

Hi Bob,

The AAA paper hopefully
will be written in a month or
so. Here is a related paper on
migrant - herding.

regards.

David

11/10/94
WORKSHOP IN POLITICAL THEORY
AND POLICY ANALYSIS
513 NORTH PARK
INDIANA UNIVERSITY
BLOOMINGTON, IN 47408-3895 U.S.A.
Reprint Files

AN OPEN AND SHUT CASE: COMMON FIELDS AND ENCLOSURES IN A VILLAGE
IN THE COLCA VALLEY OF SOUTHERN PERU

David Guillet ~~✗~~

University of Missouri-Kansas City

Paper prepared for the Symposium on Indigenous High Andean
Pastoralism, 45th International Congress of Americanists, Bogota,
Colombia, 1-6 July 1985

One of the types of agrarian change in the Andes gaining attention is the closure of communally controlled open fields¹. This change is significant because it elicits comparisons with the trajectory of the English open fields about which there is a voluminous and rich historical literature. The English open field case has been a laboratory for the elaboration and testing of theories of agrarian change, in particular the impact of capitalism on a feudal mode of production. While the English open fields were almost entirely enclosed by 1870 (Turner 1984: 12), the Andean common field systems have been relatively successful in resisting enclosure.

Most descriptions of Andean common fields have been based on sectorial-fallowing (Custred and Orlove 1974; Orlove 1979; Guillet 1978, 1981, 1984; Godoy 1984, n.d.). In this regime cultivable land is divided up into sectors. Each year some sectors are planted and others left to fallow. Cultivated sectors are planted in a sequence, usually potatoes - native chenopods/native tubers - cereals and legumes. While in fallow, sectors are open to communal grazing. In a survey of sectorial fallowing systems, a mean of 7 to 8 fields and 3 to 4 years of fallow was reported for the sample (Godoy 1984:14).

Common fields in conjunction with irrigation are rather rare, having been recorded in Chipaya, Bolivia and Huarochiri, Peru (Preston 1970; Gelles 1984). An association of common fields with agricultural terraces is also unusual (Custred and Orlove 1974; Camino *et. al.* 1981). In general, irrigation and terracing are indicative of intensive agricultural regimes associated in turn with private control over land (Guillet 1981:144). In the irrigated terrace system to be described in this paper common fields with collective grazing have been an important component. Beginning in the early 1960's, the system moved away from common grazing fields in a manner which invites comparison with the trajectory of Andean sectorial fallowing regimes and British open fields. This paper is intended as a contribution to the ethnography of Andean common fields and to the comparative history of enclosure movements.

IRRIGATED TERRACE AGRO-PASTORALISM IN LARI

The village which is the subject of this study is Lari, a district capital in Cailloma Province of Arequipa Department in Southern Peru. Lari is located in the Colca valley known for extensive areas of agricultural terraces many of which date to before the Incan Conquest under Mayta Capac. These terraces allow the irrigated agriculture which, together with the keeping of sheep and cattle in the valley and llamas and alpacas in the upper puna provide the basis for a productive agro-pastoral economy. Aside from the changes in the last 30 years which will be touched on in this study, the overall ecological adaptation of Lareños seems to have been relatively stable since the Spanish Conquest.

The village sits at 3330 m. in altitude on a shelf of volcanic soil overlooking an inner valley which descends to the Colca river. Behind the village, slopes rise up to the summits of

snow capped peaks. On the other side of these peaks village land stretches across a high, undulating puna to the outskirts of Cailloma. Terraces line the slopes above and below the village. Small pampas are found on the shelf and dispersed randomly throughout the cultivated zone. Interspersed throughout this landscape are outcroppings of uncultivable land.

Approximately 8550 hectares, or 90 percent of the usable land of the village, is in natural pastures on the slopes and undulating plateau above Lari. This land is exploited by herders living in dispersed estancias. Their lives revolve around the rotation of animals from astaña to astaña as bunch grasses grow and are grazed on. While politically, the puna herders belong to the district of Lari, their social organization reflects a pastoral adaptation, with a stress on relations of descent. The puna is divided by moiety into Hurinsaya and Hanansaya. Each moiety has a shrine, capilla, and a school and cementary, shared by members of both moieties, is located in Hanansaya. In many respects the moiety division of the herding zone "mirrors" the social organization of the village proper.

Residents of the village nucleus own agricultural plots scattered throughout the cultivated area in a belt between the Colca river bottom at 3200 m. and the current upper limit of agriculture, at approximately 3600 m. Virtually all plots are irrigated. The majority are located on rock faced terraces. While yoked oxen are capable of plowing most plots, hand implements are necessary to work terraces too narrow for animal traction. Production is oriented to the subsistence cultivation of maize, followed in importance by barley and broadbeans and a host of lesser cultigens.

The system of irrigation which feeds chacras is quite complex (Guillet n.d.). Water is brought down from sources in the puna through three major canals where it enters numerous feeder and branch canals. These canals are used to irrigate during the day and to fill reservoirs at night for additional distribution the next day. Because canals are open and unlined, much water is lost in this arid climate to evaporation and filtration.

Once water leaves a main canal and enters cultivated land, an offtake, called a toma, diverts it to an irrigation sector. The irrigation sector consists of a named group of contiguous plots within which water obtained from an offtake of a major canal is distributed. There are fourteen sectors carved out of the land irrigated by the three major canals. Each week users from each sector meet together with a water judge, regidor, who assigns water shares. The acephalous tendency of water distribution through autonomous sectors is counterbalanced by an irrigation committee made up of regidores and an elected governing board. It meets every two weeks during the irrigation months and sets principles which govern allocation of water in the reginas.

Cultivated plots, chacras, can be located where soil of adequate depth and quality and sufficient water are available at suitable altitude. Virtually all chacras are irrigated. A canchon is an irrigated, fenced, agricultural plot adjacent to a house. It may be used either as a corral to hold animals at night or for an intensively cultivated early, mishka, crop of broadbeans and

barley. Huertas are intensively cultivated kitchen gardens. Located within canchones they are used for the cultivation of herbs and vegetables and for experimentation with new crops and techniques. Land can also be in fallow, puruma. In traditional maize cultivation a plot was planted to maize for 3 to 10 years, depending on soil quality, and then fallowed for 3-4 years. There are approximately 805 hectares of land in agricultural use in the village, or 8.8 percent of the usable land. About 1 in 4 hectares were in fallow during 1978.

Common Fields: Botaderos

Uncultivated common fields used for communal pastures, called botaderos, are found in several locations in Lari. Some are in a belt on the slopes behind the village above the upper limit of cultivated terraces at about 3600 m. This degraded sloping, land provides bunch grasses for grazing during the rainy season. Botaderos are used by cultivators from Lari rather than by herders of the puna who rely on their own private pastures. Animals grazed in botaderos include, in decreasing order of importance, sheep, cattle, donkeys, horses, and goats. Private upper pastures are the domain of alpacas and llamas and to a lesser extent, sheep.

The upper common pastures are part of Lari's communal property which extends to the crest of the mountains above the village. They are accessible by a network of footpaths which connects the village with the estancias in the puna on the other side of the mountains. The closest common pasture is a twenty minute climb; the most distant takes about an hour.

Communal lands are ideally open to all villagers. Any Lareño can pasture animals on the land and collect firewood, medicinal and culinary herbs, and building materials such as stone. The ability to cut tatora out of marshy lakes for animal forage during periods of drought is especially important. Such land can not be sold or claimed as private property. When an individual filed a denuncia laying claim to abandoned terraces in an area known as Humaro-Pampa, he was denounced by village authorities who argued that while the area had been cultivated in decades past, the source of the water used to irrigate it had dried up and the land had reverted to terreno eriazo, under communal control.

While there is an ideal of open access to botaderos, transfers to private use have occurred. Some transactions are legitimate, based on an open and consensual decision by the community, often recorded in the district council minutes. Others are illegitimate, deriving from the illicit sale by a village authority of communal property to an individual. Villages characterize illegitimate sales as an abuso, or abuse of authority.

An example of a legitimate private use of the upper communal grazing lands is Chipta, a mountain which rises up immediately behind Lari. In discussions of communal grazing land with Lareños, Chipta is clearly perceived as part of the village's heritage. Yet, when the discussions turns to family pastures, Chipta is said to be "owned" by the Mamanis, a large and important family whose members have irrigated terrace lands in the valley

and extensive family pastures in the puna. Among these is Llorqueta, a large estancia of around 2300 square meters which contains the ceremonial center of Hurinsaya.

The Mamani's claim to ownership rests on a legend which recounts the family's contribution of silar, volcanic rock, to the construction of the church in Lari begun in 1758 (Valdivia 1847:122). Silar comes from deposits near Cailloma in the puna above Lari. In view of the Mamani's generosity, the village gave the family the rights to use Chipta mountain in perpetuity, albeit with certain restrictions, as will be seen below. The practice of grants by the village of communal land to individuals for generosity or exemplary effort on behalf of the common good is not unusual and examples can be found in the last thirty years.

Chipta is managed, as are the rest of the Mamami family pasture lands, as a family enterprise. A manager, called a cabecilla, is chosen by consensus from among the most competent, older, and trusted individuals. He exercises absolute authority and subdivides the land into separate pastures which are given to individual family members. In theory, anyone who carries the surname Mamani is allowed access to the pastures. The cabecilla can effectively withhold access, with the accedence of close family members, to distant kinsmen.

Chipta is not, however, a private preserve of the Mamanis. A convenient, and accurate, indication of private ownership is the declaration of a parcel for tax purposes by an owner during the annual self-assessment, auto-evaluó. This involves the completion of a form listing an owner's plots, their locations and size. Tax on the plots is then calculated with a simple formula. Declaring a parcel in the auto-evaluó is a good indication of private ownership. Usually an owner holds title to the listed plots.

While the majority of family estancias in the puna are considered private property and are declared for tax purposes, only one of the botaderos of the slopes, not Chipta, is declared. The rather unclear legal status reflects ambiguous, mixed, use of botaderos. "Owners" granted all villagers the right to pasture animals for a 20 to 30 day period each year scheduled by village authorities. An entry in the council minutes for 1977 states, for example, that animals are allowed onto the communal pastures of Umáro-Pampa, Chipta, Uruquipa, Huaylliucuña, Cuchuruma, Tomallihua, Morro de Uchuruta, and others, beginning on the 15th of September. The movement of animals onto communal pastures roughly coincides with the initiation of the agricultural calendar. It allows them to be removed from the fields which now must be plowed and seeded, and, later during the rainy season, keeps them out of muddy corrals.

Common Fields: Cochás, Pampas, Outcrops, and Abandoned Terraces

Aside from botaderos in the belt of abandoned terraces above the village, common fields are also found in pampas on the upper shelf (Tomallihua and Chillema), atop of rocky outcrops (Arcocollo and Morro de Uchurunta), alongside of marshy lakes, cochas (Pomacra, Jacupa, and Ananchihua), and in terraces which have been abandoned for lack of water (Humáro-Pampa). With the exception of Tomallihua and Chillema, village commons on the upper shelf, to be discussed below, these lands have never been transferred to

private use; they have been and remain communally controlled open fields.

In the majority of the instances of common fields mentioned so far, land has been unsuitable for agriculture because of excessive slope or insufficient topsoil, but suitable for pasture, or is cultivable but has been abandoned for some time allowing water rights to be withdrawn.

Common Fields: Harvested Chacras

During the agricultural season chacras were under private control. The owner could decide on the crops to grow and the cultural practices to follow. The decision to fallow or to cultivate a field was entirely his own. A strong ideology of household autonomy lies behind these decisions. The notion that communal controls restrict this freedom is soundly rejected.

Reinforcing an ideal of household autonomy is a free and active market in land. Any plot could be bought, sold, rented, sharecropped, or otherwise transferred, to local villagers as well as forasteros. Sales were registered before a land judge, and properties were declared for tax purposes. It is clear that agricultural plots were the basis of a land market in which prices were regulated by supply and demand.

Up until this point the use of irrigated plots fits the model of private control described for continuous agriculture. At the end of the agricultural season, following harvest, private ownership rights were relinquished and chacras were opened to communal grazing on the stubble. None of the other rights of the botaderos were extended during the period, i.e. collection of building materials, herbs, turf or firewood.

During the periods of unrestricted grazing, communal grazing fields were coterminous with irrigation sectors. These divisions were based not on fallow-cultivation sequences, as in sectorial-fallowing, but on a spatial organization to facilitate water distribution. Water plays a much more important role in agricultural production than anything else; it is not surprising that it indirectly girds the organization of communal grazing. In the pampa, there were no walls to inhibit movement of animals or to enclose private plots.

Village authorities set the dates and sequence of harvest in a communal assembly. This sequence was influenced by the timing of the first irrigation of each sector which was set at the start of the agricultural cycle each year by irrigation officials. Lower sectors on the west side of the village were irrigated first and thus harvested first. As the harvest moved from the west to the east of the village successive sectors were opened, in turn, for communal grazing.

During and after harvest, llama caravans descended on the valley loaded with products from the puna to exchange for maize and barley. This pattern has changed somewhat in recent years in that villagers prefer rice and sugar over puna products. This forces caravaners to detour to markets in the puna to exchange or sell their wool, carcasses, and other products to obtain more marketable foodstuffs before descending to the valley to barter with villagers. Llamas were also important as a means to transport the harvested crops to the houses of the owners. Herd owners were

required to pay for pasture rights, verbaje, while their animals grazed on common fields. For example, in an entry for May 10, 1976, for each 10 llamas, a soga, or rope woven out of wool, was charged. 15 soles could be paid in lieu of a soga. The council authorized 8 days of pasture for each herd that arrived.

The role of animals in the irrigated terrace regime of Lari was thus multifaceted: oxen were used as plow animals; llamas as transport, and, all animals deposited manure on fields. Extremely rich soil within canchones was produced by the corralling of animals there at night. The manure was stored to be used on terraces for maize cultivation and the canchones were used for the production of intensive early crops and vegetables.

Communal grazing lands accepted animals at the beginning of the agricultural cycle. Grasses began to grow after the onset of the rains. At the end of harvest, they were moved onto the fields where grazing on the stubble they added valuable manure to the fields. In an intensification of this pattern, in some cases forage cut from harvested fields was brought back to the corrals and supplemented that obtainable from field grazing.

Comparison of Irrigated Terrace Agriculture and Sectorial Following

Sectorial fallowing is generally considered a "pure" case of common field systems. Fallowed sectors become communal lands and farmers have full rights to graze their animals and gather firewood, culinary herds, and whatever else they may need. The lands are managed by the community of cultivators (see Thirsk 1964). In irrigated terracing, common field components operate in a somewhat different manner. A comparison of the two regimes suggests the following points of divergence.

Altitudinal Limits

Sectorial fallowing regimes in the Central Andes have been found to lie between 3000 and 4000 m. a belt which overlaps with the "normal" altitudinal range of potatoes and indigenous tubers and grains. Yet irrigated terrace agriculture in Lari is situated squarely within this belt, between 3200 and 3600 m. In view of the widespread scope and expanse of irrigated terracing under the Inca and the agrarian collapse following the Spanish Conquest, it is tempting to suggest that sectorial fallowing may have been a deintensification of the agrarian regime, irrigated terracing, utilized by the Inca as an adaptation to this altitudinal belt.

Direct Versus Indirect Communal Controls Over Production

One of the key characteristics of sectorial fallowing is the communal management of crop and plot rotation. Communal rules regulate the sectors that can be cultivated during the year and specify the crops that can be grown in the cultivable. Direct controls over crop and plot rotation are not found in the irrigated terrace regime of Lari and are not necessary for land regeneration, as in sectorial fallowing (see Guillet 1981:145).

In general, while land is individually owned throughout the villages of the Colca Valley, communal controls over water indirectly constrain agricultural production. In one sense, cultivators are correct in saying that the community exercises no

control over how their land is farmed. There are no direct communal mechanisms which specify what crops must be cultivated, in what sequence, and when land must be cultivated and left to fallow. These decisions are the prerogative of the landowner rather than the community, as in systems of sectorial fallowing.

Nonetheless, in Lari, communal control of water indirectly governs the choice of crop and the area of land which an owner may cultivate. Water is allocated to crops in a specific sequence. While there is some variation within sectors, in the general sequence, early, *mishka*, crops of broadbeans are irrigated first; then when they are finished, main crops of maize and cebada, followed by potatoes and alfalfa. Greater priority is given to subsistence crops, called *sembrios*, than to alfalfa, a forage crop. An individual may only obtain water if, when his plot comes up in the sequence, it is seeded in the particular crop specified in the stage of the *mit'a* in question.

Controls are also set on the maximum amount of land which can be irrigated in each sector at one time. The upper limit during the 1983-84 agricultural season was approximately one hectare. The rationale for this practice is to ensure that all users are able to obtain a minimum amount of water. Thus, it is unwise to seed all of one's land in barley because water will only be allocated for barley during one stage of the *mit'a* and a limit on water will ensure that only a portion of the barley can be irrigated. If, later, maize is specified for irrigation, and one has barley to irrigate, then water cannot be obtained. The orientation of the system is to subsistence agriculture. It constrains one from entering into specialized market cultivation. There have been some shifts within the crop irrigation sequence, notably toward the incorporation of alfalfa, but by and large the system remains consumption oriented.

Shape of Plots

In sectorial fallowing, plots are irregular, in contrast with the "strips" of English open fields, produced by peculiar combinations of plow type and draught animals (Godoy 1984:33). The evidence from Lari suggests that, in a manner similar to the English case, the interaction of irrigation and terracing leads to characteristically shaped plots.

The most efficient method for irrigating slopes is to irrigate from top to bottom rather than "horizontally", across the slope. At the beginning of an irrigation turn, the uppermost terraces of a vertical grouping, separated by endwalls, on the side closest to the offtake, are irrigated first. Water then moves down to the bottom of the section and then to the top of the next section, and, in this manner, across the sector, until all of the plots have been watered, at which point the next crop is irrigated. As a result, plots take the shape of vertical strips of terraces, one under the other².

Labor Demands

Sectorial fallowing is not known for producing demands for collective labor to maintain the infrastructure of the system. Walls, hedges, or other forms of field divisions are only rarely encountered in the Andean systems. The hydraulic infrastructure of irrigated terracing, on the other hand, must be kept in good

repair, as in all irrigated systems. In Lari, major canals are cleaned at least once a year and more often, if necessary. Labor organization relies on the traditional faena form of custodial labor and requires the efforts of all able-bodied men in the village.

The Role of Animals

In sectorial fallowing, villager's animals deposited manure in sectors when they were grazed during fallow and after harvest. The manure returned to the fields was an important part of their fertilization. In the irrigated terracing regime of Lari, there are no fallow sectors per se: communal grazing is restricted to the stubble of harvest fields and to non-agricultural common fields. There is no counterpart to fallow sectors in which village herds add manure over long periods of time.

THE ENCLOSURE MOVEMENT, 1960-1984

A convenient date to chart the changes in the system we have described is 1960. At that point in time pressures for the privatization of communal land, felt in the village in past generations, increased dramatically leading to transformations in the way these lands were used. In some instances, the shifts took the form of classic enclosures, comparable to those reported by Mayer (1979) for villages in the Cañete Valley: large open common fields divided into individual parcels, fenced, and transferred to individual owners. In other cases, the pressures led private users of common lands to prohibit communal access. And, in still other cases, pressures to privatization were successfully resisted.

Communal Grazing Lands - Botaderos

There have been two patterns in the transformations of the botaderos of the upper belt. In the first, botaderos that had been transferred legitimately to mixed communal-private use, the trend has been for "owners" to exert private rights to the land, prohibiting traditional rights by villagers of annual grazing and collecting. By and large, in what would seem to be a conflict laden competition over scarce pasture, the community has not contested the exertion of private use rights.

In botaderos that had been under communal control with indivisible use, new transfers to private control, without traditional communal access, occurred in a majority of cases. In order to analyze the transfers that took place during the period in question, we will define those transfers which are recorded in the minutes of the district as legitimate and all others as illegitimate.

Communal grazing lands located on pampas on the west side of the village have been slowly converted in the last 20 to 30 years into privately controlled houseplots, galpones, canchones, and huertas. The first reference to these transfers in the minutes is in June of 1966 in the placing of limits on land that could be sold to individuals for these purposes. We can assume that in light of the need to regulate these transfers, the practice had been going on for some time. The bulk of the transactions occurred during the period 1970-1974 which refers to the first phase of the

agrarian reform of the Velasco government. One area, on the western edge of the village is of special interest. Early in 1972, it was divided into numbered houseplots and declared an "urbanizacion" on the subdivision model of urban land development then being carried out in Arequipa. In the minutes, transactions involving land in this area bear an urban plot, lotizacion, number.

The date of the last transfer and a statement that no more communal land remain in Lari or outside is in an entry on September 26, 1981. In the majority of the transactions noted in the minutes (n=22), an individual was sold a plot of land ranging from 25 to 50 square meters in size for a house, a canchon, and a huerta. Many of the recipients were originally from the high provinces in the Departments of Cuzco and Puno. From these areas, llama caravans annually descended into the Colca Valley to trade highland products for barley and maize. Favored trading partnerships were established with local villagers and when land became available the visitors were in a position to buy into the village.

During the same period (1970-81), communal land, located on the flat, unterraced shelf some distance from the village was sold for conversion into chacras and alfalfa meadows. In many ways, these transactions complemented the conversion of communal land into houseplots adjacent to the village; for some of the new residents, chacras supplied part of the subsistence needs and complemented other land purchased from individuals or obtained through indirect means, such as sharecropping. There is reason to believe that illicit sale of terreno eriazo for agricultural plots was more common than for "urban" land.

Illegitimate transfers are more difficult to document because by their nature they are covert. Some cases in which the village denounced an illegal sale of land to an individual are recorded in the village minutes. But, the incidence of this phenemon is probably much greater than that. It is clear that it is a subject of much contention.

Aside from botaderos, other communally controlled open fields have resisted the trend to privatization. They remain open to all villagers.

Communal Grazing Lands: Harvested Chacras

By the beginning of the 1980's, the system of communal grazing on the stubble of harvested chacras had been completely dismantled. Grazing on harvested land is now done by the household on its own plots. The stock of other villagers is no longer allowed on to graze on the stubble of an individual's plot.

Many aspects of the transformation can be linked with the introduction of alfalfa during the same period. On the flat pampas of the upper shelf, it was necessary to construct walls to hold in grazing animals which now could be grazed during the normal agricultural cycle alongside of plots used for foodcrop production. Walls prevented animals from damaging these crops. No longer is there a fixed village harvest period, since alfalfa can be grazed at any time, nor are there open communal pastures at the end of harvest.

In terraces used for alfalfa production, restriction of the movement of animals is also necessary. It involves the construction of an adobe fence on top of vertical terrace end walls to hold in animals. The terrace rapidly degrades, under the trampling of the animals. In time, the plot comes to resemble a sloping canchón.

DISCUSSION

It would be tempting to link the changes to a single factor, such as changing price structures or agrarian law, and thus support one of the theories used to account for transformations in the English case. At least for Lari, it seems more accurate that a conjunction of factors is at work.

Rainfall

When discussing the problems of obtaining pasture and the closure of common fields, the issue of rainfall invariably surfaces. Informants argue that rainfall has been declining over the decades creating difficulties in finding pasture of good quality. The problem of obtaining pasture makes legitimate private users of communal pastures reluctant to share them with villagers. Other villagers are motivated to illegitimately acquire communal pastures by suborning village authorities.

Lareños are not alone in suggesting a trend to declining rainfall. Antuñez de Mayolo (1981) has argued that it is part of a general pattern of increasing aridization in the Central Andes. Substantiating such a trend is difficult, however, with the data that are available. The longest series in the Colca Valley comes from a weather station at Yanque which began measurements in 1951. These data reflect a pattern of extreme irregularity and rather clearly defined periods of extremely low rainfall including 1956-1960, 1964-1969, and 1975-82. Average annual rainfall for the entire 32 year period was 418.4 mm. The data do not support a pattern of significantly decreasing rainfall. Regression analysis reveals a slight decrease of 3.27 mm./year over the period, but is not, however, statistically significant ($t=-1.166$). A longer, 48 year series, from Chuquibambilla in the Province of Cotabambas (1931-1979; data missing from 1932) also fails to substantiate a long term trend of decreasing rainfall and, in fact, reflects a slight increase (1.94 mm./year; $t=1.299$) over the period in question.³

The available data show that rainfall is quite low on the average, very irregular, and subject to a pattern of periodic droughts. Each of these is a major constraint to agriculture and pastoralism and would in itself produce competition over scarce resources such as pasture. But they do not substantiate a long term pattern of decreasing rainfall. This does not necessarily mean that such a pattern should be rejected: the data are not of sufficient time depth to fully test long term trends, particularly in light of accounts of nineteenth century travellers suggesting evidence for increasing aridization. One of the few travellers to visit the Colca Valley in the nineteenth century was Antonio Raimondi. Raimondi had to cut short his trip through Cailloma in

1865 because of lack of pasture for his mules (Raimondi 1874: 55-56). Yet, Cailloma was known in the colonial period for being a region rich in alpacas and llamas, presumably with sufficient pasture to support them (Malaga Medina 1975:310). Another traveller to the sierra at the turn of this century, Reginald Enock (1910:167) concluded that assertions by puna dwellers of receding snow caps was probably borne out in light of moraine deposits⁴. Snow melts are often the source of moisture which feeds bofedales in the upper puna and have been suggested as a major limiting factor on herd size.

The introduction of alfalfa

During the same period in which changes in the use of communally controlled open fields occurred, from about 1960 to the present, alfalfa was adopted on a large scale. About 25 percent of the chacras registered in a cadastral survey taken in 1978 were producing alfalfa. While there have been reports of alfalfa cultivation in Arequipa Department since its introduction by the Spanish in the Colonial period, its recent widespread adoption in the Colca Valley seems to be related to two sets of factors.

The first set of factors are environmental and agronomic in nature. The primary reason given by the majority of informants is scarce and declining rainfall. Alfalfa possesses long roots which allow it to conserve moisture during periods of drought and allow the plant to recover quickly following a frost. Lareños also state that it will grow on bad soils and in locations not suitable for maize. It is understood to be a high quality forage, preferable to the bunch grasses and field crop stubble. Most importantly, for many cultivators it replaces the traditional fallow period, puruma, to which plots are submitted after several years of maize cultivation. It is probable that maize yields have increased with the introduction of alfalfa, in view of its soil improving qualities.

A second reason is demand for alfalfa for the fattening of cattle for sale to middlemen who buy for mines and for transport to coastal cities. This demand is created by wage laborers who live in the adjoining village of Madrigal and work in the Madrigal mine. Some Lareños rent alfalfares to these individuals.

Growing alfalfa, a semi-perennial, in place of annual field crops has provided an important supplementary source of high quality forage. Yet it has hastened the shift away from communal grazing on the stubble of harvested fields. The construction of adobe fences to demarcate property lines and restrain animals is the final blow to the system of communal grazing on the stubble.

Population Growth

Lurking behind villager's perceptions of scarce pasture is the fact that population growth is placing additional demands on the resource base of the village. Population for the district of Lari which includes the nucleated settlement and the dispersed estancia population has grown consistently, as indicated by the last four censuses: 789 (1940), 820 (1961), 1239 (1972) and 1156 (1981). The major growth spurt, during the decade of the 1960's, occurred simultaneously with the beginning of the shift to alfalfa and the dismantling of two large common fields, Chillema Pampa and Tomallihua Pampa, in order to create in the first case

additional chacras, and, in the second, housesites and canchones. It is significant that many of the purchasers of the plots were immigrants to the village from the high provinces of the Department of Cuzco and Puno who had come visited Lari on annual llama caravans and established favored trading partnerships there. The net effects of out- and in-migration on population have not been fully analyzed as yet, and there is reason to believe that out-migration since about 1960 has tended to ameliorate population increase from natural births and in-migration. But, there is substantial cause to cite population pressure leading to increasing competition for village resources as behind the movement away from communal controlled open fields.

¹ The research on which this paper is based was supported by a Research Leave from the University of Missouri-Kansas City and the Title XII Collaborative Research Support Program under Grant No. AID/DSAN/12 XII-D-0049 in collaboration with the Instituto Nacional de Investigaciones Agro-Pecuarias and the Universidad de San Agustin, in Peru. Additional support was provided by the University of Missouri-Columbia and the Center for Latin American Studies of the University of Florida.

² An expanded discussion of the interaction between irrigation practice, land tenure, and plot shape can be found in Guillet n.d.

³ I wish to thank Bruce Winterhalder for supplying me with the the Chuquibambilla rainfall data.

⁴ "It seems to be a matter of general opinion in these regions (the puna), that the snow-cap has been retiring of recent decades; and this really seems to be borne out by the appearance of the moraines and debris at their lower edges. The ice-cap seems to have extended further down the slopes at no very distant period. Whether this is only part of a recurring phase of retirement, or whether of a permanent diminishing, it would, of course be impossible to say without observations extending over the corresponding periods. But the latter seems the more probable (Enock 1910:167)."

BIBLIOGRAPHY

- Antúnez de Mayolo R. Santiago E.
 1981 La Nutrición en el Antiguo Perú. Lima: Banco Central de Reserva del Perú
- Camino, Alejandro, Jorge Recharte and Pedro Bidegaray
 1981 Flexibilidad Calendarica en la Agricultura Traditional de las Vertientes Orientales de los Andes. In La Tecnología en el Mundo Andino. Heather Lechtman and Ana Maria Soldi (eds.). Mexico D.F.: Universidad Nacional Autonoma de Mexico. pp. 169-194
- Custred, Glynn and Benjamin Orlove
 1974 Sectorial Fallowing and Crop Rotation Systems in the Peruvian Highlands. Paper Presented at the 41st. International Congress of Americanists
- Enock, C. Reginald
 1910 The Andes and the Amazon. London: Fisher Unwin
- Gelles, Paul H.
 1984 Agua, Faenas y Organización Comunal en los Andes: El Caso de San Pedro de Casta. Tesis de Magister en Antropología. Lima: Pontificia Universidad Católica del Perú
- Godoy, Ricardo A.
 X 1984 Common Field Agriculture: The Andes and Medieval England Compared. m.s.
 n.d. Andean sectorial farming systems: A review. America Indígena forthcoming
- Guillet, David
 1978 The Supra-Household Sphere of Production in the Andean Peasant Economy. Actes du XLII^e International Congres des Americainistes. Vol. 4, Pp. 90-105. Paris
 1981 Land Tenure, Ecological Zone, and Agricultural Regime in the Central Andes. American Ethnologist 8:1:139-156
 1983 Agro-Pastoral Land Use and the Tragedy of the Commons in the Central Andes. In Contemporary Cultural Adaptations to Highland Environments. P. Beaver and B. Purrington (eds.). Athens: University of Georgia Press
 1986 Agricultural Intensification and Deintensification in Lari, Colca Valley, Southern Peru. in Research in Economic Anthropology. B. Isaac (ed.). JAI Press. forthcoming
 n.d. Terracing and Irrigation in ^{The Peruvian Highlands -} ~~a village in Southern Peru~~. Current Anthropology forthcoming

Malaga Medina, Alejandro
1975 Consideraciones económicas sobre la visita de la
provincia de Arequipa. In Tasa de la Visita General
de Francisco de Toledo. Edition of Noble David Cook.
Lima: Universidad Nacional Mayor de San Marcos

X X Mayer, Enrique
1979 Land Use in the Andes: Ecology and Agriculture in the
Mantaro Valley of Peru with Special Reference to
Potatoes. Lima: Centro Internacional de la Papa

Preston, David A.
1970 Freeholding communities and Rural Development: The
Case of Bolivia. Revista Geographica 73:29-41

X A X Orlove, Benjamin S.
1976 The Tragedy of the Commons Revisited: Land Use and
Environmental Quality in High-Altitude Andean
Grasslands. In Hill Lands: Proceedings of Internation-
al Symposium. West Virginia: West Virginia University
Press. pp. 208-214

Raimondi, Antonio
1874 El Peru. Tomo 1. Lima: Imprenta del Estado

X X Turner, Michael
1984 Enclosures in Britain 1750-1830. London: Macmillan
Press

Valdivia, Juan Gualberto
1847 Fragmentos para la Historia de Arequipa. Arequipa