—that the construction of a dam and connecting canals was actually begun. The village elder happened to have the single largest landholding within the village, with his total of 43 hectares being just over one-third of all the lands inundated and with all of his land located in the advantageous position nearest the dam. The size of his holdings (some of them obtained from less successful individuals among the original settlers) and, according to informants, his withholding of water at strategic times, created great animosity within the community.

Resentment came to a head when, through a legal maneuver, he acquired sole rights to the water. His continued attempts to buy up lands from more hard-pressed farmers plus his introduction of new tenants ("outsiders" to the older community of pioneering families) adjacent to the main part of the village resulted in his complete alienation from the original members of the community. Largely because of this, together with charges and counter-charges of witchcraft, and his advanced age, he sold the land and moved to a distant town.

The landholdings and water rights were purchased in the mid-1950s by a Chinese mestizo, a wealthy man with other holdings in Pangasinan Province. Having learned of the problems associated with the system in the past, this individual went out of his way to correct the injustices perceived by members. Meetings were held with all water users, officers were elected (most of them the landlord's own tenants), work schedules established, and an equitable set of water schedules agreed to. In addition, the custom of an annual feast was begun, with special foods and beverages provided by the landlord.

The actual number of members in the association, now or in the past, has been difficult to determine. For some individuals it consists of the families (less those who have left) that owned the original 150 hectares planned for but never adequately irrigated when the system was begun in 1938. Work and membership shares are supposed to be based on one-hectare fields, but with the major landowner having more than one-third of all the land within the system, it is not clear whether he alone or he and his fifty tenants (the actual number varies from year to year) are

true members. Voting at meetings is informal at best, with attendance irregular, and "recognized people" being involved—"recognized" in that their land is in the system and that they (or members of their families) provide work when asked by officials to do so.

The system is still dominated and the water rights still controlled by one individual, and the Society Mambabanga remains only marginally a communal enterprise. The main considerations of the members in the village of Mambabanga are that it works reasonably well and that the allocation of water is equitable given the physical limitations of the system. Their objections to the previous arrangements were not that things had been done undemocratically but only that they had been done unfairly. Though they are well aware of the potential for abuse that exists in such an arrangement, they see little need nor much to be gained from efforts to change the system.

Inkalian systems in Ilocos Norte are also sometimes dominated by strong individuals or cliques of leading families; some of these zanjeras are far from truly representative of communal interests. Like the Society Mambabanga, there is much greater concern for consistency and fairness than there is for representative governance. The major difference between such systems in Ilocos Norte and the example of the Society Mambabanga is that the disparities in wealth between leaders and members are considerably less in Ilocos Norte than in Isabela, where large, absentee-owned, single-family corporations are much more common. With the direct participation of leaders in irrigation activities in Ilocos Norte, the systems there are more personal and at least reflective of group concerns.

In contrast to the Society Mambabanga, the Union Bacarrena at 304 hectares is more than twice as large, with a total of 88 members owning lands of 0.5 hectare to more than 10 hectares. The lands of the association are a part of an original 1,100-hectare land grant made to sixty families in 1915, all of them immigrants from various barrios in Bacarra. Today Union Bacarrena is a term applied only to the irrigation society, with most members living in communities north of Barrio Mambabanga. The members in Mambabanga (eleven families in all) live there as a consequence of a major flood in 1937, when they had been living in a village on the secondary floodplain and sought and received permission from the older families of Mambabanga to establish their homes there. The irrigation system was developed over a period of ten years, 1920–1930, starting out with 150 hectares and subsequently expanding to its current size of just over 300 hectares.

The Union Bacarrena is organized like the inkalian systems in Ilocos Norte: members own their own land and are either farmers or landlords

(but not tenants); the society owns the water rights, dam, and network of canals; individuals are assessed work based on the total amount of lands owned (one hectare for one day's work); officials are elected and include a president, vice-president, secretary, treasurer, and a board of directors. A feast, which does not involve specific rituals focused on irrigation or the founders of the association, is held each year and members are assessed contributions. There are a few water buyers on lands peripheral to the system—a total area of about 10 hectares—and they are required to pay ten percent of their crops. Offers have been made to include them as full members of the association, but because of irregularities in the delivery system they prefer to continue paying the percentage cost rather than joining. At the same time, the members furthest removed from the dam and main canals complain of consistently inadequate water and blame those nearest the intake, with the result that absenteeism among them was said to be high. Some of these individuals have withdrawn entirely from the organization and no longer acknowledge their memberships and associated responsibilities, though regular members accuse them of taking water without paying fees.

With water derived from a small creek by means of a fixed concrete-and-log dam, communal labor is largely restricted to work on the main canals, and members are required to contribute 20–30 days each year or pay a fee (6 pesos) in lieu of each day's work. One of the main causes of dissension is absenteeism and the failure of people to pay fines. Other issues include conflicts over water shortages and theft and, as with unpaid fines, the association is unable to enforce its own regulations. The most active and committed members express concern over the viability of the association, but, according to a retired officer, there have always been such problems. In terms of its ability to operate as a system, the union seems considerably less effective than similarly organized, inkalian-based zanjeras in Ilocos Norte.

Environmental and social conditions in Ilocos Norte make this greater efficiency both necessary and possible: *environmental* in that agriculture is less intense and involuted in Isabela (with one-tenth the population pressure; cheaper and easier access to land to buy, lease, or farm as tenants; adjacent pioneering hill areas still available; better soils; more evenly distributed rainfall) and with fewer overall pressures to make irrigation work more effectively; *social* in that families are organizationally more open and less corporately defined, involving individuals in larger networks of reciprocity, all of which ultimately compete for a member's personal commitment. Farm families in Isabela are neither faced with the same intensity of pressures that exist in Ilocos Norte, nor have they developed (or had to develop) the corporate mech-

anisms that facilitate the forms of cooperation and property sharing required for communal irrigation. As in other areas of the Philippines, communal irrigation in Isabela seems to work best where it is effectively noncommunal and dominated by one or more forceful (and often wealthy) individuals.

Part of the contrast between the two areas exists because family landholdings are much larger in Isabela than they are in Ilocos Norte (approximately 3 ha vs. 0.5 ha), with the result that the ratio of people to land is much smaller. The Union Bacarrena with 88 members on 304 hectares can be contrasted with a similarly organized inkalian system in Bacarra having 500 members on 185 hectares. The relative shortage of farmland and the greater collective pressures on members simply do not permit the apathy that characterizes communal participation in central Isabela.

The models for both atar and inkalian systems were known and conceivably could have been applied to communal irrigation in Isabela. However, given the relative availability of land and the character of family and community organization that developed in response to pioneering conditions in Isabela (Lewis 1971:81–172), it quite reasonably follows that immigrant Ilocano farmers developed inkalian and not atar-based systems. Moreover, communal irrigation systems in Isabela are far fewer in number and, as evidence from the two cases examined shows, less cooperatively effective than those in Ilocos Norte. As indicated in de los Reyes' work (1980), other systems in the Philippines are of this type, with the more corporate atar systems being limited to northwesternmost Luzon. In situations similar to those encountered by Ilocano migrants in Cagayan Valley, other Ilocanos established communal irrigation in southeastern Mindanao.

Irrigation Systems in the Davao Region

Ilocano resettlement in Southeast Mindanao followed World War II. Among the areas settled in Davao del Sur and Davao del Norte provinces, the Padada Valley south of Davao City and the Tagum River area to the north have been opened to rice farming largely by Ilocanos and Visayans, and individuals from both groups have developed communal irrigation systems there. Some, like the New Ilocos Irrigation Association near Magsaysay in the Padada Valley, are composed entirely of Ilocanos, while others, like Matan-ao Marber Irrigation System in the adjacent municipality of Bansalan, are composed of both Ilocanos and Visayans. Whatever the ethnolinguistic composition (though the examples provided by de los Reyes suggest that Ilocanos

have more frequently initiated communal irrigation in the Davao Gulf region), the irrigation associations are all ones in which members own their own lands and the corporate concerns of systems are limited to water rights, dams, and canals.

As is the general pattern in Isabela, the six associations described by de los Reyes are dominated by more forceful and wealthy individuals, and the problems most frequently encountered concern water theft and water distribution (1980:65–101; de los Reyes et al. 1980:311–355). In none of the examples from southeastern Mindanao is there any indication of corporate land ownership such as occurs with atar systems. Likewise, as in Isabela, landholdings are relatively large in southeastern Mindanao (ten times as large), compared to the pattern of extremely small holdings with either atar or inkalian systems in Ilocos Norte. Consequently conditions in the region, as in Isabela, do not favor the greater corporate definition of families or of communal irrigation. Only one part of the Philippines exhibits similar population pressures and a long history of communal irrigation systems in a situation roughly comparable to Ilocos Norte, and that is the Cordillera Central with its spectacular high mountain rice terraces.

Irrigation Systems in the Cordillera Central

Only three studies are specifically about the social organization of montane irrigation systems in the Philippines, all of them on the Bontok or Mountain Province. Unfortunately, comparable data on the social dimensions of irrigation systems for Ifugao, Kalinga, Tinguian, Nabaloi, and Kankanai peoples are either extremely limited or lacking altogether. The one holistic analysis of Bontok irrigation is by Bacdayan (1974) regarding the western portion of the province, while the survey made by de los Reyes and others includes important comparative data on sixteen communal systems from elsewhere within the Bontok cultural region (de los Reyes 1980; de los Reyes et al. 1980). Together, these three studies provide a reasonably clear picture of Bontok irrigation systems and are especially important since it is possible to link this information with available studies on Bontok family, descent group, ward, and village organizations. The relationships of irrigation to other forms of organization make communal irrigation systems there significantly different from those found in the Philippine lowlands.

Cognatic systems are pervasive with Malayo-Polynesia, but within this vast region there are exceptions that involve unilineal and bilateral descent groups that have apparently developed from an original cognatic structure. In the Philippines the more corporate exceptions are

most evident with so-called Igorote tribal populations. In an overview of social organization in the Cordillera, Eggan (1967) emphasized the importance of bilateral descent groups and the related development of larger corporate residence groups such as wards and villages. Drucker (1977) has presented an important discussion of descent systems and property inheritance among the northern Bontok as they relate to the ownership of irrigated rice terraces.

Drucker demonstrates how historically heightened pressures on land have resulted in socially restricted systems of descent. With respect to nonirrigated land (forests, pastures, and gardens) the pattern of ownership previously involved landholding by individuals, bilateral descent groups, men's house groups (sociopolitical wards called *atol*), or even the community at large. At present most unimproved lands are communally owned since, as a result of new income sources, pressures on these lands have declined.

Where gardens are privately owned, the pattern of equal inheritance by all offspring is followed. On the other hand, pressures on irrigated rice lands have remained very high and property is transferred from generation to generation by what Drucker calls "paralineal" inheritance, with the eldest son receiving the rice fields of his father, the eldest daughter those of her mother, and other children dividing up whatever might remain (1977:9–15). Whereas Ilocano families in Ilocos Norte have become increasingly corporate, the corporate basis of social life among the Bontok involves kinship and community groups that extend well beyond the corporateness of individual domestic units. Consequently, both the social and natural settings in Mountain Province have resulted in markedly different kinds of irrigation organizations from either of the two kinds developed by Ilocanos.

Though Drucker clearly shows the relationship between land shortages, subsistence strategies, social organization, and inheritance, he does not provide an interpretation of how families, descent groups, wards, or villages relate to or are involved in the operation of irrigation systems.

Fortunately, Bacdayan's study of a western Bontok community does illustrate this and, coupled with the survey data of de los Reyes, it provides a reasonably clear picture of the articulation between irrigation systems and community groups. Bacdayan outlines the history and organization of a community irrigation system in Tanowong, a village in the municipality of Sagada in the western Bontok region. The Tanowong system, with a most impressive 25-kilometer canal, involves "roughly 1,000 people" and serves four closely related hamlets.[21] The existing system is based on an established set of terraces

and multiple water sources plus major renovations begun in 1954 when, as a result of decreasing water supplies, a remote supply was sought, eventually leading to the construction of the 25-kilometer canal. However, this later, major undertaking did not, Bacdayan notes, produce any changes in the "traditional framework of communal action" (1974:257–258).

The most important group in terms of community action is the men's house or *dap-ay* group (Bacdayan notes that *ato* is the more commonly used term in Bontok ethnography) and in Tanowong there are up to thirty members in each, with eight in all for the community as a whole—four in one hamlet, two in a second, and one in each of the remaining two. I repeat in some detail his description.

> The *dap-ay* are the religious, social, and political centers of village life where major decisions are made and through which the villages are mobilized and grouped for communal action. While there is explicit competition among *dap-ay,* they always co-ordinate their efforts for the welfare of the community as a whole.... The *dap-ay* serve as focal points of mobilization and accountability where decisions require implementation, such as the collection of materials or money, and the procurement of labor for community trail and irrigation repairs.... While the *dap-ay* is the unit of mobilization and accountability in community-wide endeavors, the nuclear family within the *dap-ay* is the unit of assessment for whatever is required by a community project. (Bacdayan 1974:248–249)

In further linking the importance of irrigated rice lands to community organizations Bacdayan adds,

> It follows that rice terraces are one of the most highly valued kinds of property for inheritance. Given this fact, plus the fact that the religious ceremonies, which are very significant kinship group and communal rites of intensification, are keyed to the rice cultivation cycle, the ownership of a rice terrace is like a badge of citizenship and of continuity, rootage, or identity in the group. This cultural significance of the rice terrace is the background for the intense concern shown over the dwindling water supply. (Bacdayan 1974:252)

Bacdayan's paper is not directly concerned with questions of corporate organization, the main thrust of his work being to show the considerable measure of success which the villagers of Tanowong had with using traditional social organization to accomplish a major task that involved them with distant villages and with representatives of the Philippine national government. Nonetheless, his work does provide an important example of how the corporate structures of

irrigation and community systems are linked in this one area of Mountain Province. Moreover, though lacking both the specific details of irrigation in Tanowong and the relevant information on community structures, the description of sixteen irrigation systems by de los Reyes and others supports the kinds of irrigation-community relationships outlined by Bacdayan.

The sixteen systems described by de los Reyes and her colleagues represent villages from throughout Mountain Province. The smallest has an area of only 1 hectare (divided into two sections), with a membership of 20 farmers and a field-size range of 100–400 square meters. The largest has an area of 35 hectares (all in a single area) with 300 members and a field-size range of 10–10,000 square meters. Of the 16 systems, 5 are noted as having "irrigation associations," all having been initiated by officials of the National Irrigation Administration long after the actual construction of the systems. The remaining 11 organizations are variously described as being managed "by the users themselves" or "barrio officials." The author's comment on one of the five associations seems in large part to characterize the government's efforts and frustrations in trying to "organize" mountain farmers.

> The association's activity ended, however, immediately after the organization meeting. At present, the operation of the Agcuyo system is not managed by any formal association, nor by any formal leader. (de los Reyes 1980:43)

In describing another association the author noted,

> The operation and maintenance of the system is supposedly under the supervision of the system's irrigation association. As it is now, however, the association officials are not active in overseeing all aspects of the system's management. Nonetheless, the association leaders still attend to some of the needs of the system. It appears, however, that *they do so not because of their irrigation positions but because they are also incumbent barrio leaders.* (de los Reyes 1980:144, emphasis added)

And in still another,

> The Nabineng system is not managed by a formal association. However, the barrio officials of Mayag, who are recognized in their capacity as community leaders, extend to the farmers whatever help or advice they may seek on matters relating to the operation of the system. (de los Reyes 1980:133)

Thus, the most characteristic social feature of Bontok irrigation is the congruence between the leadership of villages and irrigation systems. Unlike Ilocano zanjeras, which have no direct ties with barrios, much less a congruence in officials, Bontok villages and irrigation systems appear to be virtually synonymous in this respect. Though the studies of de los Reyes and her colleagues provide no specific details on the roles of extended kin groups, wards, or the communities at large, there is little question from the examples provided that village officials are the irrigation officials. At the same time, ethnographic studies clearly show the importance of corporate groups in Bontok villages (Botengan 1976; Drucker 1974, 1977; Eggan 1960, 1967; Keesing 1949; Reid 1972). The distinction may perhaps be made that whereas Ilocano irrigation systems are *communally based* (i.e., characterized by the collective use and ownership of a resource or property), Bontok irrigation systems are truly *community based.* Given the local presence of corporate forms of organization and cooperation, plus the need to improve agricultural production and the environmental conditions that make it feasible (water sources, soils, terrain, etc.), it reasonably follows that an indigenous irrigation system will employ and rely upon existing corporate groups rather than create an association independent of existing institutions. A further example from de los Reyes' work refers to just such local concerns.

> The Fian-na system is not currently managed by a formal association. The farmers feel that as long as they are united as a group, they do not need a formal association which, in their opinion, might be used by the government to control their system. Also, they believe that if they were to form an association, they would be constrained to accept the terms imposed by the NIA (National Irrigation Administration) on the rehabilitation of existing systems, namely, the repayment of any financial assistance extended by the agency. Furthermore, they fear that the existence of an association may foster corruption among its officials and consequently cause disunity among the farmers. (de los Reyes 1980:118)

In addition to the underlying corporate basis of the congruence between village and irrigation organizations, Bontok communities, unlike so many lowland ones, are physically separate from each other and immediately adjacent to their terraced fields. Whereas propinquity is undoubtedly a factor in the relationship between the two organizations, the corporateness of Bontok social systems does provide the basis for irrigation organization. In none of the examples provided by de los Reyes and her colleagues is there any indication

that alternate forms of organization (such as those that exist in Ilocos Norte) have emerged. The formal relationship between village and irrigation systems is also evident in Sumatra.

Irrigation Systems among the Toba Batak

Richard P. Lando (1979) has provided an important, comprehensive work, which can perhaps stand as a model for the anthropological study of irrigation systems in their social and cultural contexts. In this respect his study is holistic but without viewing the social organization of irrigation as merely an adjunct to the social life of a village. In the case of Toba Batak irrigation groups *(bondar)* there are a variety of types, some of which coincide with village organization and others that are entirely independent. Vergouwen, in an earlier publication that briefly mentioned bondar in terms of his study on social organization and law, noted,

> ... there are those [associations] that owe their existence to the irrigation of fields by streams, or by irrigation canals, *bondar.* These associations ... [are] units with distinct interests of their own, having their own internal organisation, their own administration, and their own legal rules. ... In other regions, however, the water interests go together with the other interests of the ruling lineage in village and territory, so much so that sometimes a close and independent unit based upon common water interests is hardly to be discerned, and the administration of the water for a good part coincides with that over land and the people. (Vergouwen 1964:344)

The Batak are divided into a number of exogamous, named patriclans *(marga),* which are united through asymmetrical marriage exchange systems. Villages, such as the one studied by Lando (1979)—Lintong ni Huta on the south shore of Lake Toba—are composed of a number of related patriclans and (within these) lineages. These groups, alone or in combination, are the bases for cooperative, corporate enterprise.

> Kinship often defines the limits of membership, the rights, and the responsibilities and obligations of a group of people engaged in a common undertaking or the administration of a corporate resource. (Lando 1979:95)

Irrigation systems in the Lintong ni Huta area exhibit several variations on a common theme, with the particular organization of an associ-

ation dependent upon a combination of environmental, social, and historical factors. As Lando noted, "The corporate organization of irrigation systems was an idiosyncratic matter of the locality" (1979:192). All conform to principles of customary law *(adat),* principles that are broad enough to allow for differences in place and changes over time. Six small irrigation associations within the village are the joint property of the descendants of the men credited with founding the systems, though the fields within are owned by individual families and passed from father to son.

Unlike Ilocano zanjeras, bondar members are less regularly involved in the day-to-day operation of systems. Many associations in Batak have paid employees who attend to the ongoing management of activities.

> Batak farmers pay levies for their water to the controlling body of the irrigation association and are liable for labor on the system at most for two or three days a year. Employees of the system, paid in rice, perform the duties of maintenance and water allocation which in other kinds of irrigation organizations in Southeast Asia are the obligatory duties of all members. Batak irrigation associations are operated more like public utilities rather than cooperative associations. (Lando 1979:9)

Excess water could be used in two ways—sold for a share of the rice grown (plus some annual work on the system) or used to clear and aid in the construction of a terrace; in the latter case landowners were required to give up one-fourth of the newly irrigated land to the bondar (Lando 1979:198). Lands obtained in this way became the property of the association, and were either rented to outsiders (with the rent becoming part of the general fund) or rented to young men of the owning lineage. This form of land acquisition is roughly similar to the ways that atar systems in Ilocos Norte incorporate additional holdings as zanjeras expand.

The author noted that over time some descent groups become smaller, and in order to maintain themselves, expanded memberships have become based on residence and voluntary assistance arrangements. Within this, however, genealogical ties have provided the overt principle of organization (1979:223). However, one large bondar was the major focus of Lando's study and it included members and descent groups from thirty-eight small hamlets throughout the village. The construction, organization, and evolution of this association was the major concern of this work. Silean Banua is the largest and most important irrigation system in Lintong ni Huta, having 120 hectares, 206 "levy-

paying" members, an 8-meter-high dam, and a trunk canal 8 kilometers in length. Initiated in either 1866 or 1867, taking fifteen years to supply some fields, and not supplying all portions of the system until 1924, Silean Banua was developed under quite different arrangements from the smaller associations mentioned above.

> The size of Silean Banua and the fact that the entire village of Lintong ni Huta cooperated in its construction and financing meant that the entire village held rights to the system, rather than a single kin group which is a commoner pattern. (Lando 1979:35)

Originally developed by descent groups, Silean Banua is now managed by various *golongans* ("groups" or voluntary associations) which may be based on local lineages, common residence in a hamlet, or a mix of individuals from two or more hamlets. Golongans have replaced the level of cooperation that had earlier been the basis of association between kin groups. This change resulted largely from the outmigration of large numbers of Batak during the Dutch colonial period. Despite the change from being a kinship-based group to a voluntary association, the irrigation system remained a locally based, highly corporate structure.

> The adat of water rights remained intact and most importantly the system remained an organization independently controlled by the village.... The outside perimeters of Silean Banua are still intact, the inside boundaries have shifted radically. (Lando 1979:263)

As Lando himself noted, the situation is very similar to the case described by Bacdayan (1974) involving the reformulation of village-to-irrigation system relationships by the Bontok. Both examples show marked similarities in terms of accommodating changes by the corporate systems specific to the two communities. Again, the situations in both Mountain Province and highland Sumatra are strikingly different from that of Ilocos Norte where villages have no descent or residence groups that might provide a corporate infrastructure for the organization and management of communal irrigation. Still another set of corporate configurations can be seen in communal irrigation in Bali, a situation different from those already examined.

Irrigation Systems in Bali

For Southeast Asian scholars—be they concerned with culture, society, political systems, human ecology, religious beliefs, art, drama, music,

or myth—all roads ultimately lead to Bali. Its setting, its people hold a compelling fascination for us. To anthropologists it represents the very quintessence of what we find in somewhat less romantic, more mundane ethnographic form elsewhere. With respect to the topic of this study, the Balinese *subak* has stood as a culturally elaborate, socially complex ideal of communal-corporate irrigation.

As the Geertzes and others have shown (Belo 1936, 1970; Boon 1977; Covarubbias 1937; Geertz 1959, 1980; Geertz and Geertz 1975; Lansing 1974), Balinese social organization is highly corporate, ranging across groups such as the domestic family, quasi lineages *(dadia),* castes or title groups, hamlets, temples, subaks, and various forms of cooperative association *(seka).* For this comparison it is not necessary to elaborate the overall corporateness of Balinese society or to detail the participation of individuals in these various corporate "planes of social organization" (Geertz 1959), but only to show the relationships of members to irrigation groups and, in turn, of irrigation systems to villages. Compared with other areas of Southeast Asia, the studies devoted all or in part to Balinese irrigation systems are considerable, providing a historical background and regional breadth not found elsewhere (Birkelbach 1973; Geertz 1967, 1972, 1980; Grader 1960; Liefrinck 1969).

The subak begins with individuals who own their own land within the systems.

> The complexes of ricefields obtaining water from the one conduit or from the one branch of a conduit are called in Balinese *subak,* and the owners of the ricefields making up such a complex constitute a subak association. (Liefrinck 1969:8)

> An irrigation association, or *subak,* comprises a larger or smaller number of owners or holders of irrigable fields together forming one consolidated complex, and has the aim of promoting common irrigation interests.... *Subaks* have common interests, which manifest themselves above all in collective ownership of weirs and conduits and in joint worship of temples. (Grader 1960:269)

In more detail, Geertz explains,

> The immediate tasks of wet rice agriculture—plowing, flooding, sowing, transplanting, weeding, watering, harvesting, and so on—were organized and carried out at the lowest level of the system, that of the individual, *privately owned terrace or complex of terraces....* So too were the social arrangements necessary to accomplish them—sharecropping, land renting or pawning, exchange labor, group work, and so on. At this elemental level,

> the subak as a corporate unit played no active role; *it merely set the context within which the individual peasant, on his own land his own master,* was obliged to work. The subak never acted (and this seems to be one of the few flat statements one can venture about Bali) as a productive organization in the proper sense. (Geertz 1980:72–74, emphasis added)

Subaks have a set of elected officials, regularly scheduled meetings, written constitutions, periodic elections, and scheduled rituals. An arrangement similar to one described for the Batak (Lando 1979:9–10) involves the presence of hired "water teams" *(seka yeh):*

> ... groups of men, members of the subak, who were delegated by the subak membership as a whole to carry out these everyday duties and recompensed accordingly—either in kind, in cash, or by exemption from various subak taxes and contributions.... The members of the water team performed what must have been, by a conservative estimate, ninety percent of the labor connected with water control in the subak. The water-team members, headed by an official elected from among them, the *klian seka yeh,* formed the technical heart of the subak. (Geertz 1980:74)

Subaks are also commonly involved in direct reciprocal relations with other subaks,

> *Subak* associations with common interests, notably as regards irrigation, may hold joint meetings, or they may meet on the same day in the same temple but each in a different pavilion, such arrangements facilitate consultation. (Liefrinck 1969:14)

Birkelbach mentions the importance of subaks combining to form "local unions"; this is accomplished through a sharing of leadership. Most such associations involve smaller subaks acting together or, where such a system shares a border with a larger one, the smaller subak having sought out the alliance. Such alliances are very common in Ilocos Norte, but the practice of having a shared leadership is not. Nonetheless, for subaks corporate persistence remains important and, as Birkelbach states, "many subaks choose not to lose their identity for a more effective operating size" (1973:153).

Geertz describes how watershed districts involve the coordination and potential cooperation of efforts, with a plurality of subaks working in concert. He estimates that sub-subak, regional work constitutes perhaps one percent of all labor contributed to individual subaks (1980:80). However, these alliances and larger inter-subak activities entail no form of higher corporate organization. It is at the gov-

ernmental level that systems coordination and activities differ most significantly from those characteristic of Ilocos Norte. The ritual coordination of irrigation, the collection of taxes by the official representatives of lords, and the presence of an overall, customary set of water laws *(adat yeh)* distinguish Bali's organization from anything that exists in the northern Philippines.

Despite the ritual coordination of irrigation in Bali and the presence of government tax collectors, irrigation systems were and are wholly autonomous, self-governing, locally developed institutions.

> Technically, the ... subak was entirely self-contained. It depended on no facilities over which it did not have direct control. There were no state-owned or state-managed waterworks of any sort, nor were there waterworks that were the property or responsibility of autonomous super-subak bodies of any sort. The whole apparatus—dams, canals, dikes, dividers, tunnels, aqueducts, reservoirs—upon which any particular landowner depended for his water supply was built, owned, managed, and maintained, sometimes exclusively, sometimes in partnership, by an independent corporation of which he was a full and, in legal terms anyway, equal member.... There was no alienation of the basic means of production. (Geertz 1980:69)

The relationships between irrigation system and residence groups have been clearly presented as involving separate and distinct corporate entities.

> [The] three main constituents of the village polity—banjar [hamlet], subak, and pemaksan [temple congregation]—are noncoordinate: their memberships do not coincide. Rather, they intersect and overlap. Virtually any irrigation society has members from many different hamlets and many different congregations. The members of virtually any congregation come from several hamlets and several irrigation societies. The members of virtually any hamlet will belong to different irrigation societies. (Geertz 1980:53)

The major difference between irrigation systems in Bali and the montane systems in northern Luzon and northern Sumatra is that, whereas communities and irrigation societies are conjoined in the last two areas, equivalent, corporate connections between community and irrigation system do not exist in Bali. There, villages and irrigation systems are corporately separated, not united.

Subaks and zanjeras are distinct from the other irrigation systems mentioned here in that both are organizations having a distinctive set

of rituals that focus on the group as a unit—a unit over and above the individual propitiatory rituals practiced by members at field sites or altars. The ritual activities briefly referred to by de los Reyes et al. (1980:18–19) for the Bontok and by Lando (1979) for the Toba Batak are not practices that set the irrigation systems apart as distinct organizations.

Liefrinck's description of subak ritual (1969:29–38) and Geertz's emphasis of this ritual in the larger contexts of villages, districts, and local kingdoms (1980:75–77, 80–82) show the local elaboration of irrigation ritual together with its importance in the society at large. Geertz has contended that it is through the ritual coordination of agricultural activities that irrigation society and Balinese society are linked. Nonetheless, each subak is ritually, as well as socially, an autonomous unit with its own temple and religious authority.

The annual or semiannual pamisas held by zanjeras are ritually pallid events compared with the religious activities of subaks. Zanjeras have no religious centers as such, nor do they have an equivalent "temple priest." Kamarines are used for cooking and serving meals to work parties, for both casual and formal meetings, as places for afternoon siestas during the heat of the day, as well as for group rituals. They are not specifically religious structures. Only the occasional presence of an offering, an umras, suggests that the site has ritual significance. The rituals themselves are a syncretism of indigenous beliefs, combined with imported and reformulated American and Spanish Christian ideas. Ceremonies may involve—sometimes in alternate years or even during different phases of the same ritual—a Catholic priest, a Protestant missionary, a local shaman, or no religious personage at all. With zanjera officials attired in slacks and short-sleeved shirts (and most members in ordinary work clothes), ceremonies are performed in an open-sided shed or hollow-block building (covered by a rusty sheet-iron roof); they just do not engender the sense of epic drama that is described for subak rituals.

Given the relative social complexities of zanjeras and subaks, however, there is much more than meets the ritual eye in the simpler performance and plain setting of the pamisa. The corporate arrangements and the types and varieties of resources and property involved in atar-based zanjeras are much more elaborate and complex than are those of the inkalian or subak-type irrigation systems. The ritual facade of the zanjera may be less colorful, but more lies behind it—a case of "more matter, with less art." The corporate "matter" of atar-based zanjeras deserves special consideration.

Conclusions

If, ethnographically speaking, all roads lead to Bali, theoretically, in the case of irrigation, they lead to Karl Wittfogel (1957). However, the major limitations of Wittfogel's arguments for "oriental despotism" and "hydraulic states" as they might apply to Balinese subaks and Batak bondars have been convincingly dealt with by Geertz (1980) and Lando (1979). Zanjeras, I would simply reiterate, were independently developed and are autonomously maintained by peasant farmers. As to the contention that irrigation in Ilocos Norte is "small-scale," and therefore represents a form of "hydroagriculture" which precedes "hydraulic agriculture" (Wittfogel 1957:18), it can only be restated that zanjeras irrigate an estimated 18,000 to 20,000 hectares and, though many are very small, there are a few as large as 800–1,000 hectares. Whatever "small-scale" may mean in real hectares, irrigation in northwesternmost Luzon stands as a regionally impressive example of hydrological development, all of it accomplished in the absence of Eastern despots and without the interference or direction of local landlords. Nepotism rather than despotism is a better, though still misleading, term to describe the basis of irrigation systems in Ilocos Norte and the other examples considered here.

The zanjeras most similar to irrigation systems elsewhere in the Philippine lowlands are the inkalian associations. Whether developed by Ilocano émigrés in Cagayan Valley or by indigenous Tagalogs in central Luzon, the pattern is one of private landowners uniting to form a corporate group that owns the water system and collectively holds the rights to water. The same pattern is characteristic of the Balinese irrigation

associations. Where land is relatively available, as in Isabela today or Ilocos Norte in the past, the landowner-operated irrigation system is a reasonable response, since it provides farmers full, not limited, title to land. The atar system may be a socially ingenious formulation, but in part it is a response to a relatively great shortage of land *and* the absence of alternatives for irrigators to develop their own fields further or to open up public lands. Certainly, no attempts were made by Ilocanos in Isabela to establish atar systems. Though land pressures in Isabela have increased dramatically since the first inkalian systems were established, the eagerness of the national government now to establish irrigation systems and extend existing ones precludes farmers from being able to convince landowners to give up 40–60 percent of their lands.

Granting that the following argument is partly teleological, it is reasonable to assume that the oldest systems in Ilocos Norte were owner-operated and that the more socially complex atar systems developed later. It is quite unlikely that the earliest irrigation systems would have begun by diverting water from the main rivers while more manageable, less demanding tributary streams and hillside springs were available as sources. Irrigation must have gone from the simple to the complex, and therefore I would argue that irrigation must have existed in Ilocos Norte prior to the earliest recorded date for an atar system (1730). Whatever the totality of factors that made the creation of atar systems individually necessary and socially possible, their development required a significant organizational change resulting in the emergence of a structure unlike anything that preceded it or is evident in adjacent areas.

As noted, neither inkalian nor atar irrigation systems have an irrigation-to-community relationship similar to that of Bontok irrigation systems. And, as I have emphasized elsewhere (Lewis 1971), barrios in Ilocos Norte are socially amorphous, being little more than the places where farmers live and interact with a narrow set of kin and neighbors. There are no corporate residence or descent groups in Ilocano communities. In marked contrast, Bacdayan (1974) and Lando (1979) have shown that Bontok and Toba Batak irrigation organizations are directly derived from and dependent upon traditional structural arrangements.

Atar systems, on the other hand, are truly revolutionary since there are no cultural precedents for this kind of organization. Balinese irrigation is similar in that neither hamlet nor village provides either the organizational basis for or links to irrigation systems. However, subaks are within the tradition of the Balinese *seka,* or voluntary association, and are referred to as *seka subak*. In this respect there is an organizational precedent for Balinese irrigation systems. Though short-term, corporate-like associations are found in marketing arrangements in the

Ilocos region (Griffiths 1977), as are apparently long-term corporate agreements over the use of hill swiddens (Ziaclitta, personal communication), such groups, referred to as *sociodads,* are not pervasive or outstanding in the way that voluntary associations are in Bali. Without evidence of similar structural arrangements from other regions, Ilocano atar-based systems are unique in the ways in which individuals have created a corporate irrigation group on the basis of water-for-land exchanges. The group owns both water and land (atar, paglakay, and komon), provides water to the original non-member landowners (the biang-ti-daga people), shows no indication of connections or social precedents to other social groups, and achieved all of this without subordinating its members to outside authority.

As the comparative examples for insular Southeast Asia have shown, owner-operated systems are widely distributed throughout the Philippines, are represented by Balinese irrigation associations and, in slightly variant form, are found among the Toba Batak of Sumatra. In the development of inkalian systems in Ilocos Norte and like associations in Isabela, the same principles of organization were applied by Ilocanos. In this instance culture can be considered a constant, although environmentally and socially the two areas are quite different. Simply in order to subsist on one-half-hectare farms, the people of Ilocos Norte have had to be hardworking and industrious, and these "virtues of necessity" are themselves influences on behavior. The farming environment has always been much more difficult in Ilocos Norte, where rainfall is less evenly distributed throughout the year and where soils are poorer. Likewise, the social life of the two areas shows considerable variation in the organization and structure of family and community.

The degrees of corporateness exhibited by domestic families in Ilocos Norte and Isabela have constituted important differences in the relative effectiveness of communal irrigation. Families in Ilocos Norte are not involved in wider groupings of cognatic kin or in open-ended networks of reciprocal exchange, with the social consequence that they can and do concentrate their energies on activities more directly relevant to their economic concerns. At the same time, because family holdings are so limited, inheritance practice has changed from a bilateral to a patrili-neal, more corporate emphasis, which is especially evident in the custom of male land dowry, the sabong. This shift to greater corporate definition has been especially pertinent in terms of the relationships between family-owned land and communally controlled irrigation. The *corporate focus* (the degree to which property and property relationships are prescribed and corporately delineated) is more clearly specified in Ilocos Norte; in Isabela the corporate focus of family resource

is more diffuse, more ramified, with individuals and individual families involved in wider, often competing networks of social obligation, and with family estate dissipated with each generation. Consequently, though the formal organizational structures of cooperative association may be the same in both areas, a lack of corporate focus means that ongoing, single-purpose forms of cooperation will function less effectively, as demonstrated by a comparison of the inkalian systems in Ilocos Norte and Isabela.

The emphasis on the significance of corporate organizations in anthropology has considered the question primarily in terms of unilineal descent groups or corporate communities.[22] On the other hand, Appell (1976) has argued for the need to consider the domestic family as a corporate group and of how family property relationships provide the structure for social groups in cognatically based societies. How domestic families maintain property and relate to other property-owning families in Ilocos Norte are especially important to irrigation associations. In the absence of wider networks of effective community support or demands from kin, neighbors, and other units of reciprocal exchange, farmers in Ilocos Norte are in a sense freer to concentrate on maintaining and improving family resources. The zanjeras provide a way of maintaining (if lands are already within the system) and improving (if lands are to be opened or expanded, as with atar systems) family resources in land. Moreover, the corporate interests of the domestic family and those of the "zanjera family" intersect and are complementary. In Isabela the specificity of the cooperation required by communal irrigation is adversely affected by the competition from the wider systems of obligations within which each member is also involved; there is much that distracts from and competes for one's social obligations. In Ilocos Norte a zanjera member can and must be more attentive to both domestic and "zanjera family" demands.

Culturally Ilocanos in Ilocos Norte and Isabela are the same, and in a formal-social sense both are bilaterally structured with kinship models corresponding (Lewis 1971). Because of environmental pressures, both social and natural, domestic families in Ilocos Norte have been more concerned with transfers and uses of property. Ilocano families in Isabela, under a different set of environmental pressures in which pioneering conditions favored extended social ties and obligations, have been more concerned with reciprocity and obligation than with property as such.[23]

Other than some hypothetical measure of what irrigation "efficiency" might mean, I would not wish to suggest that being more corporate is better than being less corporate. Life can hardly be

described as better in Ilocos Norte than in Isabela, however more smoothly communal irrigation may work there. In both settings, Ilocanos responded and differentially adjusted to nonspecific demands in the broader social and natural environment. In terms of real income and sociability, the people of Isabela are wealthier and, it may be supposed, better off.

Atar-based zanjeras are important to understand not merely because they are so different from other examples of communal irrigation but, rather, because the difference represents a unique experiment in how peasant managers created their own corporate resources in both land and water. In their elaborate exchanges of water for land and their subsequent distributions of atar shares to members, all of it beginning more than two hundred years ago, they undertook an indigenous program of "agrarian land reform" long before the phrase was popularized by reformists and propagandized by politicians. By their own efforts they have instituted locally two of the major goals heralded by most Third World governments—irrigation and land redistribution. Unfortunately, in what will be a major local tragedy, it may all be undone as a result of well-meaning but poorly conceived government irrigation schemes.

Today in Ilocos Norte the government plans to "improve" and "rationalize" local irrigation by developing large hydrological complexes that will do away with the need for the multiplicity of zanjeras. Aside from zanjera concerns about what the loss of diversity and the ability to repair systems rapidly might mean to individual site and regional stability, the farmers are concerned about what this will mean to group and even personal survival. For atar zanjeras as corporate entities as well as for individual holders of atar shares, the government's preemption of their rights to provide water would permit the titleholders of biang-tidaga land to demand the return of atar fields, since the government, not the zanjera, would then be providing irrigation. This is not just an idle, paranoic concern of zanjera members; in a few instances losses of atar lands have already occurred. For example, because of major changes in river channels and its inability to secure surpluses from a neighboring system, a zanjera in Vintar negotiated with the government to obtain its regular supply of water from the Bacarra-Vintar Irrigation System. This resulted in a legal suit being brought by the zanjera's biang-tidaga owners. The development of the major irrigation systems proposed for the Laoag River Valley will result in an enormous and complicated amount of irrigation; the potential losses of land to the zanjeras affected could be devastating to thousands of people.

Zanjera members are much more aware of the implications of these proposed changes than are outsiders. They do not believe that "those

engineers" understand the situation, much less that they know what is best for zanjeras. Their own municipal federation of zanjeras exists because the much smaller Bacarra-Vintar Irrigation System threatened to reduce the valley's supply of water fifty-five years ago. Although they see the current proposals for the Laoag River Valley as much more dangerous to the zanjeras there, they believe that all valleys and all zanjeras are potentially threatened. One zanjera elder summed it up,

> Government business is government business; they build their dams and roads to impress other government people or, maybe, the *baknangs* [rich people].... Our zanjera was built almost two hundred years ago and we built new fields [i.e., extended the irrigation and traded for land] before the Spanish [period] ended. Now the government wants to take the water and give it to people, and there will be no more zanjeras. We will have no land and our sons will have no land. And that will be a terrible thing.

APPENDIX 1

An Irrigation Agreement

KNOW ALL MEN BY THESE PRESENT:

That we, party of the first part, [name of Zanjera president] and [name of Zanjera vice-president], Filipinos both married, both of legal age, and residents of Bacarra, Ilocos Norte, as representatives of the Zanjera Laud Irrigation Association, Incorporated, Bacarra, Ilocos Norte, and I, party of the second part, [name of landowner], Filipino, married, of legal age, and also a resident of Bacarra, Ilocos Norte, hereby make known the following:

1. That I, the party of the second part, [landowner], have a parcel of land which is irrigated by the Irrigation Ditch called Laud and more particularly described and bounded as follows:

> A parcel of rice land in Bayag, Barrio No. 4, Bacarra, Ilocos Norte. Bounded on the north by Zanjera Daya's main canal; on the east by [two landowners' names]; on the south by Zanjera Laud (lands formerly owned by [name]); and on the west by [landowner's name]. It has an area of 7,200 square meters and declared for taxation purpose under Tax No. A-000000 in the name of [landowner].

2. That, whereas if a person has land without irrigation or other persons have irrigation without land, it is obvious that rice cannot be successfully grown. Thus, since neither of us can alone produce rice in such a situation, the two parties have agreed to divide the said parcel of land described above. Two-fifths of the land shall go to the Zanjera Laud

Irrigation Association, Incorporated, in exchange for their work and hardship, and because the water flowing through the ditch of Zanjera Laud now gives life to the said parcel of land. The three-fifths portion that is left belongs to the owner of the land, that is to me, [landowner], as seen in the sketch at the back of this document and which shows how the shares belonging to each side are apportioned.

The portion belonging to the Zanjera Laud: two-fifths of the above described land containing an area of 2,880 square meters more or less. Bounded on the north by [landowner's] bigger parcel of land; on the east by [two names]; south by Zanjera Laud (lands formerly owned by [name]); and on the west by [name].

The portion of the land pertaining to [landowner]: three-fifths of the land described above containing an area of 4,320 square meters more or less. Bounded on the south by Zanjera Laud's smaller portion; on the east by [two names]; on the west by [name]; and on the north by Zanjera Daya's main canal.

3. That because of the apportionment of the land described above and as also stated above, the following agreements are hereby entered into:

(a) That each of the two parties shall pay for the real estate tax accruing each year on the portion of the original big parcel of land allotted to each party in proportion and each party shall also be responsible for whatever assessments the government shall impose with respect to his share.
(b) That in case the Irrigation Association Laud, Incorporated, shall no longer irrigate the land described above, the two-fifths portion allotted to the said Zanjera Laud shall revert to the original owner of the land, the said [landowner], as the right free owner, and no one shall have the right to prevent its reversion.

In witness thereof, we have executed this document in two copies, in the Ilocano dialect which we understand, and upon which we hereto affix our signatures in the Municipality of Bacarra, Ilocos Norte, this 12th day of August in the year of our Lord 1945.

SGD. [president]
1st Head and Representative
of the Zanjera Laud Irrigation
Association Incorporated as the
party of the 1st part.

SGD. [vice-president]
2nd Head and Representative
of the Zanjera Laud Irrigation
Association Incorporated as the
party of the 1st part.

SGD. [landowner]
Owner of the land which is to
be divided and party of the
2nd part.

Signed in the Presence of:
SGD. [witness] SGD. [witness]

APPENDIX 2

Affidavit of Claim to Land Ownership

The following action was paralleled in a similar document in which a neighboring zanjera, in a cooperative effort, solidified its claim to a section of atar land where the two systems bordered each other. The total amount of land involved, including the 9 hectares listed below was 22.7 hectares.

Affidavit

I, [name of zanjera president], of legal age, married, Filipino citizen, and resident of the municipality of Bacarra Province of Ilocos Norte, Philippines, after being duly sworn in according to the law, depose and say:

(a) That I am the President or Maestro of the ASSOCIATION ZANJERA DAYA INCORPORADA, Bacarra, Ilocos Norte, and as such I have the right to deal and represent said Association with any person, partnership, corporation or any Government entity in any matter pertaining to the properties of said Association.

(b) That the Association Zanjera Daya Incorporated is a duly constituted, organized corporation or association in Bacarra, Ilocos Norte, and duly incorporated in accordance with the provisions of the Act of the Philippine Commission No. 1459, and of the Act of the Philippine Legislature, No. 2728, as ev-

idenced by the Official Certificate signed by the Director of the Bureau of Commerce dated February 7th, 1933, at Manila, Philippines, and by the papers which are in my possession.

(c) That in her capacity as a corporation or association she has properties, personal and real, and among them is one parcel of orchard situated at sitio Bauang, Barrio No. 4, Bacarra, Ilocos Norte, Philippines, having acquired it by way of occupation and prescription, free from liens, charges or encumbrances of any kind whatsoever, and said land more particularly described and bounded as follows, to wit:

> "ONE PARCEL OF ORCHARD"—located in Bauang, Barrio No. 4, Bacarra, Ilocos Norte, bounded on the south by the ditch of Zanjera Laud, on the east by the terrenos or rice-paddies of Mr. [name], on the north by the Bacarra-Vintar River, and on the west by the Kamarine of the said Zanjera Daya. It contains an area of 9,000 square meters more or less, assessed at P180.00 for the current year 1936, according to the Declaration of Real Property Tax No. 00000, under the name of said Association Zanjera Daya Incorporated. Its limits are visible by means of a bamboo fence. The tax of said orchard for this year, 1936, was paid, as per Official Receipt No. 000000 issed at Laoag, Ilocos Norte, on April 10, 1936.

(d) That, from the year 1905 the said Association Zanjera Daya Incorporated possessed and occupied the said orchard above described actually, openly, publicly, peacefully, and continuously, up to the present thirty-one years (31) now, under claim of ownership by virtue of occupation and prescription.

(e) That the said Association Zanjera Daya Incorporated, as the true owner and lawful possessor of the above mentioned orchard had paid all the annual taxes for the said land (orchard) and had never been delinquent in the payment thereof.

(f) That, in my capacity as President or Maestro of said Association Zanjera Daya Incorporated, I hereby request that her right as owner over said parcel of orchard above described *be consolidated* into ABSOLUTE OWNERSHIP, and that this affidavit BE REGISTERED in the Office of the Register of Deeds by Ilocos Norte, in accordance with the provisions of Act No. 2711, Sec. 194 in as much as the said orchard above described is not registered either under the Torrens System or under the Spanish Mortgage Law.

In witness whereof I have hereunto signed my name at the bottom of this instrument and at the left margin in quintuplicate after it was read and translated to me in Ilocano by the Notary Public swearing this document, before whom I appeared in the municipality of Bacarra, Ilocos Norte, Philippines, on this 10th day of April, 1936.

[name]

President or Maestro, Association Zanjera Daya,

Incorporada, Bacarra, Ilocos Norte

Read, translated and
signed in the presence of:
[witness] [witness]

UNITED STATES OF AMERICA

COMMONWEALTH OF THE PHILIPPINES

MUNICIPALITY OF BACARRA)

s. s.

PROVINCE OF ILOCOS NORTE)

Subscribed and sworn to before me this 10th day of April 1936, at Bacarra, Ilocos Norte, the herein [name of zanjera president] presented to me his Residence Certificate No. A-000000 issued at Bacarra, Ilocos Norte, on February 3, 1936.

Witness my hand and Official Seal, fecha ut supre.

BEFORE ME:

[Name]

Notary Public

Until December 31, 1936

APPENDIX 3

Notarized Description of Irrigation Contract

REPUBLIC OF THE PHILIPPINES)
PROVINCE OF ILOCOS NORTE) SS.
MUNICIPALITY OF BACARRA)

BEFORE ME, a Notary Public in and for this province, on the date and at the place first stated above, personally appeared [Name "A"] with Res. Certificate No. A-0000000 issued on February 14, 1968 and [Name "B"] with Res. Certificate No. B-0000000 issued on March 16, 1968, both at Bacarra, Ilocos Norte, to me both known to be the same persons who executed the foregoing instrument and acknowledged to me that the same is their free act and voluntary deed.

The foregoing instrument is a contract between the Presidents of Asociacion Zanjera de Daya, Inc. and the Asociacion Zanjera de Laud, Inc., [Name "A"] and [Name "B"] respectively, whereby the former, in consideration of the irrigation on the land of the former by the latter, said Asociacion Zanjera de Daya cedes and conveys another parcel of land to the said Asociacion Zanjera de Laud, Inc., for as long as the irrigation continues and lasts, and should any contingency happen whereby the said Asociacion Zanjera de Laud, Inc. cannot furnish the said land with water, the parcel of land herein above ceded and conveyed shall be returned and delivered back to the Asociacion Zanjera de Daya, Inc.

WITNESS MY HAND AND SEAL

[name]

Notary Public

Until December 31, 1970

Not. Doc. No. 48

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APPENDIX 4

A Historical Court Case

Documents and maps relating to the original contracts between zanjera officials and biang-ti-daga landowners are scarce and those that do exist are treated with some confidentiality. Although zanjera constitutions or charters are readily accessible, they contain no information about the extent or varieties of corporate property or the water-for-land arrangements with biang-ti-daga field owners. For legal purposes, the most important papers held by an atar zanjera are its original land-division maps, usually one showing the breakdown of lands into atar holdings and another outlining the biang-ti-daga blocks (Maps 3 and 4). Though I was shown three sets of block and parcel maps, the zanjeras were reluctant to have them duplicated or copied in any detail.[24] They are especially concerned that the information therein could, if it became widely known, result in litigation being brought against them for the return of atar lands by descendants of the original landowners.

Part of their concern is because many biang-ti-daga fields have changed hands numerous times, in consequence of bilateral inheritance and resale. The result is that the residual or primary rights to the corresponding atar areas, relinquished in the original exchange, are legally ambiguous. The zanjeras worry that, even under normal operating conditions, the ownership of these membership lands might be contested, however spurious the grounds, by one or even more parties. They simply feel that the less known about the specifics of the original land-for-water exchanges the better. Detailed as the block and parcel maps are, however, they provide little information other than what the physical division of lands entailed: overall size of the areas, the proportions and blocks held by each party, the names and

field locations of the original biang-ti-daga owners, sometimes a descriptive word or two about the lands ("swampy," "tree covered," etc.), and the shares and names of the first atar holders. They supply no details about the negotiations that took place between zanjeras and landowners, nor were the ones I saw updated to include altered ownership of atar shares or biang-ti-daga holdings.

From a quite different source, there undoubtedly exist relevant archival data in the eighteenth and nineteenth century colonial court records in Spain. Just as sometimes now happens, there were instances in the past when landowners legally contested a zanjera's right to atar lands. As the following case illustrates, when claims were made during the early years of a zanjera's existence, courts were able to obtain depositions from participants—zanjera leaders, landowners, and local officials—as to what the original agreements entailed over and above the bare outlines found in the block and parcel maps. Details from such a court case were brought to my attention and copies of the available documents were loaned to me by one of the descendants of a zanjera's founding leader. The case involved a court action initiated by biang-ti-daga owners in 1806 against two atar-based zanjeras: Zanjera Sales, one of the larger systems in Bacarra (today approximately 250 hectares), and Zanjera Deniega, the largest system of all (today approximately 975 hectares).

The court's deliberations, decisions, and supporting documentation were recorded in Spanish. Court writs and some evidence were subsequently translated into Ilocano and given to the contesting parties. These translations constitute probably no more than one-sixth of the entire court record, which, as evidenced in references to particular page numbers, was more than 370 pages long. The charges, countercharges, depositions, and court writs are sometimes more judicially cryptic than revealing. However, when considered in light of the data and interpretations presented here and elsewhere by Siy (1982), the activities described may be seen in their broader, ethnohistorical context. Unfortunately, the legal jargon made the transition from Spanish to Ilocano in its entirety. Much of the material—almost half of it—does little more than establish, then reestablish the persons and places involved in the litigation. Only a relatively small portion of the 68 pages of available documents that deal with the relationships between zanjeras and landowners is presented and commented on here.

The court case began with a petition to the provincial governor from the original landowners (the plaintiffs) in November 1806 (the exact day is illegible). In the petition, the owners asked that their lands, "grabbed and occupied" by the two zanjeras, be returned to them and

that the irrigation systems be taken over by the municipality. Though this is the first document in the case, court officials subsequently subpoenaed information and obtained depositions on the arrangements involved in the initial water-for-land exchanges. Consequently, the translated papers include documents and testimony about events that go back more than thirty years to when Zanjera Sales was established in 1775. At the conclusion of the case a final court writ is dated March 10, 1837; altogether, the papers encompass a period of more than sixty-two years.

Because much of the court proceedings and many of the documents were not included in the Ilocano translations, and even some of these have since been lost (e.g., several maps referred to by court clerks are missing), the materials are insufficient to provide a consistent and coherent history of what occurred over more than six decades. Groups and individuals appear and disappear with great irregularity and, although at the time the documents were undoubtedly adequate for the persons directly involved, the gaps in chronology are enormous. Nonetheless, from the information that is available, a reasonably clear picture emerges of what the contractual relationships and legal issues were between zanjeras and landowners during the late eighteenth and early nineteenth centuries.

A document signed in Vigan by the "Clerk of the Court" and dated July 12, 1815, refers to events in 1775, 1777, and 1791, noting that the "original maps" (apparently the block and parcel maps of Zanjera Sales) provided the basic information on the water-for-land agreement.

> The lands were still uncleared and uncultivated at the time of the opening of the irrigation canal in the year one thousand, seven hundred and seventy five. At that time the lands in question were uncultivated and idle. They [the zanjera and the landowners] divided the lands, as should be done in such cases. At the same time, Sales and his companions then constructed an irrigation ditch to channel water from a creek in Apaleng. This can be seen in the map [apparently Zanjera Sales' block and parcel map] shown in my presence by the said Sales.… In the year one thousand, seven hundred and seventy seven, the lands became uncultivated and idle for the reason that water coming from the creek was insufficient.

The document then notes that in 1791 a new ditch was constructed by Zanjera Sales, this one coming from the Bacarra-Vintar River.

> This irrigation ditch proved very beneficial to the formerly unproductive lands. It was agreed that no more nor less than half of the lands would be divided between the landowners and the owners of the irrigation ditch. It was further agreed upon that this decision should be strictly followed.

One of the arguments made by landowners in 1806 and restated in 1815 was that the lands within Zanjera Sales were already being cultivated by them when the system was developed. Though never actually specified in the documentation, it appears that it was partly because Sales experienced the hiatus between 1777 and 1791 that at least some landowners claimed that their lands were irrigated prior to the opening (or reopening) of the system in 1791. However, on the basis of the 1775 maps, plus a supporting statement by Zanjera Deniega, the Royal Court ruled in favor of the irrigation association. The court's conclusion was that

> on the basis of the evidence presented, I would state that the lands were given to Don Esteban Viernes de Sales and his companions by landowners when the fields in Day-as were first subdivided and distributed among [the members]. Don Manuel Parguian [a landowner] opposed this stating that the lands were under cultivation when the irrigation ditch of the said Sales association was opened. Deniega [i.e., the headman of Zanjera Deniega], together with his companions, has opposed the landowner's position saying that it is not proper that the lands be given back to the original landowners except for the little parcels that were cultivated prior to the opening of the irrigation canal.

The next event referred to also occurred in 1791 and was described in a letter dated May 14 and addressed to the Mayor of Bacarra, Don Pedro Crisologo, from the founding officers of Zanjera Deniega. At that time they were petitioning for official recognition of their irrigation system, the canals of which had already been constructed and which put them in conflict with Zanjera Sales.

> Most Honored Mayor:
> We, Juan Domingo, Antonio Deniega, Josef Colma and Lorenzo Ignacio, come to you on behalf of our one hundred thirty companions, all residents of the municipality of Bacarra. We all pay taxes to His Majesty, the King (may he be blessed). We come in all humility before His Majesty's court which you represent and we declare that:
> It is our desire to get the most from lands irrigated by water running in the ditch that we have constructed. This irrigation ditch was made with the permission of the mayor whom you succeeded, Captain Josef Buenaventura, last year—one thousand seven hundred and ninety.

Zanjera Deniega officials then described the land to be irrigated as extending both east and west of the town, an area that today includes Zanjera Deniega (in the east), a portion of the lands irrigated by Zan-

jera Sales (in the west), plus the lands of three smaller zanjeras that now draw water from Deniega's main canal. Overall, the area designated probably included some 2,000 to 3,000 hectares—two or three times larger than it is today—but its exact size and boundaries cannot be determined from available court records; nor, during my field research, were Zanjera Deniega's block and parcel maps available for comparison. In any event, the officers of Zanjera Deniega, "Juan Domingo and his associates," continued their petition,

> We therefore ask Your Honor to approve this. And, we desire also, if it is in accordance with the law, that it be proclaimed to the whole town so that those people who own lands which can be irrigated by our ditch will come to you. We further request that you ask these people whether or not they would like us to channel water to their lands. Also, may we be informed as to their response, which we ask that you include in your decision, as well as the names of all those who present themselves to you. This will serve as guidance and security for us, the builders of the irrigation system.

The mayor responded by public notice.

> On the same day, month and year … that I have received the petition … I hereby order it proclaimed to all landowners, heads of villages and to all towns people, in or out of this court, and, in order that more people may know of it, after the mass on Sunday. To all people who own farms within the service area of the said irrigation ditch I advise them to report to this court within six days after this proclamation has been made so that their wishes are known regarding the request of the petitioners. But if people fail to present themselves as herewith notified, their declarations will not be heard and whatever ruling is made it will have to be followed.

One week later, on May 22, 1791, the mayor affirmed that the "document has been duly proclaimed." Over the next six days 109 landowners indicated their wishes on receiving or not receiving water from the proposed irrigation system.

> I, the said mayor of the municipality of Bacarra, declare that from the twenty-third to the twenty-seventh of this month of May, the people responding to my proclamation came before me in court. They signified their willingness to agree to the construction of an irrigation system by Juan Domingo and his companions. They also reported that they own lands within the area of the irrigation system.

Following are 54 names, giving their residences and stating that they owned one or more fields within the designated area. However, 55

names are listed as being opposed to the irrigation, with the added comment by the mayor that these people

> do not want their farms to be serviced by the irrigation system because they do not have any place where they could plant crops other than rice. Other people explained that they will open and construct an irrigation system of their own; they intend to divert water from the river for irrigating their fields.

Included among the names of those opposed to the opening of Zanjera Deniega is that of Juan Sales [the son of Don Esteban Viernes de Sales] who, with his "companions" was in the process of reestablishing Zanjera Sales fourteen years after the problems it had in 1777. It is unquestionably Juan Sales and other officials of Zanjera Sales that are described as those who "will open and construct an irrigation system of their own." As these and later documents indicate, Zanjera Sales and Deniega were at variance over water rights and canal rights-of-way several times during the sixty-two-year period and, according to informants, at different times after that. However, the record also shows that they cooperatively opposed landowners when water-for-land exchanges were locally threatened. The various shifts from adversary to ally can readily be appreciated given the two major property concerns of zanjeras—rights to water and atar lands.

The court documents suggest the ongoing role of municipal officials in providing legal sanctions to the establishment of zanjeras. By 1775 the record shows that procedures for validating negotiations between zanjeras and landowners were already established. The legal recognition of the water-for-land exchanges was especially important for zanjeras since the existence of atar lands involved coincident forms of land tenure (i.e., the original owner's primary and the zanjera's secondary ownership of atar blocks). As is demonstrated later for this case, it was the combination of block and parcel maps and the recorded municipal sanctions of the water-for-land exchanges that eventually compelled the court to rule in favor of the zanjeras.

Despite the considerable involvement of government officials in providing the initial approbation, there is no indication that cooperative irrigation either originated with or was dominated by government officials, least of all any that could be called "Oriental despots." Irrigation in Ilocos Norte was neither a cause for nor a product of regional or state political systems. Since the earliest date given for a zanjera constitution in Bacarra was 1730, there may well be documents on earlier cases than the one presented here. Similarly, it may be possible to determine the

earliest date for the formal organization of atar-based zanjeras, though not necessarily the origins of communal irrigation in Ilocos Norte, which I feel would be represented by inkalian-based systems.

> I, the mayor of the town of Bacarra, on the twenty-fifth day of May, in the year one thousand, seven hundred and ninety-one, in the presence of my subordinates, who stand as my witness, hereby declare that the period indicated wherein people with lands are supposed to present themselves in court has lapsed. It is my duty to order, as I herewith order, that on the twenty-sixth of this month, I will go with the landlords, the heads of villages, including my subordinates who will bear witness for me, to inspect and examine the lands of the petitioners. The results of this inspection will be recorded in a document. This information will be conveyed to all concerned, including those who presented themselves as owners of land so that they cannot pretend that they were not informed.

On the same day a note from the mayor stated that the zanjera officials had been notified of the inspection and, due to the "urgency" of their request, on the following date he wrote,

> I started my inspection in an unirrigated and uncultivated place called "Baldias of Pedro Abraham," or the uncultivated land of Pedro Abraham. He is an old man past sixty years. As was brought out from questioning the landlords who went with me, the dense trees that grow on these lands have prevented the area from being fenced. As could be seen, a heavy growth of trees stood towards the west, south and east. I inspected the unirrigated lands of the people who presented themselves to me until I reached a placed called Narpayat at the limits of this municipality [the eastern boundary with Vintar]. I found out that it is true that the irrigation ditch opened by Juan Domingo and his companions can reach and irrigate the said uncultivated and unirrigated lands.

The mayor then described the overall irrigation area as being bordered on the northwest by the village of Cabaruan and on the south by the Bacarra-Vintar River. Within this area he mentioned the holdings of particular individuals, the condition of some of the lands, and whether or not the owners wished to be included within the irrigation system. The following selections from his notes reproduce only his comments about the relationships between landowners and the zanjera.

> Josef Bartolome said that he is willing to give one-half of his lands in exchange for irrigation, but that the remaining half be his to cultivate. He requested that in this way he could share in the benefits of the irrigation

> system. He also promised to pay the cost of maintaining the irrigation system [apparently an irrigation fee].
>
> I also saw an area of uncultivated land owned by Don Augustin Andres in which new paddies had been constructed just before the last harvest. Similarly, Alonzo Ballutag … asked that his land not be irrigated. Since he does not want irrigation, the said owner stated that he will not blame the builders of the irrigation system in the event that he is not able to raise crops on his land. However, in case he decides to plant rice [in rainfed fields], he will not have the right to use the irrigation water. Francisco Marcos and his companions also came forward and declared that they had no objection to having the irrigation ditch pass through their lands in case they are needed by the owners of the irrigation ditch. [Two others] declared their willingness to have the irrigation ditch pass through their lands … [as did] Domingo Raymundo … who declared that he was willing to give one-half of his lands to be used by the owners of the ditch in return for the delivery of water. But he stated that the other half remain his to cultivate and that he should be provided irrigation water for these lands. He promised to help by contributing to the maintenance of the irrigation system.… I inspected all of the lands from Corocor to Narpayat [a distance of approximately 6 kilometers].

Three days later, on May 29, the mayor announced the following:

> … as is my right, I hereby declare that … the cultivated and uncultivated lands of the petitioners who are in favor of being included in the irrigation system be cleared and cultivated. This is done with the hope that their life will be made easier and that they can provide money for their tax to the King and food for their children. And they [Juan Domingo and his companions] will not extend their irrigation system to the lands of those who objected to the passage of the irrigation system. However, the ditch can be opened to the unirrigated lands of those owners willing to share in the water system.… Juan Domingo and company are further instructed to allow all those landowners who accepted that their lands be irrigated to cultivate the remaining one-half of their lands. These landowners should not be denied the use of the irrigation water for their yearly rice plants. They [the irrigation organizers] should not ask for further expenses to use the water. However, if the owners of the land irrigated are willing to give some small fee for the use of water, it should be in accordance with this ruling.

On the first of June the irrigation organizers were read this notice and provided certified copies of it. A document written forty-six years later, on July 11, 1814, as part of the total evidence presented in support of the zanjeras' counter argument against the charges of the landown-

ers, records how the same man, the former mayor, was interviewed by authorities in Manila regarding the events of 1791:

> Don Pedro Crisologo, a landowner and village leader in the town of Bacarra, presented himself before me [the document is simply signed "Commissioner"]. I received his oath, executed in the name of God and the Holy Cross as required by law. He swore that he would tell the truth as he knew it. He was asked what he remembered regarding the contents of the documents under question and the declarations of the petitioners.
>
> He stated that when he was the mayor in 1791 it was the time that water was obtained from the river through the irrigation canal constructed by Antonio Deniega and his companions which watered the high, uncultivated lands. He further explained that since he saw the hardships of those who constructed the irrigation system, he thought it wise to ask the owners of the lands that were previously uncultivated to have their lands divided equally with the owners of the irrigation ditch. He said that the owners of the ditch should not get more than one-half of the lands irrigated by their canal.... They made no written contracts; they simply made a mutual agreement from their own free will.... He knew from experience that since they could divert water from the river, they channeled the two irrigation ditches opened by Antonio Deniega and his companions and the one made later by Don Juan Sales and his companions to the high, unirrigated lands within the municipality of Bacarra. This was an improvement for the whole town, even for those who had no lands.
>
> This sums up his declaration which he swore to. He certified that he was twenty-eight years old at the time. He signed with me, the Commissioner, including my witnesses.

In August, 1805, a complaint to the mayor of Bacarra was registered by Zanjera Deniega and an unspecified number of biang-ti-daga owners, apparently all from within Zanjera Sales, against "Juan Sales and his companions." Deniega's complaint was over the positioning of Sales's dam, the landowners' because of inadequate irrigation water. At this time the mayor withdrew from an official role in the matter because one of the petitioning landowners was his son. In his place he appointed a judge to act for him.

The record for 1805 refers to a detailed map, apparently compiled by the acting mayor, outlining the areas serviced by Zanjera Sales, Zanjera Deniega, and two or possibly more other irrigation associations, though only Zanjera Sales was being challenged at that time. The map is noted by the judge as being a part of all the documentation made available to all participants. Unfortunately, like all other maps referred to in the translations, it is now missing. Except for the acting mayor's description of a visit to the fields, nothing in his comments indicates how the

issues were to have been resolved. From subsequent events it appears that the two zanjeras settled their dispute, at least temporarily, in the following months. But clearly the problem of water shortages raised by the landowners remained unsolved.

The charges made by landowners to the provincial governor fifteen months later continued their complaint of inadequate water, which was at that time extended to include Deniega as well as Sales. This time, the landowners went much further and proposed the draconian solution that both irrigation systems should be operated by the municipality. Added to this was their request that all atar lands be returned to their original owners. Leading the signatories are the names of the mayor, Don Gregorio de la Cruz, and the "council of village chiefs." The letter, dated Novmeber 12, begins as if the petitioners were actually members of the zanjeras rather than biang-ti-daga landowners. However, the names, including the mayor's, are those [though not all of those] that agreed to give up lands for water in the 1791 exchange.

> Because of the scarcity of rain over the past four years our crops have failed, and we have still had to pay taxes and tribute to the King. We were earlier asked [apparently by zanjera officials] about extending one or two of the short ditches in our irrigation system. Against the will of some members, two ditches were subsequently opened east of the town by Mariano Reginaldo [maestro of Deniega] and Juan Sales [maestro of Sales]. The two ditches are too small, poorly constructed, too close together, and irrigate only a limited area.
>
> These ditches have also caused damage in that they often alter course and the surrounding lands are destroyed. Thus, because of the scarcity of water and the greediness of the owners of the ditches, the canals do us little good and we can only watch as our fields dry up. The unequal distribution of water has been a source of trouble, hatred and conflict which have been the cause of shame to our town. All of this is inimical to the common good, as well as peace and order in the town.
>
> Because of our common grievance and complaint, we request you order that the said irrigation systems be placed under the care, management and common use of the town so that all people may share its benefits. We feel that if the irrigation systems are improved and better managed that this will release us from our misery. In this way each person will share in the blessings given by our river. It will minimize jealousies, suspicions and recriminations, as well as our expenses, and the harm done to us up to this time. We also ask you to order the owners of the irrigation ditches to return the lands that they grabbed and occupied, for they simply used their superior force and the pretext that they would include us in their irrigation system. Each person should be left in the peaceful ownership of the land that he has done so much to clear and develop.

> This is why we entrust this case to the hands of justice and the care of all village heads. We further ask that all the decisions relating to the irrigation ditches under question be issued from the court and that these decisons be made known and enforced. Past village headmen should also bring forward any documents that they have to help clear up the issue in order to avoid conflict and trouble over the return of lands to their rightful owners. This will also bring about peace and order for the good of all.
>
> We do not doubt that this will be done if the said irrigation ditches remain in our care and this will assure the fair sharing of irrigation water. We ask that you regard us favorably and we have faith in your generosity and sense of justice. Please grant our petition. We assure you that we come without ill-will. [Signed by 35 landowners]

If accepted, of course, the petition would have resulted in the dissolution of the two zanjeras as property-owning, corporate groups. Despite the mayor having removed himself officially from the proceedings, his role as one of the litigants must have caused great concern for other zanjeras as well. A letter attacking the position of the thirty-five landowners was signed by the leaders of Deniega, Sales, and two other zanjeras (which were identified only by the names of their senior officers) and addressed to the "Acting Mayor Commissioner," apparently the judge appointed during the previous year's complaint. From a partly illegible document only a few of the zanjeras' comments can be discerned.

> Our irrigation systems have provided benefits for the people of Bacarra since the year one thousand, seven hundred and ninety-one. These ditches have watered the lands to the east of the town and northwest of the town all of the way to the seashore at the delta of the river. This was done at the request of the heads of the villages and our townmates so that they, too, could share in the services of our water system, as indeed they presently enjoy….
>
> We ask that you review the statements of the village headmen, for, if they do not deny it, they will realize how they deceived us in the statements that they have signed. Consequently, we ask that you verify what our townmates have stated and then make your recommendations to the village headmen … and please include, in the writs of instruction that you issue, the facts concerning the greed and cupidity of some village headmen.

No date appears on this letter but, given that it is in response to the landowners' petition, it must have followed within a few days. On November 28 the acting mayor made a public declaration and stated that a reading of the zanjeras' joint petition had been made on that day to an assembly including village leaders, landowners, and the zan-

jera officials. In reply to the zanjeras' claim that the canals had been built at their request, the landowners and village headmen maintained that the "content of the [zanjeras'] petition was not what was agreed upon." The only new information added in the acting mayor's covering statement to the governor of Ilocos Province was that the landowners, "wanted to open another irrigation system and construct another dam upstream of the two existing irrigation systems."

On December 13 the provincial governor issued an order in response to the petitions.

> Based on the facts as presented and because I believe that it will be for the good of all, the irrigation ditches at issue will be placed under the care of the municipality. But, it is advised that everyone remain on friendly terms with each other, and that a just settlement be reached regarding the lands that were owned and occupied before the construction of the ditches. With this goal in mind, six individuals, such people as hold the confidence of society, are appointed to look into the matter. All documents within the custody of the court regarding the disputed lands and irrigation systems are to be brought out. Also, the mayor of the municipality together with the village headmen are ordered to bring out all agreements that apply to this case and these should be followed. To avoid conflict and inequities, the care and management of the distribution of irrigation water will be placed in the hands of three judges.

Other than the governor's one reference to "six individuals … appointed to look into the matter" and the unclear, somewhat contradictory direction that "three judges" would also have something to do with the "management and distribution of irrigation water," no information is provided as to how the zanjeras were to be run. There is no indication in the record of atar lands being returned to the biang-ti-daga landowners, though subsequent documents noted the problem that the zanjeras had in repossessing land from the litigants. The problems that zanjeras had in repossessing at least some atar lands resulted in the prolongation of the court action until its conclusion in 1837.

The next document is dated March 3, 1810, and involves the ongoing dispute between Zanjera Sales and Zanjera Deniega over canal rights-of-way. A second issue in this writ refers to still another quarrel between Sales and a third, unnamed zanjera about whether it or Sales would obtain access rights to a new, undeveloped area and so gain additional atar lands. The governor, Antonio Zurbito, responded to the petitions:

> I, the said governor … do hereby declare that Mariano Reginaldo, Juan Domingo and Manuel Pablo [Zanjera Deniega officers], together with the

> opposing party, Juan Sales, came to my office today. They explained that they have already arrived at a mutual understanding regarding their petitions [documents not included in the Ilocano translations or else since lost]. Each now tills the land that is rightfully his own and neither occupies the land of the other. They have tried to find a way for both to operate their irrigation systems so that others [possibly referring to biang-ti-daga owners] cannot take the lands that each communally owns.
>
> The said Sales has the responsibility and the duty to construct a conduit where his canal passes over the irrigation ditch of the above mentioned Reginaldo, Domingo and Pablo. Sales is further obligated to pay them for the lands through which his ditch passes with lands of corresponding size and quality. Reginaldo and his companions will further retain the ownership to these lands in spite of the passage of the ditch of Sales. Sales will also be required to fix the ditch of Reginaldo in the event that the construction of his conduit causes any damage to the aforementioned ditch.

In dismissing the second matter raised by Zanjera Sales, the governor continued,

> I have witnessed the declarations of the two contending parties and I have gone over the contents of the documents pertinent to this case. I have also read their past agreements as contained in these documents, which I now confirm. I feel it is my duty and obligation to say that there is no merit whatsoever in the petition of Juan Sales and his companions. Consequently, I hereby order that the said Sales and his companions should not hinder the opposing party in their rightful control and use of the lands under contention.

Apparently because the case between the landowners and the zanjeras was still pending, the governor rather than municipal officials dealt directly with matters involving zanjeras Deniega and Sales. Whatever the case, the document shows that both Deniega and Sales were still functioning and relatively autonomous systems, negotiating with each other for canal routes, exchanging lands, and (in the case of Sales) competing with still another zanjera for rights to irrigate new atar and biang-ti-daga blocks. Nothing in this suggests that the earlier appointed court officials were actually directing the operations of Sales and Deniega, much less that the zanjeras had been turned over to local authorities. Neither is there any mention of the disposition of the contested atar lands.[25]

Today, when a zanjera's canals traverse the lands of other zanjeras or private landowners, the zanjera responsible must compensate for the lands affected or lost. As shown in Figure 4, the canals of zanjeras in the

central part of the valley frequently cross the lands of neighboring and sometimes more distant systems. Compensations can include an exchange of lands (e.g., those referred to in the governor's directive), sharing a water source or delivery system, extra labor, or even money. Where land exchange is involved it may include a trade-off of atar or komon lands—lands that the zanjeras do not own outright.[26]

The first legal decision rendered in the case between the landowners and zanjeras Deniega and Sales was made on July 11, 1814 at the Royal Court in Manila. The translation is signed by the "Regent," Martin Ayala. Along with the writ is included the deposition of former mayor Don Crisologo Mateo (referred to earlier), in which he described the original agreements between zanjeras and landowners. The court's decision follows the submission of a counter petition by Zanjera Deniega, restating its argument against the landowners. The petition, however, is not included in the documentation.

> This petition [of Zanjera Deniega] concerns the retention of the lands which they had gained in 1791 when they provided water to the landowners in exchange for land. The irrigation system was the result of hard work and the expenses that they endured. The canals that they built were strong and well constructed, allowing the passage of water to irrigate fields in Callaguip, Baranio, Barranco and, as they will eventually, adjacent lands that are not as yet irrigated. Their original agreement with the landowners was made in the presence of the then mayor, Don Crisologo Mateo, who approved the construction.…
>
> The case has now reached this court on the petition of Deniega and his companions. It has been verified that the irrigation ditches have enhanced the welfare of the community. In his capacity as governor of Ilocos Province, Don Alonzo Corrales will implement this court's decree. In so doing he will follow the dictates and interests of peace and justice. He will determine the distribution of lands owned by both parties before the construction of the said irrigation ditches and after the fields were cleared. He will designate six trusted people from among the landowners and residents of the community and they will bring forth copies of all documents and agreements relating to the case. The governor will also direct the mayor to have the owners of the ditches present all the documents that they have. To avoid conflict during this period, the fair distribution of the water will be entrusted to the judges of the community. The original case against Deniega and his companions will be dismissed. It will then be explained to both parties that they ought to keep at peace with each other and that they should follow the original agreements that they made when the ditches were first constructed. This is the decision of this court which both parties have now acknowledged.

Five months later, at the request of the zanjeras and as a consequence of the landowners' apparent attempts to contravene the court order, a second writ was issued instructing the provincial governor to take direct action.

> This is done in the Royal Court in Manila, on the nineteenth of December, one thousand, eight hundred and fourteen. The regents and ministers have witnessed the new petition presented by Antonio Deniega and his companions again asking that the lands previously divided be returned to them so that they can cultivate the fields as their reward for opening two irrigation ditches that brought water to lands that were not then irrigated. The Governor [of Ilocos Province] has explained that the two contending parties must comply with the agreements made at the time when the ditch was constructed. Because this was apparently unclear, the decision was not fully carried out.

In the following month, on January 17, 1815, the governor appointed his representative to carry out the court order.

> Having received the two volumes of documents relating [to this case], I, Don Francisco Bringgas, the Governor and Captain of War in the Province of the Ilocos, declare that Don Gregorio Vicente de los Angeles is commissioned to investigate the matters under question … and he will see to it that there is compliance to the court's decision. He will report back to me on their compliance with the final order of the court. This decision has been conveyed to Sales and Deniega so that they too understand.

Within ten days the governor's representative, Don Vicente, replied with his description of the action taken in Bacarra.

> Most Honorable Governor:
> The original petitioners [the zanjeras] lodged their claim against [the landowners] concerning the lands listed in the first document and found on page 314. The places where the fields under question are located are those recognized by the various commissions that were previously directed by the High Court to look into this matter. These investigations confirmed the setting aside and distribution of the lands [to the zanjeras]. This was done in accordance with the original agreement accepted by the landowners whose lands benefitted from the irrigation ditches opened by Deniega, Sales and their respective companions. This agreement was confirmed by the High Court, the Royal Court which resulted in the two royal decisions on July 10th and 11th of last year [1814] ordering their further investigation.

> … The decisions of the court have been carried out as required, this year, 1815, and the fields involved have been properly designated and divided in order that the rightful owners can reap the benefits from their own land. The rights to the land have been given to the proper owners as stipulated on page 259 of the court's decision. And, although Don Manuel Parguian and the brothers Reyes [landowners], who are opposed to Sales and Deniega, objected to the distribution and the granting of ownership over the lands in Dayas, the commission nonetheless carried out its plan. We have determined that, in accordance with the agreements between those who dug the irrigation ditch and those who owned the lands, that all of the lands in the said place have truly shared the use of the water. As soon as the commission completed its investigation, we placed survey markers that recognize the ownership of each party's land. Don Manuel Parguian [one of the landowners] and Don Esteban Vicente de Sales [one of the zanjera officials] have overseen the brotherly and fair distribution of the lands in Day-as and the other lands as described on page 247. The announcement of what was done was made to the parties involved in this land dispute, including their various companions on this twenty-seventh day of January, 1815.

Without explanation, though quite obviously because at least some landowners continued to balk the original court order, the commissioner had to make a return visit to Bacarra in July of the same year. At that time, the court's decision and directives were explained to the two contending parties. The first of two letters provides greater detail on the court's understanding and interpretation of the original contractual arrangements between zanjeras and landowners. In the first of these reports, written to the governor on July 12, 1815, the commissioner wrote:

> On the basis of the evidence presented to me, I would state that the lands were in fact given to Don Esteban Viernes de Sales and his companions by the landowners when the fields in Day-as were first subdivided and distributed. Don Manuel Parguian [a landowner] has opposed this, stating that the lands under question were already under cultivation when the irrigation ditch of the said Sales was opened. Deniega, together with his companions, opposed the landowner's position saying that it was not proper that the lands be kept by the landowners except for the little parcels that were already cultivated prior to the opening of the irrigation canal.
>
> Although the landowners have opposed this position, ownership has now been given to the petitioners, the irrigation [associations] of Deniega and Sales, in accordance with the decision of the court. The giving of these lands to the irrigation ditch owners, Deniega and Sales, is in accordance with the original agreement made in the presence of the mayor [who served] in the year one thousand, seven hundred and ninety one,

and whose deputation is found on page 17 of the court record. This is why I have ordered the division of these lands into two equal parts so as to compensate for the hardships incurred in constructing the irrigation dam and canal, which proved beneficial to all the contested lands. In opposition, the said Parguian [landowner] cites that when Governor Don Antonio Zurbito was in office he awarded the lands to them and that these lands should remain in the ownership of himself and his companions as stated in the decision of Governor Zurbit.

But the said Sales and his companions have reasoned that the lands in question were the same fields as those given to them for opening the irrigation system in compensation for the labor and expense of reconstructing the irrigation canal. In addition, the lands were still uncleared and uncultivated at the time of the opening of the irrigation canal in the year one thousand, seven hundred and seventy-five. At that time the lands in question were still uncleared and uncultivated and idle. They [the zanjeras and landowners] divided the lands, as it should be in such cases. Sales and his companions then constructed an irrigation ditch to channel water from a creek in Apaleng. This can be seen in the map [apparently Zanjera Sales' block and parcel map] shown in my presence by the said Sales as indicated by the letter D.

However, in the year one thousand, seven hundred and seventy-seven, the lands became uncultivated and idle for the reason that the water coming from the creek was insufficient. So, in the year one thousand, seven hundred and ninety-one, Don Juan Fruto de Sales, father of the said Don Esteban, constructed another irrigation canal. This can be seen on the map marked by the letter P. This irrigation ditch proved very beneficial to the formerly unproductive lands. It was agreed that no more nor less than half of the lands would be divided between the landowners and the owners of the irrigation ditch. It was further agreed upon that this decision should be strictly followed. Just in case the said Parguian has objections, he can petition elsewhere but it will not violate the ownership of the divided lands. Thus, enforcement of the decision here is entrusted in law. Just in case the said Parguian and his companions do not comply with the decision, the mayor can insist on the return of the lands to the ditch owners and he will immediately report to the court anyone who disobeys.

A second letter described a follow-up, final visit by the commissioner, along with the mayor, several undesignated "companions" of the commissioner, the plaintiffs (then the zanjeras), and the defendants to the field sites on July 26. A comment by the commissioner indicates his irritation over the fact that the matter was still unsettled and not yet agreed to by some of the landowners.

In the places called Corocor, Day-as, Callaguip, Baranio, Bangsarit, Tubbao, Dalipaoen, Cadanglaan, and Iguid ti Ili, on the twenty sixth of

> the said month and year, I, the said commissioner, supported by my conpanions and witnesses, on the presentation of the present mayor [not named] and the [landowners] held and led the hands of Antonio Deniega and Don Esteban Viernes de Sales, who represent their companions. And, in the name of the late King (God bless him) ownership of the lands and the irrigation canals was returned to them, in accordance with the decision of the law and the written order that allows it. As demonstration of this I paused at that moment and threw a clod of dirt and tried to impress upon all present that the ownership of all contested lands was returned! It was also ordered that no person shall hinder that ownership and no one will contest or trouble that ownership under penalty of law. At no time will their respective ownerships be abrogated unless it is accomplished in terms of the provisions of this document. This terminates the case and I sign, along with the mayor who came with me, as well as all those with knowledge of this case and my witnesses: [the names of the landowners and the zanjera officials follow].

This would seem to have settled the issue but, sixteen years later, on November 28, 1831, as shown in a writ from the Royal Court in Manila (and signed only "Alvares") the issue had again been raised, the result of one or more unrecorded petitions from Zanjera Deniega. Unfortunately, neither the amounts of land affected nor the number of obstructionist landowners are stated. However, even without documentation, it seems safe to assume that smaller increments of land still held or claimed by a few of the landowners were at issue. It is impossible to imagine that the two zanjeras would or could have functioned without most of the atar lands being theirs to use. Whatever the case, Don Manuel Parguian and "his companions" had still not fully complied with the repeated directives of the court. In his letter Alvares also commented on what had apparently been the major problem with the original mission carried out by the governor's commissioner.

> Governor:
> … the decision and order of the High Court was still not implemented at that time [June 1815] because of the fact that the commissioner did not make use of his authority. Unfortunately, Don Gregorio Vicente de los Angeles, who was sent by the [then] Governor to subdivide the lands, delegated his power and responsibility with the result that nothing was done except to set the landmarkers at those places mentioned…. It is your duty to order and to make the petitioners [Parguian and "his companions"] understand that their case has lapsed based upon the decisions of the Royal Court of these islands. Such decisions must be given all respect and compliance. The decision of the Royal Court certified the agreement between the owners of the irrigation systems and the owners of the lands that were irrigated.

On November 5 of the following year another letter from the Royal Court to the governor of Ilocos Norte (again signed by "Alvares") outlined in greater detail specific sections from the court record where the landowners had previously indicated their agreement to comply with the original division of lands. Perhaps in part clarifying why some of the atar lands remained in the hands of the landowners, Alvares explained that the governor's appointed commission in 1815 had merely divided the lands in equal size portions and had not taken into consideration differences in the quality of the lands. He urged that these questions be quickly settled by a "short and speedy investigation" but went on to stress to the governor that nothing would be allowed to contravene the central aim of the court's decision supporting the overall equitable division of lands that had taken place between zanjeras and landowners at the times when the two irrigation systems were established in 1775 and 1791.

The final document in the long record of translated materials is dated five years later—March 10, 1837. In response to still one more petition from one or both of the zanjeras, which like many others was not included among the translated papers, the Royal Court sent down its final word on the matter. The issue (or perhaps issues) brought forward in the petition by the zanjeras was not referred to in the note, which (as is shown in the following comments from Alvares to the governor) was about a new matter. Whatever the issue was, it appears that the zanjeras hoped to have it considered under the earlier ruling. However, Alvares states that the "present conflict" could not be considered on the basis of the earlier decision.

> Governor:
> Since the aforementioned case is already completed and the decisions implemented, the assessor feels that it is not proper that the case be reopened. Consequently, he urges you to issue a prompt order restating the directives referred to on pages 369 and 370 of the court's decision. The petitioners still have all the rights provided by law to express their grievances under the terms of that case which may derive from the harm that they suffered as a consequence of earlier delays in implementing the law—this being the result of your predecessor's failure to act effectively. Nonetheless, the present conflict must be treated separately and must not be confused with the earlier issue which has been the case of these voluminous records.

This final document formally signified the end of the thirty-one-year-old court case while separating it from a new and unspecified conflict. No further details of the apparently ongoing disputes between the two zanjeras and their biang-ti-daga landowners were found or turned over

to me by the two zanjeras. One other zanjera provided me with a much briefer record (some ten pages) of a court case in 1856 concerning a dispute over the placement of a privately owned dam that the zanjeras considered to have been placed too close to their own on the lower reaches of a tributary stream. In that dispute no lands were being contested and the court simply considered the issue on the basis of proprietary water rights and ruled in favor of the zanjera.

A zanjera in the adjacent municipality of Vintar made available to me a copy of its "official history," which was little more than a long series of the leaders' names and a few one-sentence descriptions of major developments. Three comments referred to disputes with landowners (though they did not indicate whether or not court trials were involved) about rights to water and atar lands. Unfortunately, court records were not available nor did the zanjera officers know the details of these earlier conflicts.

A search for court records held by zanjeras and landowners would undoubtedly provide similar examples of past disputes regarding land and water, though zanjeras might well be reluctant to turn over such documentation. Probably the only records available in Ilocos Norte are the partial and, consequently, inadequate Ilocano translations. The complete record of events will most likely be found only in Spanish colonial archives. An ethnohistorical study based on the background of materials provided here and by Siy (1982) would provide an important comparative and chronological overview of the initial contractual and subsequent competitive relationships among zanjeras, landowners, and government officials.

NOTES

1. The following ethnographic notes are derived from field notes and, somewhat less reliably, the memory of particular events. In all cases the names used for informants are pseudonyms. In about half of the examples, the information has not appeared before although it may have been included as a part of the data for earlier publications (e.g., in sections on neighbor relationships, politics, farming practices, etc.). For me, these examples, and many more not described, represent some of the best moments, and one or two of the not so great moments, of having done fieldwork in Ilocos Norte and Isabela.

2. The term "Kalinga," the name of a mountain tribal people, is used in this context to equate with "savage," and is applied to all non-Christian, mountain peoples. The people referred to by the informant were undoubtedly non-Christian Gaddang with whom the Ilocanos were displacing from their traditional tribal areas.

3. Figures provided by the Provincial Irrigation Office (PIO) of Ilocos Norte listed 665 communal irrigation associations for the province. For what are surely only administrative reasons, the PIO counts irrigation groups only on the number of water sources involved, although frequently two, three, or more associations share a single dam. For instance, in the municipality of Bacarra the PIO lists 32 irrigation groups, yet by both my own count and by figures provided by the municipal mayor's office, there are 47 in all. An even greater discrepancy is found in the adjacent municipality of Vintar where provincial figures list 58, and the municipal offices list a total of 118. In Vintar, many of these systems are found along small, interior mountain streams and some are listed by the Vintar Office of the Mayor as being two hectares or less, with the smallest one noted as 0.4 hectare. On the basis of the PIO's accounting procedures and the contrasting larger numbers furnished by municipal offices, a reasonable guess would be that for the province of Ilocos

Norte as a whole there are 850–950 communal systems. The actual number of associations in any given area is complicated by other factors, all of which are discussed in the following sections.

4. Griffith's (1978) work discussed a barrio in the southern portion of Ilocos Norte which subsequently became a municipality and which, as both barrio and municipio, held an annual fiesta. In general, however, villages do not hold fiestas since, in a communal sense, there is little to celebrate or recognize.

5. Ilocanos returning from the United States after years of work, usually as agricultural laborers in Hawaii or California, may offer money, often large amounts of money, as part or all of the sabong negotiations. I have discussed this situation in my earlier work (Lewis 1971:26–28) but a much fuller discussion can be found in Griffiths (1978).

6. In both areas the sabong is important to the upper class. Given that wealthy families show a greater corporate concern with family estates, plus the complicating conditions relating to maintaining prestige and, very often, obtaining and maintaining political power, the exact functions and configurations appear to be different for them than for peasant families. In the southern Ilocos region (in Pangasinan) the sabong is, in ritual form at least, important in premarital arrangements but, as in Isabela, it lacks the significance that is associated with land inheritance in Ilocos Norte (James N. Anderson, personal communication). Griffiths (1976, 1978) reports an almost identical sabong pattern for the Badoc area of southern Ilocos Norte to what I have found for Bacarra.

7. In 1978 I was asked by a banker in Laoag if I could identify, at least to say whether it was an obvious fake, a Canadian $1,000 bill. After I commented that it appeared genuine to me, while admitting that it was the first I had ever seen, he said that it was brought in by a woman whose daughter, a nurse in Toronto, had sent it to her enclosed in a Christmas card! Such casual transfers of money are apparently not uncommon (if probably not in such large amounts or denominations) though considerable care has to be taken not to alert postal employees.

8. Zanjera [pronounced *san-hera* or *sang-hera* ("z" is not an Ilocano consonant)] was rendered as "zangjera" in my earlier work (1971). This was the unfortunate consequence of using the spelling that appeared in the charter of the one irrigation group most intensively studied in 1963, and the one most nearly within the physical limits of Buyon. Given that the central focus of my earlier study was on the barrio as a social entity plus the anthropological myopia for seeing our own cases as archetypes for larger cultural domains, "zangjera" became my term for zanjeras in general.

9. A comprehensive and very important study of zanjeras in the Bacarra-Vintar River Valley was completed by Robert Y. Siy in 1982. His work concerns nine zanjeras that range in size from just over 14 hectares to 140 hectares; together they make up a small confederation that irrigated 505 hectares. As a student of management engineering and rural planning, Dr. Siy is concerned with systems evaluation and the potential applications that his study has for

cooperative irrigation in developing areas. Though our descriptive materials overlap, his study provides important quantitative data on conditions relating to water delivery whereas mine concentrates on questions of comparative corporate organization.

10. Prior to the introduction of the new high-yield varieties, farmers obtained only two crops per year, a pattern I have previously described (Lewis 1971:49–65). The newer, so-called miracle rice types grow in a much shorter period (120 days) than do the traditional varieties (180–200 days), thus permitting the extra or third crop. Siy (1982) reports that peanuts are the most important third crop for nine zanjeras along the northern edge of the valley.

11. This pattern of elongated fields with equal access to canals is found in other areas of the Philippines where irrigation and land distribution have gone hand-in-hand. The large rice haciendas of central Luzon are an example where, with the construction of large irrigation systems, landlords were in a position to distribute land to tenants in the same way (Brian Fegan, personal communication). Similar field types are also shown for north central Sri Lanka by Leach (1961).

12. The largest zanjera in Bacarra has 8 atar blocks, 4 deriving from the initial land exchange agreements, and the remaining 4 from subsequent expansions to the system. According to what I was told, no single individual has land in all eight blocks, but individual holdings are widely scattered and, collectively, members have interests and responsibilities that are system-wide.

13. Like the names of other zanjeras referred to in this work, “Danao” is a pseudonym.

14. In some of their records and often in conversation the federation is called the Federation of Communal Irrigation Societies of Bacarra. Both names are used but the difference apparently has no significance.

15. When asked about similar situations where an existing zanjera might have to negotiate with another zanjera for a new water source, I was told that the atar lands would be protected in the contractual agreement made between the two groups involving reciprocal obligations. However, as far as I could determine from actual agreements, the “protection” is only implied at most. Zanjeras seem to view reciprocal arrangements with other zanjeras as simply another aspect of their obtaining water from any other source. No such agreements, much less reciprocity, are involved when a zanjera seeks water from a government source. In any event, I could find no examples of where the original landowners legally challenged a zanjera when it began deriving water from another zanjera.

16. The term *Hawaiiano* applies to Ilocanos who have lived or now live in the State of Hawaii, though it is also applied to those living on the U.S. mainland as well.

17. The issue is not strictly between working and nonworking members since I observed that in at least two zanjeras with prohibitions against landlords voting, the rule was not strictly enforced. Questioning revealed that the landlords in these instances were former working members who, largely due

to age, had become peasant landlords. The stated concerns about landlord influence are more specifically against upper-or middle-class landlords—true outsiders.

18. The idea of St. Elmo's fire and the association with optical illusions and water is obvious, as is the Ilocanization of the Spanish *San Elmo.*

19. Two important works are in advanced stages of preparation, one the study of a lowland system by Romana P. de los Reyes and the other an upland system by June Prill-Brett.

20. De los Reyes also notes that association officials are exempted from irrigation fees and that they receive an honorarium in the form of rice, a small part of the total collected in fees. However, these exemptions are distinct from those afforded the "special members." By contrast, whereas zanjera officials in Bacarra are also relieved of some or all member obligations, I know of no examples involving the inkalian-based systems with the kind of "special members" described for Silag-Butir.

21. Unfortunately Bacdayan does not indicate the number of hectares watered by the system. On the basis of the data provided by de los Reyes, however, for the sixteen systems which she and her colleagues examined (the averages for most individual Bontok systems being reported as 500–1,000 square meters, with some larger and others smaller) it is safe to assume that the member-to-land ratio is consistently small, with 1,000 square meters being a generous estimate. The system in Tanowong is not more than 100 hectares, and probably smaller.

22. Summary discussions of the concept of corporation and problems of social organization and descent can be found in Brown (1974, 1976). For specific references to works on communities as corporate groups the reader should start with Rambo (1977).

23. As a counterpoint to farmer networks of sociability, wealthier people in Isabela are much more concerned with property and property relationships. Certainly, upper-class people are much engaged with questions of inheritance, descent, and marriage. Likewise, in irrigation associations in lowland areas other than Ilocos Norte, the upper-class landowners are frequently the movers and shakers. As with farmers in Ilocos Norte, the concern with questions of property is rather less than with those of reciprocity. The small-farm owners of Ilocos Norte and wealthy people in general share a common corporate focus, the one because of greater wealth and the other because it is so limited.

24. Siy (1982:45,52) was shown such maps by one of the zanjeras he studied. The maps that appear here are simply modeled after his and the ones I was shown, and the names of the zanjeras and landowners are fictitious.

25. It is possible that some (and it is even conceivable that all) of the atar lands reverted to the landowners while the membership kept the systems operational *if* there were also large sections of inkalian land owned by zanjera members. This would have permitted the members to continue to operate the systems while keeping up efforts to regain the disputed atar lands. Today Zanjeras Deniega and Sales both contain fairly large sections of inkalian land (perhaps as much as thirty percent of each), a fairly good indication that most

such fields existed from the start. Unfortunately, there is no information in the documents to indicate the amounts or even presence of member-owned lands at that time.

26. The comments by the governor concerning “the lands that each communally owns” and that Deniega would “retain the ownership of the lands in question” suggest that atar and/or komon lands were involved. This may have been part of the zanjeras’ “mutual understanding” rather than a full appreciation of zanjera property relations on the part of the provincial governor.

GLOSSARY

Ading Younger sibling.

Ammuyo Reciprocal exchange of labor in agriculture.

Anito Local spirit.

Arayat Social savings association.

Atar Lands obtained in exchange for water and corporately controlled by zanjeras. The landowners' retained share or shares are called biang ti daga.

Balay ti zanjera The meeting house or, literally, the home of the zanjera. Most frequently referred to by the Spanish term of kamarine.

Barrangay The official government term now used for village and substituted for the historically traditional Spanish term barrio.

Basbas A form of ritual held between two zanjeras that jointly share a dam, canal, or other irrigation feature.

Basi Wine made from fermented sugarcane juice.

Biang ti daga Portion of land remaining to the original landowners after an exchange of water for land with zanjeras, the zanjera's portion being atar land. Literally translated as "the business of the land".

Bingay An individual member's portion of the total atar lands held by a zanjera.

Gorospe A local variety of rice developed by farmers from one of the

new, high-yield types developed by the International Rice Research Institute.

Gunglo Groups or “gangs” of 25–30 and sometimes more members that make up the larger group.

Inkalian Lands owned outright by individual members; some zanjeras are composed entirely of member-owned lands.

Inkalupo Individuals or groups of individuals that buy water from zanjeras for one-tenth of any one or more crops. Also referred to as razco.

Kaaroba Neighbor.

Kali Primary or main canal.

Kamarine Meeting house of a zanjera. Also called balay ti zanjera.

Kantura Chanter who sings the mass for deceased members of a zanjera during part of the annual pamisa ritual.

Karkama Alternate term for masasarrat or ghost.

Komon Communal property or land, after the Spanish comun.

Lechon Whole roasted pig.

Manang Older sister.

Manong Older brother.

Masasarrat The ghosts of founding members. Sometimes referred to as karkama.

Nana Mother.

Paayos Irrigation ritual held in Ilocos Sur.

Padul Rock and cement or concrete dam, usually located on small streams or at hillside springs.

Pagbibinoludan Watergate which is used to place water from higher canal into lower during times of emergency.

Paglakay An honorarium provided zanjera officers, usually in the form of plots of land given them to use for term of office.

Pamisa From the Spanish misa or mass, a ritual involving prayers for the dead. A family ritual, it is also the major ceremony employed by zanjeras.

Panglagip An alternate term for umras that involves an offering of food for deceased members of a family or zanjera.

Panglakayen The leader of a work group or gunglo who also serves as a member of a zanjera's "board of directors."

Pangolo President of a zanjera. The Spanish term maestro is more commonly used.

Pasayak Alternate Ilocano term for zanjera or irrigation society.

Puttot Rock and bamboo weir placed in main channels of rivers.

Sabong Male land dowry.

Sanselmo From the Spanish San Elmo, a spirit or anito associated with water.

Sapayot A water barrier and, also, an auxiliary zanjera that draws its water from the overflow of a parent system.

Tagnawa Communal assistance provided by kin, friends, and neighbors.

Tata Father.

Umras From the Spanish honras, or obsequy for the dead, an offering to the spirits of the dead made at a pamisa.

Zanjera From the Spanish zanja or ditch, an irrigation society; the Ilocano term pasayak is also, but less frequently, used.

Zanjero Individual member of a zanjera.

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