EARLY PERUVIAN PEASANTS:
THE CULTURE HISTORY OF
A CENTRAL HIGHLANDS VALLEY

A thesis presented

by

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to

The Department of Anthropology

in partial fullment of the requirements

for the degree of

Doctor of Philosophy

in the subject of

Anthropology

Harvard University

Cambridge, Massachusetts

June, 1970

Index

Acknowledgments

There are many people to whom I am indebted for the information they so freely and generously made available, for the stimulation and direction of my interest toward a number of the significant questions raised by this dissertation, and for the enthusiastic encouragement given to me whenever the problems seemed overwhelming. To these people I offer my sincere thanks and pay them tribute for their understanding and patience.

Perhaps the debt of longest standing is that owed to some of the faculty and some of my compatriots at the University of Washington, Seattle, who prepared the way for me--Dr. Robert E. Greengo, Dr. Alex D. Krieger, Dr. Raymond D. Fogelson, Dr. Garland F. Grabert, Dr. David Sanger, and Mr. David A. Munsell.

The faculty of Harvard University has been immensely important, and there are some to whom I should like to pay special tribute: Dr. Stephen Williams, my advisor, who has constantly encouraged me when I dragged my feet; Dr. Gordon Willey, who has read the various versions of this dissertation and who has provided me with valuable comments; Dr. Michael E. Moseley, who suggested some very basic changes in the orientation of my approach and who supplied me with unpublished data; Dr. Carl C. Lamberg-Karlovsky, who by questioning my unsupported statements caused me to do some useful re-evaluation of my conclusions; and Dr. Thomas C. Patterson, now of Yale University, who provided me

with unpublished data, who has been justly critical of some of my not-well-thought-out ideas, who provided me with my initial field experience in Peru, and who provided me with the funding and the necessary field permits and letters of introduction under which the research upon which this dissertation is based was accomplished.

There are a number of professionals at other institutions who have also contributed materially to this dissertation: Dr. E. Craig Morris of Brandeis University, who provided me with information on his survey of storage colca in the Jauja area, and who also, as a reader, made several useful comments on the Late Horizon data; Dr. Daniel E. Shea of Beloit College, who provided me with a copy of his dissertation on the oracle of Wariwilka; Dr. John H. Rowe of the University of California, Berkeley, who made available his collections from Peru, plus some unpublished data; Dr. Dorothy Menzel of the University of California, Berkeley, who made several identifications for me of possible Paracas/Ocucaje trade sherds, possible Huari trade sherds, and who provided unpublished data regarding various Early, Middle and Late Horizon materials; Dr. Patricia Lyon of Washington University, who provided me with unpublished data; Dr. William Isbell of the University of Illinois, who discussed various similarities between Pampas River materials and the Jauja-Huancayo basin with me; Mr. Gary Vescelius of Queens College, who was responsible for stimulating our reanalysis of radiocarbon determinations and the so-called Long Scale-Short Scale problem; Dr. Ramiro Matos Mendieta of the Universidad Nacional del Centro, Huancayo, who spent innumerable

hours with us in the field in Peru, who helped ease us into a foreign culture and who provided us with a good deal of unpublished data of his own; Dr. Augusto Cruzat Añaños of the Universidad Nacional del Centro, Huancayo, who helped in the identification of some of the Early Horizon Ayacucho trade wares; Dr. Hernan Amat Olazabal, who as secretary of the Patronato Nacional del Arqueologia helped make it possible to work in Peru and who gave us some insights into the nature of Chavin; and to Dr. Julio Espejo Nuñez of the Museo Nacional de Antropologia y Arqueologia, Lima, who through his kind assistance provided us with a great number of the unpublished collections with which we were able to make correlations.

In addition, there are a number of graduate students in Peruvian studies who have spent several hours with me, ironing out theoretical difficulties and contributing from their own research; these include: Edward M. Franquemont, who aided in the analysis of the sherds in the field, who pointed out the significance of a number of factors which had been obscure to me, and who provided me with the basic seriation of Kotosh materials; Christine A. Robinson, who aided and encouraged us in the field; Drexel A. Peterson, who aided in part of the initial survey in the valley, who made several pertinent observations regarding the materials gathered, and who kindly provided us with his unpublished Chanapata and Lurin materials; Harry G. Scheele, who discussed at length the nature of the Chavin occupation, and who pointed out the superficiality of the similarities between the Central Highlands and the Central Coast; Eugene McDougle, who made important

observations about the Late Horizon and Early Colonial occupations of the Central Coast and their relationship to the sierra; John Thatcher and Nicholas Hellmuth, who made their Huarochiri survey materials available; Edward and Jane Dwyer, who discussed the relationships of the Cuzco valley sequence with that of the Jauja-Huancayo basin sequence, and who identified the chronological placement of several published Cuzco area pieces; Hermilio Rosas, who made available some San Blas material for comparative study; Fernando Chahud G., who worked with us and who indicated some important sites in the Jauja-Huancayo basin that we had overlooked; and Captain Jose Lopez of the Instituto Militar Geografico, who provided us with some unpublished data on the region and who obtained maps and air photos for us at a time when Peru and the United States were at an impasse over the Hickenlooper amendment.

Not only was I aided in the pursuit of this research by those actively engaged in Anthropology, but there were numerous other individuals who contributed materially from their own fields of knowledge to the completion of this dissertation. Michael Snow helped for a few weeks in the field and aided in the identification of the avifauna; Robert and Charlotte McLaughlin aided in the analysis of artifacts and in several problems met in the field; Heather Lechtman aided in the identification of our metal samples; Guillermo Mayer entertained us and proved invaluable in solving several logistical problems; Francesca Mayer located the proper bounds of Hatun-Xauxa for us in Villa Sausa; Dr. M. James and Kathryn Law provided us with

occasional glimpses of civilization and pulled us through after our automobile accident; Oscar Pando drove us over seemingly impassible llama trails and across open fields to the detriment of his car, and was instrumental in locating about a dozen sites on the survey through his own personal initiative; Felicia Sato made it possible for us to devote our time in the field wholly to research and also proved an invaluable informant concerning the ethnography of the current Indians of the puna; Major James and Jerri Heggarty provided us shelter when the huaycos kept us from the highlands, and aided us in solving problems involving governmental bureaucracy; and William J. Fox spent endless hours making the maps and the first dozen well-executed figures.

There are certain institutions which made my work possible and to whom I owe a debt of gratitude: the National Science Foundation, which funded my years in graduate school and my field work; the Patronato Nacional del Arqueologia of Peru which granted permission to work in the highlands; the U.S. Peace Corps, which extended many of the benefits usually accorded only to volunteers in my time of need; the Universidad Nacional del Centro, Facultad de Ciencias Sociales, which accorded me many privileges; and the Department of Anthropology and the Peabody Museum of American Arcaheology and Ethnology, Harvard University, who have made much of this possible.

I owe an extremely personal debt of gratitude to my wife Jane, who spent endless hours in the field collecting, washing and labelling sherds and stone artifacts; who spent weeks in isolation while I

toiled over the analysis of the raw data; who has put up with month upon month of my marriage to the library and to the typewriter; and yet who still possesses the eagerness to read and criticize and aid in every way possible in the completion of this dissertation. I should also acknowledge the debt this paper owes to my two year old daughter, Lisa Jane, who by her interest in brilliantly decorated sherds and certain palpable aspects of sherds, managed to pick up quite a number of the fancy decorated pieces illustrated in this dissertation while her mother and father fruitlessly scoured surrounding fields for the same.

Preface

This dissertation covers the culture history of the Jauja-Huancayo basin of the Mantaro River in Peru for a period of some three millenia, from roughly the time the first ceramics occur in the valley until the present. Seen as important contributions are not only the tedious but necessary descriptions and chronological orderings of material artifacts, but also discussions regarding such important processual questions as the spread of such religious concepts as those exemplified by Chavin or the oracles of Huari, the development of urban centers in certain situations and their rejection in others, or the shift from hunting and gathering to pastoralism in some areas and to agriculture in other areas.

Among the strictly archaeological contributions, we have defined the lithic assemblages for the late preceramic and ceramic periods; this includes not only the seriation of projectile points, but attention to other artifact forms such as shaped bifaces and unifaces, and various core tools. In addition we define a new large prismatic blade industry for the Late Intermediate Period and the Late Horizon, and distinguish between the lithic industries of the native Huanca peoples and the Viques mitmaqkuna during the Inca occupation. On the ceramic side, we define sixteen different ceramic styles, each with subphases of durations varying between 30 and 150 years. Correlations, diffusion, trade, and conquest as reflected in the ceramic record for

each phase are pointed out. Demographic changes in the valley for the last three thousand years are documented through settlement pattern analysis.

Among the more interesting processual questions touched upon is the prolonged non-urban orientation of the inhabitants of the valley. Evidence points to a successful survival of semi-sedentary pastoral peoples practicing some horticulture and supplementing their economy with hunting, while surrounding peoples had been settled, agricultural, and even urbanized, for a millenia or more. The argument is made that the people of the central highlands of Peru led a semi-nomadic existence much like certain semi-nomadic peoples of Central Asia.

We point out that the Chavin religious ideology spread in two waves--an earlier variant which was spread to the agricultural, thickly inhabited northern highland areas and coastal areas of central and northern Peru; and a later reformed or reinterpreted variant, which spread out of the Paracas area half a millenium later throughout the southern coast, and in the sierra from Lake Junin to Lake Titicaca.

With respect to the Huari oracles, an argument is made for important connections between the oracle of Wariwilka and the oracles of Pachacamac, Huari and Catequilla. Contrary to previous hypotheses, the Huari empire marks an intensive and extensive social, economic, political and religious crisis in the Jauja-Huancayo basin. The Calpish phases, approximately A.D. 650-800, mark the first sedentary town life, the first urban planning, the first large ceremonial temple centers, the first stone architecture, new cultivating tool

assemblages, new specialized woodworking tool assemblages (for building beams?), and the loss of tools associated with the previous pastoral and hunting emphasis.

An elaborate system of storage colcas related to a system of redistribution is developed during the Late Intermediate Period occupations, but it is also pointed out that a peripheral market exchange system exists. Study of settlement pattern data shows the movement of peoples vertically as well as horizontally during periods of stress and periods of relative peace. Settlement data permits significant contributions to the definition of the achoritic fortified town-dwelling Late Intermediate Period chiefdoms (Krader 1968, Sahlins 1968) and also the location and the extensive pattern of Inca occupation in the valley. During the Inca reign, we can demonstrate the existence of a mitmaqkuna that is localized to one small area of the valley, that exhibits different ceramic vocabulary and lithic industry than the local Huanca peoples, that has a different settlement pattern, which we can, moreover, make a reasonable argument on the basis of archaeological data to have been a mitmaqkuna of Angara, yet which cannot be found mentioned in any historical source. The archaeological record, then, considerably augments the understanding of the ethnohistory of the Jauja-Huancayo basin garnered from chronicles and visitas. In addition, the archaeological record is shown to be useful in the historical post-conquest colonial periods, for it points out those events of sufficient magnitude to be reflected in changes in lifestyle, arts and crafts, dwelling mode, economic

dependence and so on that the historian often can only guess at.

Chronological sequence for the Jauja-Huancayo basin

Preceramic		
	Jurpac	4700-2800 B.C.
	Tinyari	2800-1500/1000 B.C.
Early Horizon		
Phases 1-4	Pirwapuquio	1000-650 B.C.
Phases 5-10	Cochachongos	650 B.C.-A.D. 0/50
Early Intermediate Period		
Phases 1-3	Uchupas	A.D. 0/50-300
Phases 4-6	Usupuquio	A.D. 300-500
Phases 7-8	Huacrapuquio	A.D. 500-600/650
Middle Horizon		
Phases 1-2	Calpish	A.D. 600/650-800
Phases 3-4	Quinsahuanca	A.D. 800-1050
Late Intermediate Period		
Phases 1-4	Matapuquio	A.D. 1050-1250
Phases 5-8	Arhuaturo [Huanca]	A.D. 1250-1470
Late Horizon		
	Arhuaturo-Inca [Huanca]	A.D. 1470-1533
	Inca	A.D. 1470-1533
	Viques mitmaqkuna	A.D. 1500-1533
Colonial and Republican		
	Llaqsa	A.D. 1533-1580
	Ocopa	A.D. 1580-1750
	Retama	A.D. 1750-1890
	Modern	A.D. 1890-1970/present

Chapter 1

Ecology of the valley basin

A. Physiography

The Jauja-Huancayo sector of the Mantaro River drainage constitutes a natural basin 60 kilometers long and varying from 3 kilometers to 12 kilometers in width, which was filled with glacial lake waters to the depthof several hundred meters during some epochs of the Pleistocene. The basin itself is an artifact of the disconformal uplift during the late Pliocene and early Pleistocene--the hills to the east of the basin belong to the Paleozoic Mitu series while the hills to the west of the basin belong to a yet unnamed Mesozoic Triassic series, and the basin itself is filled with fluviolacustrine sediments for the most part (Dollfus 1965). The Mitu series is composed of rhyolites, schists, shales, greywackes, quartzites, red sandstones, and various conglomerates, while the unnamed Triassic series is composed of limestones, lenses of coralliferous materials, slates, marls, dolomites, sandstones, conglomerates, and in some places, interstices of basalt and lava (Dollfus 1965; Harrison 1943). The basin itself has a rather complex Pleistocene stratigraphy of glacio-fluvial deposits, glaciolacustrine deposits, terminal moraines, overlain in some places by torrential solifluction accumulations and alluvial fans, and with rocky spurs of mica-schists extending from the eastern slopes into the basin and partially dissecting it. In general, the

basin can be considered to be composed of fluviolacustrine sediments, for the most part in the form of incompletely consolidated conglomerate of redeposited boulders, cobbles, gravels and sands, all of which are heavily rolled, and which contain nodules of quartz and other cryptocrystalline silicates. Therefore all the materials utilized for lithic implements--such as obsidian, various cryptocrystalline silicates such as chert, chalcedony and jasper, quartz and quartzite, rhyolite, greywach, shale/slate and so on--were all available in the immediate vicinity and were fairly easily obtained.

The terrace system of the valley is important and deserves further explanation. The oldest terrace, t'''', exists in only a few localities near Lago Paca and Molinas and above Lago Ñahuinpuquio and Andamarca; the deposits of this terrace comprise the Jauja series of apparent Villafranchian age. The terrace is succeeded by terrace t'''; the "2nd terrace" of Map 1. This terrace is comprised in part of till from the Mantaro glaciation; there is some evidence on the eastern slopes of the valley of a terminal moraine extending into the valley from Mt. Huaytapallana. Between the formation of this terrace, sometime during the early Quaternary, and the subsequent terrace t'' (the "1st terrace" of Map 1) there is evidence of a long interglacial period. Considerable geologic time was necessary for the cementing of the conglomerate gravels in the terraces and for the disagradation of the granites in the conglomerate by chemical weathering. This interglacial is also marked by the formation of the Quiullacocha glacis and the formation of a characteristic red zone soil believed to mark a period of high mean annual temperatures and reduced precipitation.

Terrace t'' apparently was formed during the Middle and Recent Quaternary; Dollfus (1965) has found a few fragments of a terrace t''b, which he dates to the Middle Quaternary, whereas the major part of the terrace t'' formation is terrace t''a, formed in the recent quaternary. The last terrace, t', represents a postglacial crisis, dating to about 8000-6000 B.C.; it is represented on Map 1 as the plain unshaded area proximal to the current Mantaro river bed.

The geological history of the valley can be argued to have had several effects on its subsequent cultural history. The very size of the basin itself has meant a reasonable amount of variation in ecological microzones exists, so that the basin has been able to support fairly large populations with little strain on its resources. The series of terraces and terrace remnants offer several loci of unobstructed view over large expanses of relatively flat terrain; these terrace edges and terrace remnants therefore have been repeatedly reoccupied in both preceramic and ceramic periods. On the other hand, the cemented nature of the earlier terraces with a calcium carbonate percentage greater than 20% (Dollfus 1965:144) has meant that underneath the thin topsoil (about 20-30 cm.) throughout most of the valley there is an impervious base. This cemented stratum immediately underlying a thin topsoil has had a severe effect on the agricultural utilization of the valley. On the one hand the relatively slight grade of 0.4% (a total drop of 225 meters in 60 kilometers, from 3350 meters at the upper end of the basin to 3125 meters at its mouth) has meant relatively slow runoff and makes agriculture possible there today.

On the other hand, the thinness of the soil has meant that during the dry season the entire valley floor becomes baked rockhard, so that even after the October rains it is very difficult to till, which led the major prehistoric agriculturalists to rely heavily upon the lower slopes of the hillsides which were much more readily utilized. In part this utilization of the lower hillsides may be due to a heavy reliance upon root crops, for even today most root crops are raised on the better drained hillsides and the valley floor is utilized primarily for European-introduced domesticates. In part this feature of the landscape may be responsible for the prolonged emphasis upon pastoral nomadism in the basin while other highland peoples had long since become wholly agricultural.

One may observe a pronounced effect of this underlying cemented conglomerate upon the actual residence patterns themselves. There are several small rockshelters in the basin, formed by the erosion of the underlying non-calcified fluviolacustrine sediments along the terrace edges, resulting in small shelters roofed by the heavily calcified terrace surfaces; the rockshelters excavated by Ledig (Tschopik 1946) and Fung Pineda (1959) are typical examples of such shelters. The preference for hunting and pastoralism over agricultural pursuits until the Huari conquest has led to settlement patterns consisting of non-permanent, perishable dwellings, easily transportable, and with apparent seasonal occupation only of dwelling sites for Early Horizon and Early Intermediate Period peoples. From the strictly practical point of view of trying to recover the

prehistory of the basin through excavation, this thin topsoil with the underlying calcrete has meant that the majority of sites have no depth; for multi-phase occupations, this has meant that ceramics of all phases are thoroughly mixed from top to bottom so that methodology other than stratigraphic superposition has to be resorted to in reconstructing the cultural history of the area, and has also resulted in a situation where qualitative analysis is a much finer methodological tool than quantitative analysis. An interesting cultural artifact of this calcrete is the proliferation of 'shaft' tombs and multi-chambered tombs during the Usupuquio through Calpish phases. These calcified gravels have great strength; the roof of the multi-chambered tomb PJuM 625-10 (Fig. 6) was driven over by a 2 1/2 ton truck fully laden with sacks of seed and field workers with no consequent damage to the tomb save minor fall of some of the uncemented gravels.

B. Climate/Meterology

The Jauja-Huancayo basin belongs to a Koppen system Cwb climatic region, which is based on climatic elements of temperature and rainfall (Eidt 1969:64). In a general sense, this means the mean temperature of the coldest month varies between freezing and 10°C while the warmest month is always above 10°C, and that the wettest summer month is ten times as wet as the wettest month in winter. During the days in the winter months (May to September) the orographic position of the valley leads to strong winds, while during the nights the cold air descends into the basin, producing the characteristic thermal inversion of

intramountain depressions, contributing to the genesis of the winds.

The temperature does not appear to vary significantly between the northern end of the Jauja-Huancayo basin and the southern end, although precipitation does vary quite markedly. The temperature extremes at the stations of Jauja (26 years of records) and of Huancayo (40 years of records) show maxima of 25°C. and minima of -10°C; for December the mean temperature ranges roughly between 11°C and 13.5°C, with a 12.5°C mean, and for June the mean temperatures range roughly between 9°C and 11°C, with a June mean of 10°C. The mean annual temperature between the two ends of the basin varies by about 0.5°C, with a mean annual temperature at Jauja of about 11°C and at Huancayo of about 11.5°C. Of far more importance than the seasonal variation in temperature is the daily variation in temperature; due to the combined factors of altitude and seasonal aridity, temperatures may vary by more than 20°C in a day (Sources: Anonymous 1965; Romero 1966; Robinson 1964).

As remarked above, rainfall is far more variable, with quite large differences not only from one locale in the valley to another, but from year to year. Rains fall between October and April, generally in the form of storms in the late afternoon, eroding the uncovered slopes. Precipitation at Jauja is about 635 mm. a year on the average, while at the other end of the basin at Huancayo where the storms rise and leave the basin, roughly 100 mm. more a year falls, about 740 mm. a year on the average. These averages, however, do not reflect the true extent of variation in precipitation. For Huancayo, where we

have the longest record, the average yearly total varies normally about ± 20%, from about 580 mm. to 890 mm. Not only do we have normal variation of ± 20% in precipitation from year to year, but the area also experiences abnormal wet years and years of extreme drought--years from as little as 143 mm. to years with as much as 1987 mm. have been recorded. Thus the facts that 90% of all precipitation falls between October and April, that precipitation varies normally ± 20%, and that years of extreme drought are not uncommon, have had an obvious limiting effect on the agricultural practices of the area. For the earlier non-agricultural hunters and the semi-agricultural pastoral nomads, this problem would not have been as severe, for their built-in mobility would have allowed them to vary the range of exploitation from year to year as the extremely local rainfall varied (Sources: Dollfus 1965; Anonymous 1965; Lewis 1954; Romero 1966; Robinson 1964).

C. Flora and Fauna

The Jauja-Huancayo basin is wholly within the Quechua life zone as defined by Pulgar Vidal (1967); alternatively it is partly in the 'Sabana o Bosque Seco Montaño Bajo' and partly in the 'Pradera o Bosque Humedo Montaño' life zones of Tosi (1960). For understanding the flora of the Jauja-Huancayo sector, the Quechua life zone concept has proved to have far greater utility. In large part, the valley area appears to have identical flora from one end to the other, with slightly greater density at the southern end, most likely due to the more favorable rainfall conditions.

The shrubs and trees tend to be sub-xerophytic in character, and numerous species of cacti occur. In the narrow quebradas on the western flank of the valley, where the landscape has been very little modified by man, there is a proliferation of thorny shrubs, cacti of many kinds, stunted molles and quinuals and quisuars, clumps of sauce and lloque, and a variety of native grasses and tubers. Generally the lower slopes and the whole valley floor is under cultivation and has been for such a long time that the local flora has been severaly modified or has disappeared altogether. The eastern slopes of the valley have been so badly misused that large areas have been eroded down to bare rock; the extent of this erosion became readily apparent when we noticed in some areas the Usupuquio house platforms standing on eroded pedestals of 0.5-1.0 m. of gravel in the midst of bare rock expanses.

Particularly common on the western flanks of the valley and throughout the valley floor are roads and paths dating back to pre-Columbian times, worn and eroded one or two meters below the surrounding surface, and now edged with Mexican maguey, native cacti, and clumps of the European-introduced retama. Indigenous trees are relatively rare, except in the vicinity of the remnants of Pleistocene Lake Jauja such as Lago Paca, Lago Ñahuinpuquio and the man-drained former Lago Cochachongos, in the vicinity of natural springs such as Pirwapuquio, Usupuquio and Huacrapuquio, or, as mentioned above, in some of the unmodified quebradas cutting the valley flanks. There are a large number of eucalyptus in the valley of several species--the eastern flanks contain several reforestation projects, and anywhere there is

sufficient moisture either from rainfall or modern irrigation projects, fields are lined with trees, in particular eucalyptus owing to its rapid rate of growth, for use locally as ridge poles and rafters for the adobe and tapia walled local houses, and for sale to Cerro de Pasco Corporation for use a mine timbers in the mines of Huancavelica and La Oroya. Cacti proliferate in the rubble heaps of the later period ruins; in these ruins one quite frequently sees the unusual sight of cacti, which are usually associated with arid areas, heavily entwined with creepers and in active competition with various caducous shrubs.

The following lists include the most important native flora currently utilized by the people. Included in the list are four introduced species--maguey, eucalyptus, guinda and retama--which owing to their rapid and proliferous growth have widely supplanted their indigenous competitors (Sources: Buxbaum 1969; Matos Mar 1950; Mercado Zarate 1941; Pulgar Vidal 1967; Tosi 1960; Weberbauer 1924).

Trees, Bushes, Cacti

Schinus molle	molle
Salix humboldtiana	sauce
Alnus jorullensis	aliso, lamras, lamblash, rambrash, almbran
Eucalyptus sp.	eucaliptos
Buddleia sp.	quishuar, quisuar, quixuar, colli, alamo
Polylepsis sp.	quinuar, quinual, queñua, keñua
Prunus sp.	guinda
Physalis sp.	capuli
Kagneckia lanceolata	lloque
Agave americano	maguey
Fourcroyas sp.	maguey, ala, chagual, cabuva, chuchau, savila
Puya raimondii	puya
Spartium junceum	retama
Piptadenia colubrina	huilco
Erythrina sp.	pashurus, pashullo
Sambucus peruviana	sauco, layan, arrayane
Cassia sp.	mutuy
Pinus sp.	piño, alimo
Passiflora sp.	pucumpuy, granadilla, tumbo

Cantua buxifolia	cantuta, cantua, cantu
Rubus sp.	zarza espinosa
Accacia sp.	guarango
Caesalpinia tinctoria	tara, taraca
Stenolobium sp.	huaranhuai
Opuntia sp.	tuna, huallanca, hualojo, ulluyma
Cereus sp.	tuna, huallanca, cola de zorro
Cephalocerus sp.	tuna

Drupes, Berries, Condiments, Important Medicinals

Sambucus peruviana	sauco, layan, arrayane
Passiflora sp.	pucumpuy, granadilla, tumbo
Prunus sp.	guinda, ciruela
Physalis sp.	capuli
Buchosia sp.	ciruela del fraile, usumaq
Opuntia, Cereus spp.	tuna, huallanca, hualojo, ulluyma
Fragaria chiloensis	frutilla
Capsicum sp.	aji, rocoto
Cantua buxifolia	cantuta, cantua, cantu
Tagetes minuta	huacatai, chicho amarillo
Saxifraga magellanica	huamanripa
Crysanthemum sp.	manzanilla
Cyclanthera pedata	caigua, achacha
Erythroxylon coca	coca
Nicotiana sp.	tabaco

Roots, Tubers

Solanum sp.	papa
Oxalis tuberosa	oca
Ullucus tuberosus	olluco, ulluco, papa-lisa
Trapeolum tuberosum	mashua, maxuas, allausa, añu, isaño, apiña-mama
Arracacia xanthorhiza	arracacha
Polymnia sonchifolia	llacon, llaqcon, yacon

Grains, Seeds, Legumes, Cucurbits

Zea mays	maiz, chocle
Chenopodium quinoa	quinoa
Chenopodium sp.	cañijua, cañahua
Amaranthus sp.	achis, coyo, achita, quihuicha, coimi
Paspalum candidum	aracsho
Lupinus tauri	tarwi, tauri, tarhui, altramuz, chocho
Vicia faba	haba
Cucurbita sp.	zapallo, calabaza
Phaseolus sp.	frejol, pallar

The fauna of the Jauja-Huancayo basin, such as remains, belongs to the Andean Province of the Andean-Patagonian subregion of the Neotropical region of zoogeographical or faunal regions (Fittkau 1969).

During the Pleistocene, altitudinal temperature zones and life zones were repeatedly compressed and expanded vertically during cold and warm periods respectively. During these times the vertical temperature gradient probably was increased and decreased relative to the present gradient (a change of approximately 0.5°C per 100-meter difference in elevation). The repeated vertical displacement of the temperature zones led to frequent interruptions and rejoining of the animal populations along the mountain slopes, thereby causing a rapid differentiation of the montane faunas during the Pleistocene (Haffner 1969:131). In the Andean Province, in spite of the unusally high richness in the number of endemic species, the density of species is much poorer than in ecologically comparable areas in other parts of the world (Fittkau 1969:652).

The natural landscape has been altered and disturbed to such an extent that the original fauna cannot maintain itself or has already disappeared. The presence of many of the animals on the following lists, then, must be imputed either from the archaeological record or from the reports of early conquistadores and modern researchers in similar ecological areas. Mastodon and Megatherium have been reported from the Pleistocene terraces of Lake Jauja (Harrison 1943:12). Deer bones and antlers are present in the middens of the basin, but which of the three genera listed was present, or whether all three were present, has not been ascertained; similarly it has not yet been determined which one of the three genera of fox is actually represented in the osteological materials.

Peru has 503 species of fresh-water fish, although the high Andes have a peculiar impoverished fauna of mostly torrent fishes only (Gery 1969:30). Pollution and other factors have completely eliminated the original fish populations in the valley. There has been restocking of the lakes, particularly the resort Lago Paca, and also some of the streams; it is not clear whether the original species have been replenished or replaced by this restocking. Included in the list of fauna are four important Arthropods; there is a considerbale local mythology about spiders, in part owing to the sub-lethal and lethal qualities of the local black widow variant and the local spider whose bite causes severe local necrosis and sometimes concomitant systemic neurological damage. The identification of avifauna has been largely due to the aid of Michael Snow and the rather extensive literature available (Sources: Besch 1969; Bucherl 1969; Gilmore 1950; Meyer de Schauensee 1966; Olrog 1969; Pulgar Vidal 1967).

Mammals

Hippocamelus sp.	guemal deer
Odocoileus sp.	Andean deer
Cevus sp.	Andean deer
Dusicyon sp.	Andean fox
Cerdocyon sp.	Andean fox
Pseudolopex sp.	pampa fox
Lagostomus maximus	viscacha
Lagidium sp.	viscacha
Canis sp.	dog
Felis concolor	puma, leoncillo
Lama glama glama	llama
Lama glama guanicoe	guanaco
Lama pacos	alpaca
Lama vicugna	vicuña
Cavia cobaya	cui, cuy, aca, jaca, conejillo, cobayo, guinea pig

Reptiles, Arthropods

Podocnemis sp.	turtle
Leimadophis sp.	small rock snake
Liolaemus sp.	lizard
Lacertilia sp.	lizard
Centruroides sp.	scorpion
Latrodectus mactans	local black widow spider
Loxosceles sp.	spider, bite causes necrosis of tissue
Diplurinae family	trapdoor spiders

Avifauna

Non-passeriformes (vultures, hawks, falcons, doves, hummingbirds)

Vultur gryphus	Andean condor
Coragyps atratus	Black vulture
Cathartes aura	Turkey vulture
Buteo sp.	variable hawk, other hawks
Geranoaetus melanoleucus	Black-chested buzzard-eagle
Spizastur melanoleucus	Black and white hawk-eagle
Phalcoboenus megalopterus	mountain carcara
Falco femoralis	Aplomado falcon
Metriopelia sp.	ground dove
Penelope montagnii	Andean guan
Oreotrochilus sp.	hillstar hummingbird
Patagona gigas	giant hummingbird

Passeriformes (earthcreeps, pipits, miners, thrushes, finches, ovenbirds)

Anthus furcatus	Short-billed pipit
Geositta sp.	miner
Upucerthia serrana	Striated earth creeper
Cinclodes sp.	cinclodes
Schizoeaca palpebralis	Eye-ringed thistletail
Asthenes sp.	Junin canastero
Diuca speculifera	White-winged diuca-finch
Phrygilus sp.	sierra-finch
Spinus atratus	Black siskin
Turdas sp.	thrush
Colaptes rupicola	Andean flicker

Aquatic forms (grebes, flamingos, geese, ducks, plovers, gulls)

Podiceps sp.	puna grebe
Phoenicpterus chilensis	Chilean flamingo
Phoenicoparrus andinus	Andean flamingo
Chloephaga melanoptera	Andean goose
Lophonetta specularioides	Crested duck
Anas georgica	Yellow-billed pintail
Anas puna	Puna tel
Oxyura jamaicensis	Ruddy duck
Fulica gigantea	Giant coot
Cairina moschata	Muscovy duck
Gallinulla chloropus	Common gallinule
Vanellus resplendens	Andean lapwing
Charadrius alticola	Puna plover
Phegornis mitchellii	Diademed sandpiper
Larus serranus	Andean gull

D. Domestication and Agriculture

Recent work has considerably changed the picture of the domestication of plants and animals in Peru, both with respect to the antiquity of certain domesticates and as to their probable original locus of domestication. Considerable evidence seems to substantiate the hypothesis that the Southern Andes, encompassing in this case Southern Peru, Bolivia and Northwest Argentina, was an early major focus of domestication. On botanical evidence, Brucher (1969:299) and Pickersgill (1969:60) have suggested that the original locus of domestication of the lima bean (Phaseolus lunatus), the common bean (Phaseolus vulgaris), at least one squash (Cucurbita andreana maxima), one chili pepper (Capsicum baccatum), achira (Canna edulis), the jack bean (Canavalia plagiosperma), peanuts (Arachis hypogaea), and cotton (Gossypium barbadense), is this southern Andean area, in part due to the presence today of wild growing species of these domesticates in this area. There is now some archaeological evidence to support, if not a Southern Andean locus, at least some early highland locus of domestication. For the Huanta area, MacNeish (1969) has reported some interesting evidence in his preliminary report. During the Jaywa phase (6300-5000 B.C.), there is some evidence of possible domestication of the llama, Achiote, and Crescentia cujete; but MacNeish argues that the subsequent Piki period (5000-3800 B.C.) is the critical period of domestication, with guinea pig and llama certainly domesticated among the animals, and with gourds, squash, quinoa, amaranth, and pepper showing up as domesticated plants. In the subsequent Chihua period (3800-2700 B.C.), lucuma, cotton and Sapindas

are added; and in the terminal preceramic Cachi period (2700-1700? B.C.), maize, beans (Phaseolus sp.), another squash (Cucurbita andreana maxima) and Canavalia beans are present, with subsistence seen to have been almost wholly based upon agriculture and herding. Perhaps during the Initial Period, but certainly during the Early Horizon, water control is practiced. Lynch's report (Moseley and Patterson, personal communication) of a date of 4,660 B.C. in some way related to maize cobs, Lagenaria gourds, cotton and a cucurbit still seems questionable, but in light of MacNeish's data it does not seem as unreasonable as it once did, since Lagenaria and Cucurbita appear in the Piki phase (5000-3800 B.C.) and cotton in the subsequent Chihua phase in Huanta.

From the Central Coast, where we still have our best evidence, domesticated species seem somewhat later. Based on the recent reports by Moseley (1968), Patterson and Moseley (1969), and Pickersgill (1969), it appears that Lagenaria gourds [which first appear in Canario sites] and one species of cucurbits were domesticated by Encanto times (3700-2600 B.C.), while in the short Pampa phase (2600-2500 B.C.) we get the sudden appearance of additional squashes (including C. andreana maxima), jack beans (Canavalia sp.), guava, legumes (Lupinus sp.), cotton, and perhaps some of the Phaseolus sp. beans. Lima beans, the common bean, achira and Capsicum peppers are added in the subsequent Playa Hermosa phase (2500-2275 B.C.). Apparently the domesticated plant inventory remained stable for a few centuries, as it is not until the terminal preceramic Gaviota phase (1900-1750 B.C.) that the next major increase in domesticates occurs, with Pacae, sweet potato, lucuma and peanuts

now occurring, and with maize present on the North Coast if not also on the Central Coast.

Whether one wants to dispute the first occurrence of any particular domesticate by a few centuries one way or the other, what seems important is that by 2000-1500 B.C., the following impressive list of domesticates are being exploited in Peru:

llama	Lama glama glama
guinea pig	Cavia cobaya
maize	Zea mays
squash	Cucurbita moschata
	C. ficifolia
	C. andreana maxima
common bean	Phaseolus vulgaris
lima bean	P. lunatus
jack bean	Canavalia plagiosperma
bottle gourd	Lagenaria siceraria
chili peppers	Capsicum baccatum
legumes	Lupinus sp.
amaranth	Amaranthus sp.
quinoa	Chenopodium quinoa
lucuma	Lucuma bifera
pacae	Inga sp.
guava	Psidium guajava
achira	Canna edulis
peanuts	Arachis hypogaea
sweet potato	Ipomoea batatus
cotton	Gossypium barbadense

Though not all of these plants above can be grown in the Jauja-Huancayo basin, a considerable number of them can. What becomes critically important here is the fact that the occupants of the Jauja-Huancayo basin apparently preferentially retained an emphasis upon hunting and semi-nomdic pastoralism with horticulture being a minor adjunct, while many other Andean areas became settled, full-time agriculturalists, and that this emphasis remained the dominant cultural determinant until forcibly terminated by the Huari conquest.

In addition to other factors, this may have been due in part to an emphasis upon growing such root crops as papas, ulluco, oca and mashua; the average yield per hectare of maize in the Jauja-Huancayo basin is 1200-1600 kilos, while the average yield of papas is 7000-9000 kilos per hectare. Moreover, ulluco, oca and mashua seem peculiarly adapted to cold and semi-arid climates; in the vicinity of Jauja these crops mature in 7-8 months, but in the moister and slightly warmer environs of Huancayo, these same crops take 1-2 months longer to mature, averaging 8-9 months (Lewis 1954:45-50). Theoretically, then, due to the relatively little attention required during the growing period and the relatively high yield, semi-pastoral nomads such as we have hypothesized would be able to produce significant quantities of vegetable products with no apparent stress placed upon their semi-nomadic existence.

Chapter 2

Previous archaeological study in the area

A considerably greater amount of work of an archaeological nature has been done in the Mantaro valley between Jauja and Huancayo, and in the contiguous areas, than is evident from perusing any modern summary of Peruvian prehistory. Perhaps the first work we can refer to as archaeological is Cieza de Leon's description of the ruins of Wariwilka (PJuM 501) when he visited the valley with President La Gasca in 1547. Though the temple had been destroyed only about a decade earlier by the combined activities of Manco Inca II and Father Valverde, Cieza apparently believed that it had been destroyed for a much greater period of time and described it as primarily a relic of the pre-Inca occupants of the area. His description of the temple remained the most accurate and thorough until Flores Espinoza (1959) gave us the first actual measurements and a rough plan. The location of the temple was forgotten after Cieza's time, and was not rediscovered until 1931 by Federico Galvez Durand.

The quickening interest in prehistory in other parts of the world in the early nineteenth century was also reflected in Peru. In 1838 Leonce Angrand, Vice-Counsul of France in Lima, made notes and drawings of the ruins of Hatun Xauxa (PJuM 509-513, 520), on the ruins of Tunanmarca (PJuM 505), and on a site (unidentified) between Sicaya and Orcotuna. These drawings are in Vol. 8 (Nos. 16, 30, 32, 33) of his

unpublished notes and drawings in the 'sala de la Reserva del Gabinete de Estampas de la Biblioteca Nacional de Paris'; although two of them have since been published in Rivera Martinez (1968, Pls. 11,12). Also included in these drawings are maps of the sites; apparently Horkheimer (1951) was able to obtain a photocopy of the sketch map of Tunanmarca. These drawings and maps should be very valuable to obtain for anyone interested in the Tunanmarca area; the two plates published by Rivera Martinez show Tunanmarca in a state of preservation much superior to that of today. Presumably the same would be true for the ruins of Jauja, and the ruins between Orcotuna and Sicaya.

The earliest published reference was by Lt. Gibbon, who with Herndon, was exploring the Amazon drainage for the U.S. Navy. Gibbon remarked on Jauja, but his best description was that of Patankoto (PJuM 502), which he observed (1854:8) had "ruins of stone walls 12 feet high and 1 to 1 1/2 foot thick. Some of the buildings have been round; others oblong, but generally square, 12 by 18 feet. The round ones are largest and best situated. The streets very irregular and narrow... The mason-work is very rough, but remains of mortar are there. .. Besides doorways, there were window openings."

The drawings of Jauja by Wiener (1880) are the next important contribution. Particularly important here is a sketch of a large Inca usnu or platform (1880:245) which has since been destroyed, and a map of the storage colcas above Jauja, which, though inaccurate, is the only map of the storage colcas of Jauja. Wiener also illustrates three Moche IIIb pieces (1880:605, middle row-right; p. 616, lower row-

middle and right) which he identifies as being from Jauja. Inasmuch as no other Moche vessels, or even Moche sherds, have been found anywhere in the valley or surrounding areas, these three pieces are extremely important if they have been correctly identified as to provenience. However, I would argue that these three pieces most likely come from the Hacienda Sausal in the Chicama valley on the North Coast; Wiener visited this locality, which he calls 'Sausal': and he refers to Jauja in the text as 'Sausa'; so it seems most likely that 'Sausal' was mistakenly read as 'Sausa'; which was then modernized to the present day version as Jauja. This seems most reasonable, particularly since the closest occurrence of Moche pieces elsewhere is a couple hundred kilometers from Jauja.

There is a gap of approximately half a century before the next work of an archaeological nature in the Jauja-Huancayo area. Into this gap we can place one lone stone feline figure, published by Berthon (1911, Pl. 13), which is said to come from the vicinity of Jauja. Berthon labels the feline as being of Tiahuanaco style, but a stone feline of almost identical design is illustrated by Tello (1923a, Fig. 57) as being Chavin style. I am not conversant enough with the sculpturing vocabulary of either style to declare which style the piece belongs to with certainty, but to my eye it appears to have more Middle Horizon features than Early Horizon features.

Galvez Durand has been credited by many as the first to recognize Huari-related ceramics in the Jauja-Huancayo area when he excavated such ceramics from tombs near Wariwilka in 1931. But this honor

actually goes to Kroeber, who in 1926 picked up a piece in Huancayo (illustrated in Kroeber 1944:40, Fig. 5c) which he noted had affiliations both with Nasca Y and Epigonal Tiahuanaco (Kroeber 1927:642). This piece has been identified by Menzel (1964) as being a Chakipampa-derived Viñaque piece. Kroeber's second major contribution is the definition of a ware from the Jauja-Huancayo area which he calls Black-on-Red Huancayo ware (Kroeber 1944:98). This ware comes from collections made by Lila O'Neale in 1931; the sherds illustrated in Kroeber's Pl. 38:b-n all come from the Early Intermediate Period Usupuquio occupation of the hill known as Calpish today (PJuM 616). Unfortunately the whole vessel illustrated in Pl. 38:a by Kroeber is a purchased piece and belongs to a different style, a late Middle Horizon style called Quinsahuanca. Kroeber's Huancayo ware, therefore, apparently encompasses both my Usupuquio style and my Quinsahuanca style, but his illustration of predominantly Usupuquio style sherds is important as it is the only source outside of this report where pre-Middle Horizon ceramics are illustrated for the Jauja-Huancayo section of the valley.

Lila O'Neal visited the Huancayo area in 1931 with Julio C. Tello and T. Mejia Xesspe when she was a Guggenheim fellow in Peru. At that time she made a collection of sherds from the site of Wariwilka, just rediscovered by Galvez Durand that year, and from at least seven other sites nearby (see Appendix A). Part of these collections were analyzed by Kroeber, as noted above, while the Arhuaturo, Arhuaturo-Inca, and Inca materials were analyzed by Ravines Sanchez (1966). Therefore,

while O'Neale did not contribute directly, her collections have led to two important studies.

Federico Galvez Durand is locally regarded as the first collector in the area, but as we have seen, several people preceded him. His most important contribution was the rediscovery of the site of the oracle of Wariwilka and his large collection of whole pots removed from several tombs at the site of Wariwilka and other local sites. Though Galvez Durand never published, some of his material has been since published by Suarez Osorio (1967), Matos Mendieta (1959), Larco Hoyle (1963), and Lumbreras (1959a).

Chronologically the next significant event was the description of a number of late sites by Gutierrez Noriega in the valley of Yanamarka, just north of Jauja (Gutierrez Noriega 1937). Most, if not all, of the sites are post-conquest, such as Tunanmarca and Hatun-malka. He correctly identified the architectural style of these ruins as being an amalgam of Inca and local Huanca architectural traits. This same year L. W. Henry presented Gladys Nomland a collection of sherds he had made at the mine of San Blas, which were described by Nomland (1939) and Kroeber (1944). Though Lake Junin is a considerable distance from the Jauja-Huancayo survey area, it has widely been assumed that the Early Horizon ceramics should be the same. Though a seemingly reasonable assumption, the Pirwapuquio and Cochachongos styles discovered by our survey have little resemblance to the Lake Junin San Blas materials. Hermilio Rosas is now working on a new series of sites in the area so that eventually it will be possible

to explicitly define the differences between the late Early Horizon styles of the two areas. The boundary between these two styles (San Blas and Cochachongos) becomes quite interesting since the San Blas site itself has Cochachongos trade sherds (observed in the collections of Espejo Nuñez and Rosas in the Museo Nacional de Antropologia y Arqueologia, Lima) and there is a San Blas trade sherd in a terminal Cochachongos-early Uchupas assemblage. Wells (1940) reports San Blas materials at site M near Tarma; hence it appears that between Huancayo and Huanuco there is an important intermediate area which has its own cultural history. The area between Jauja on the south and La Oroya and Tarma on the north must be a critical one, since for late Early Horizon-early Early Intermediate Period times, Tarma has San Blas materials (Wells 1940:353) while later on in the Early Intermediate Period, La Oroya has Usupuquio-like ceramics (Browman, unpublished field notes), and during the later part of the Late Intermediate Period the area around La Oroya participated in a ceramic style closely similar to Arhuaturo (Wells 1940:350-353).

In the 1940's the area was relatively quite. In 1941 Mercado Zarate gave us the first description of Sirwakoto (or Masma); more important he has given us our only description of pre-Hispanic mines in the area. In the early 1940's John Rowe made a collection of Inca and Arhuaturo-Inca ceramics from a hill on the eastern border of Huancayo. Since he notes that 'there were no structures' and that the 'site is the only one of any size on the outskirts of Huancayo' (Rowe 1944:54), I have not been able to identify it--the only sites which

I located with Inca and Arhuaturo-Inca sherds to the east of Huancayo all had structures; the largest site on the outskirts of Huancayo, and one of the largest in the whole valley, is Kotokoto, but it is to the south of Huancayo, and it also has structures. Rowe returned to the Huancayo area with Dorothy Menzel in the late 1950's and collected a number of other sites (see Appendix A); his analysis of this material led him to conclude that the sites of Patankoto (PJuM 502) and Kotokoto (PJuM 602) were large Late Intermediate Period cities, which continued into Late Horizon times (Rowe 1963:17). By Rowe's (1963) definition, apparently anything with a population of more than 2,000 can be called a 'city'. These sites both qualify as cities by his definition, but unfortunately the evidence seems to suggest that they had rather small occupations during Late Intermediate Period phases and that the bulk of the occupation of both sites dates to Inca phases. That is, we would have the Inca occupation bringing settled city life to the southern half of the Jauja-Huancayo basin, a result that seems to contradict the general evidence that the Inca occupation in the highlands led to a decentralization of population centers.

Following World War II, Tschopik, who was then doing ethnographic research in the highlands, published a short analysis of material from two rockshelters along the Rio Cunas which had been partly excavated by Paul G. Ledig of the local Carnegie Magnetic Observatory. The larger part of Ledig's collection (Tschopik 1946) derive from Rockshelter 1 (PJuM 508); the remaining materials are from Ledig's Rockshelter 2, which he reports was filled in and leveled in 1941.

This report of Ledig's materials, and a second report by Rosa Fung Pineda (1959) concerning her re-excavation of Ledig's Rockshelter 1 and with photographs of additional projectile points from Ledig's 1931 excavation of Rockshelter 2 and from a collection made at San Juan Pata near Jauja by Pedro Monge, comprise almost our total knowledge of lithic tools and preceramic occupation in the Jauja-Huancayo basin before our survey.

Both the Ledig rockshelters have been treated as being contemporaneous; on the basis of Tschopik's original report of Ledig's materials, both were seen as preceramic, but since Fung Pineda's re-excavation, both shelters have been treated as early ceramic assemblages. Certainly the major portion of Ledig's Rockshelter 1 is a ceramic period lithic assemblage; most of the sherds recorded by Fung (1959) appear to be of the Early Intermediate Period Usupuquio style, and the lithic assemblage is indistinguishable from the nearby site PJuM 507, an Usupuquio phase occupation site. However, the projectile point types illustrated by both Tschopik and Fung from Ledig's Shelter 2 are more typical of the terminal preceramic assemblages, and perhaps the earlier ceramic assemblages, so that it appears, on the basis of the few published specimens, that the two rockshelters were not contemporaneously occupied, but rather that Rockshelter 2 represnts a terminal preceramic and possibly early ceramic occupation, while Rockshelter 1 was occupied subsequently by the peoples inhabiting the adjacent occupation site of PJuM 507. It is difficult to assess the exact period of the projectile point collection from San Juan Pata illustrated by Fung (1959, Pl. 8b); on

the basis of the predominance of certain point types and their relative size, at least part of the collection looks to be terminal preceramic, while the rest must be roughly contemporaneous with Ledig Shelter 1 since Fung (1959:268) notes that Usupuquio-like ceramics occur at the site.

In 1951 Horkheimer reported on his visit to the Jauja-Huancayo sector in search of the Late Horizon and Early Colonial site of Llocllapampa. Though the site he sought is outside of the broad sector of the valley between Jauja and Huancayo, Horkheimer nevertheless visited a number of sites in the valley. His gossipy report is particularly valuable as it gives us for the first time an accurate sketch map showing the locations of the sites he visited plus photos of some of the better preserved structures. Apparently we have Guillermo Mayer to thank for Horkheimer's extensive visits to sites surrounding Huancayo. Mayer has an extensive knowledge of the local ruins; he worked with Wells (1940) on part of the survey around La Oroya, and he has worked with Ledig, Tschopik, Horkheimer and other scholars in the area. Mayer was very helpful on our own survey, helping us to locate the Tambo of Hatun-Xauxa, now mainly obscured by the pueblo of Villa Sausa. Local informants led us to believe that the Late Intermediate Period occupation sites and the rows of colca on the hill above Jauja encompassed the entire site of Xauxa as visited by the conquistadores, but Mayer was able to locate precisely the Tambo in amongst the dwellings of the modern day pueblo of Villa Sausa.

Richard Adams, while doing ethnographic research on Muquiyauyo (Adams 1959), apparently also made ground plans and sherd collections from four sites near Jauja (Bennett 1953:16), but this material has not been described. During the early 1950's the first of a number of newspaper articles by Julio Espejo Nuñez listing various sites in the general Huancayo area and his views as to their cultural affiliations began to appear. Many of these articles were published in rather ephemeral local papers which no longer exist and are no longer available today. Espejo Nuñez still receives ceramic collections from local history teachers in the Jauja-Huancayo area; these collections are stored in the Museo Nacional de Antropologia y Arqueologia in Lima for future study.

The Second National Congress of History of Peru for the Pre-Hispanic Periods in 1958 resulted in a number of important contributions concerning the prehistory of the Jauja-Huancayo basin. Tello Devotto (1959) published the results of his two decades of survey work in the area; his site descriptions are useful as they are reasonably accurate, they give precise locations, and moreover he reports the evidence for cultural remains and structural remains for two sites which now have completely disappeared under the expanding populations centers of Huancayo and surrounding outliers. Guzman Ladron (1959) reported on the Inca occupation in the area; his report is useful as a source of local folklore concerning what the Inca occupation of the valley consisted of. Flores Espinoza (1959) published on the site of Wariwilka, including the first map of the

remains of the Inca-version of the temple precincts of the oracle of Wariwilka. In addition, she published illustrations of several vessels from tombs near Wariwilka. Eight of the nine specimens she describes are illustrated in the article; the ninth is illustrated in Lumbreras (1959a, Pl. 9a). Menzel (1964:39) treats these vessels as a single grave lot from Middle Horizon Epoch 2B, and notes that it is an extremely important collection of vessels as some of the illustrations are related to the Viñaque style of Huari, while two double spout vessels are related to the north-central coast, and one of the vessels has an imitation Pachacamac style design, showing then that the vessels represent a rather cosmopolitan knowledge of the Huari empire. A number of the statments and conclusions Menzel reaches concerning the Central Highlands are based upon the consideration of these vessels constituting a single grave lot plus her assumption that the vessels illustrated by Lumbreras (1959, Pl. 9:b-f, Pl. 10:a) from the Galvez Durand collection are from the site of Wariwilka. A closer reading of Flores Espinoza (1959:180-181) shows that these vessels come from several tombs; Dorothy Menzel (personal communication) agrees with this reading, but points out that it does not affect the arguments since all the vessels are Middle Horizon Epoch 2B pieces. Of possibly more serious consequence would be the utilization of the published pieces from the Galvez Durand collection as all being from Wariwilka; from Galvez Durand's sparse notes, we know that he purchased some vessels in Ayacucho from the site of Huari, and as both Lumbreras and Espejo Nuñez have pointed out, more than 90% of the vessels in the collection

are without provenience. Therefore any vessel illustrated from the Galvez Durand collection must be viewed as suspect, but once again whether these vessels come from Wariwilka or from Huari does not appear to seriously affect the argument presented by Menzel.

The first Andes Expedition of the University of Tokyo was published in 1960 (Ishida and others 1960); though it added no new sites in the Jauja-Huancayo basin and its architectural descriptions of such sites as Patankoto had been preceded by others, it did publish for the first time illustrations of some of the local agricultural hoes and typical Arhuaturo and Arhuaturo-Inca sherds.

Lumbreras taught for a time at the G.U.E. Santa Isabel in Huancayo and worked over the Galvez Durand collection. On the basis of this material and considering the work of Matos Mendieta and Espejo Nuñez, Lumbreras (1959b) made certain correlations between the wares of the vicinity of Ayacucho and Huancayo. One problem which plagued Lumbreras was the fact that following the Huari Empire, there seems to have been considerable archaizing in the Central Highlands. Hence for Huancayo, Lumbreras defines a style called 'Mantaro', which he treats as a Late Intermediate Period unit; our additional evidence suggests that this style can be subdivided into Quinsahuanca, Matapuquio, and Arhuaturo/Arhuaturo-Inca style ceramics. The pieces illustrated in Pls. 9 and 10 (Lumbreras 1959b) from the Galvez Durand collection are good Middle Horizon pieces; the llamoid effigy vessels are particularly interesting as they apparently indicate northern influence, either by way of Nieveria on the Central Coast or by way of Huamachuco in the

Northern Highlands. There is an interesting piece illustrated by Lumbreras (1960b, Pl. 6:1) as a Huari shape which was drawn from a Middle Horizon piece apparently taken from the site of Anja (PJuM 799), now in the Rietberg Museum in Zurich (Anton and Dockstader 1968:197; Kubler 1962:160). This piece is a very interesting vessel and if it is indeed a conservative Middle Horizon Epoch 2A piece it will become important in cross-dating some of the late Tiahuanaco phases in the Lake Titicaca region.

Ramiro Matos Mendieta has published several reports over work he has done in the Departments of Junin and Huancavelica. For the Jauja-Huancayo area, one of the most important reports is the semi-popularized discussion of Wariwilka (Matos Mendieta 1967). The Inca miniatures (1967:14) pictured there plus the illustrations and discussion by Shea (1969) give us one of the most useful studies on Inca miniatures made in Peru, plus the most useful study of Inca vessel shape categories for the Jauja-Huancayo area. Furthermore they indicate the considerable continued importance of the oracle of Wariwilka during Late Horizon times. More important, from the point of view of trying to understand the phenomena of the Huari Empire, is the Middle Horizon vessel Matos illustrates depicting a feline head or headdress on top of a human head. Only one feline head has been illustrated from Huari of this type (Lumbreras 1959a, Pl. 8j), but several fragments of vessels of this type are know from the Jauja-Huancayo area (Shea 1969:189, Fig. 4; this study, unillustrated specimens from Calpish BC). This important vessel shape category seems to have originated from the Cajamarca-Huamachuco

area (Seler 1893, Pl. 26; Tello 1923b, Fig. 94; Muelle and Blas 1938, Pl. 39b), and perhaps relates to the oracle of Catequilla.

Perhaps the most important study of late ceramics has been done by Lavallee (1967b). Her Types B and C coincide closely with the Matapuquio style, while her Types A-1 and A-2 correspond with Arhuaturo and Arhuaturo-Inca styles, and her Type D is very similar to what we call Viques mitmaqkuna ware. Since Type D is almost exclusively from sites in the northern part of Huancavelica, this suggests that the most likely place of origin for the mitmaqkuna is from this area. Some of the distinctions made by Lavallee between her Types A-1 and A-2 turn out to be spurious; with the larger collections we made, features she defined (1967b:420-423) as being exclusively A-1 or A-2 have turned up on both wares, and sites which were supposed to have only Ware A-1 also turn out to have her Type A-2 ware. Lavallee's other important contribution is the definition of modern ceramic technology at one of the two major modern ceramic production centers in the valley, San Isidro de Aco (Lavallee 1967a).

The work done by Thompason and Murra at Huanuco Viejo turned out to have important consequences for the study of prehistory in the Jauja-Huancayo basin; both D. E. Shea and E.C. Morris, who worked with Thompson and Murra at Huanuco Viejo, have made important contributions. Morris (1967) devoted most of his study to the storage complex of Huanuco Viejo, but he was able to spend five days in Jauja; from his survey he concluded that there were 787 storage colca associated with the Inca site of Jauja and he estimated another 300 in rubble. His count of storage colcas differs from the count we arrived at for

several reasons--Morris included several groups of storage colca near Lago Paca which were outside our survey boundaries and which we had not seen to be directly related to Jauja; and at least one of the sites treated as a pure Late Horizon storage site is in fact a Late Intermediate Period occupation site with some storage colca, which was then considerably enlarge in Inca times. This problem will be dealt with at further length in Ch. 7 and 8.

Dan Shea wrote his doctoral thesis on four test cuts he made in the temple precinct of Wariwilka (Shea 1969). In only one of the test cuts was Shea able to recover anything that approached undisturbed deposits. His study of the Inca miniature offerings seems to be one of the most valuable contributions of his thesis. For comparative materials for earlier materials, Shea had only the illustrations of materials published by Matos and Lumbreras, which unfortunately have a tremendous temporal mixture of different styles. Shea felt that his deepest cut down along a wall represented an undisturbed deposit, and he defined two styles--Huarpa and Ayacucho--to include the bulk of the materials in the lowest layers, and which he assumed to be identical to the respective materials of Huarpa and Ayacucho styles as defined by Menzel (1964) and Rowe, Collier and Willey (1950) for the Huari-Ayacucho region. Based on his assumption that the style he defined as 'Huarpa' was the same as Huarpa for the Ayacucho region, he concluded that the basal strata were laid down in the late Early Intermediate Period and that the oracle of Wariwilka was already ongoing by the time of the Huari conquest. However, on the basis of our additional

data, the illustrations and the rim profiles of Shea's 'Huarpa' and 'Ayacucho' styles appear to be wholly Middle Horizon and seem to be variations of my Calpish and Quinsahuanca styles. The ceramics in the lowest levels, which were in Shea's 'Huarpa' style, appear to be mainly of my Quinsahuanca style or late Middle Horizon; it seems that there is reversed stratigraphy--not an unusual situation for fill next to a structure wall--with Quinsahuanca style ceramics lowest and with Calpish style ceramics mixed in with a considerable amount of other styles above. This suggests that the current wall may have been built or modified during Quinsahuanca phases; note, however, that the rim profiles and illustrations are not clear enough to make a definite designation. What we can say with more certainty is that the present temple was extensively renovated during Inca times, and that there are certain Middle Horizon Calpish phase structures which were destroyed during some aspect of the construction of the present temple structure.

Chapter 3

Collection, excavation and analysis methodology

A. Problems and rationalization for ceramic methodology

The fact that most sites were occupied various times not only limited the possibilities but in large part dictated the methodology utilized. Desirable occupation sites were continually reoccupied over time, but the nature of the basin has meant that each subsequent occupation only added another ceramic component to be intermixed in the thin 20-30 cm. of soil overlying the impenetrable calcrete, rather than the accumulation of midden deposits. What was not intermixed in times past has now been thoroughly intermixed by the modern farmer with his European-derived plow and oxen, with the terminus of the plow zone being in many cases the top of the cemented Pleistocene lake gravels. There are, of course, also some nicely stratified middens, but they are the exception rather than the rule.

What is needed, then, is a methodology which is sensitive to changes in the ceramic vocabulary which can be usefully applied to surface collections containing ceramics of several different centuries, perhaps even covering millenia. I would argue that 'similiary' seriation, as defined by Rowe (1961), utilizing all three patterns of seriation--occurrence, frequency and development--as outlined by Rouse (1967) is the most suitable, and perhaps only viable method.

Implicit in this approach are a number of assumptions which need

to be substantiated, and rejection of other assumptions which requires some word of explanation. Two very basic assumptions for this sort of stylistic analysis are that each individual ceramic vessel itself has a short life-span, and that the vessels themselves mirror both gradual cultural change and severe cultural crises such as invasions through changes in decorative motif, in vessel shapes, in vessel category--in short, in the total ceramic vocabulary. That ceramic vessels have a short life-span seems to be a fairly generally accepted proposition, and can be documented ethnographically. On the basis of data from four Mexican families, Foster (1960:608) estimated an average life of one year for ware in daily use, with an undetermined longer life for storage vessels and ceremonial pieces. Believing modern ceramics to be superior to pre-hispanic wares, he further postulated that the life-span for these latter vessels should be on the order of half a year. These estimates seem too short to me; the estimates of Lewis (1969:121) based on fourteen Mexican families (a much larger sample than Foster's four) of approximately 2.5 years for kitchen equipment in daily use and greater than 5 years for tools, ceremonial vessels and heirlooms, seems to be a closer approximation to reality.

The assumption that ceramics will in some way mirror significant cultural events is more tendentious. In some areas of Peru it has been argued that ceramics fail to give indication of such grave cultural crises as conquest; Tschopik (1950) and Thompson (1968) have argued that in a general sense that there has been no change in the ceramic inventory in the last 500 years and that the Inca conquest

and subsequent Spanish conquest have essentially not been reflected in the ceramic record. Lavallee (1967a) also has suggested that the same is true for the Jauja-Huancayo basin, but on the basis of our survey, this latter assertion cannot be substantiated, as both the Inca invasion and the subsequent Spanish conquest are impressively reflected in the ceramics, and the ceramics of even the early colonial Hispanic period are so different from modern ceramics that there is little danger of confusing the two. It is my feeling that the facile generalization made by Tschopik (1950) is a dangerous oversimplification, and that subsequent researchers, such as Foster (1965), Lavallee (1967a) and Thompson (1968), who all cite Tschopik as the intellectual source of their idea, have erroneously over-emphasized the reluctance to innovate and the conservative nature of potters.

To pursue this question slightly further, it is clear that Tschopik and other researchers have recognized an important phenomenon, that of the basic resistance of cultures to innovation under certain unfavorable sorts of circumstances. That this is true I would not deny; in fact it is in part owing to this basic resistance to innovation under unfavorable circumstances that I would in part attribute the long continued importance of hunting and herding in the Jauja-Huancayo basin. The problem arises, as I see it, when Tschopik and others conclude that since the cooking pots and bowls and chiche jars today are roughly similar to those of 500 years ago, we can assume a basically unchanged ceramic tradition. This sort of reasoning, if adopted here, would lead me to the patently absurd conclusion that

there had been essentially no changes in the ceramic tradition of the Jauja-Huancayo basin since ceramics were first introduced, for looking at Tables 2-5 in this chapter, it becomes readily apparent that the basic vessel shapes, in a generalized sense, have remained essentially constant over time. Rather than argue that these tables show a basic resistance to innovation on the part of a conservative potter, I would interpret these tables as indicating that only certain limited vessel categories have been seen to be useful by the serrano. I see no conflict in accepting some traditional continuity and also accepting the fact that this continuity was modified from time to time and reflects changes due to major cultural and political events. To some extent this may be due to limitations of the structural properties of ceramics and certain biological features of man himself; a measurement of vessels found in the modern American kitchen produces a limited number of cluster points which fit rather well with those observed in Tables 2-5.

Closely related to the above questions is the problem of the nature and significance of 'prestige' wares. In the case of conquest in particular, it is not unexpected that the ware of the conqueror is utilized by the ruling classes and the subjugated peoples continue making and using their own ware. Apparently this was the case during the Inca occupation of Huanuco(Thompson 1967, 1968; Morris 1967), and in other areas such as the Lurin valley of the Central Coast, but it does not seem to have been the case in the Jauja-Huancayo basin. There are four major epochs of foreign influence impinging upon the valley--

one from the Cañete-Pisco-Paracas area during the late Early Horizon, the second in the form of the Huari conquest during the Middle Horizon, the third being the Inca conquest of the Late Horizon, and the last being the Spanish conquest.

The coastal influence into Cochachongos Early Horizon settlements is the least well understood of these four incidences. Actual trade pieces are rare, and may be assumed to be pieces of 'prestige' ware, but local copies, and in particular, the influence of coastal styles upon local design vocabulary becomes marked, so that the impact of this coastal incursion has been well represented in the ceramic record.

The secon major influence occurs in the form of the Huari conquest. Since Huari Polychrome vessels are rare, and usually only found in richly furnished graves or at the important temples, it appears reasonable to call this Huari Polychrome a 'prestige' ware and see it associated with an upper and perhaps ruling class. We would be correct in doing so, but to stop at this point would be to miss a major facet of the conquest. For while Huari Polychrome, and also Cajamarca-Huamachuco wares, appear to be prestige wares and are associated primarily with rich tombs or temple precincts, there is an equally important and marked change in the everyday utility ware of the 'lower' classes. For with the conquest, the local utility ware is supplanted by local copies of Huari wares of simpler and less sophisticated decorations than the polychrome; in other words apparently the entire class structure of the Huari heartland was imposed upon the Jauja-Huancayo sector, with the priests and political elite being privileged

to utilize the prestige ware, but with the commoners adopting the corresponding ceramic utility wares of the commoners of the Huari homeland. In a sense, then, the common everyday utility ware also may be considered a prestige ware, as it obviously carries with it sufficient prestige to become more desirable than the indigenous wares.

During the time of the Inca Empire, the Jauja-Huancayo basin again reacts differently than many other areas of Peru. Fancy Cuzco polychrome, apparently partly locally produced, becomes common throughout the area, and apparently has little relationship to social status. Fancy Cuzco Polychrome plus Inca miniatures and some of the Inca utility wares appear to become additions to, rather than supplanting, the local ceramic inventory. The local style flourishing during the Inca domination, Arhuaturo-Inca, represents some of the fanciest and most sophisticated the area produces in its whole history.

With the Spanish conquest, the area reacts differently than the situation described by Menzel (1959) for the South Coast. During the first half century following the first Spanish contact, the ceramic inventory changes in rather a negative fashion, with the disappearance of a number of diagnostic features of both Arhuaturo and Inca origin. The initial effect of the Spanish conquest was a disintegration of the local ceramic vocabulary with no concomitant replacement of Hispanic features. It is important to note that though the local Arhuaturo style was represented by more survivals in early Llaqsa inventories, the Inca overlay was also still present in a significant proportion. We do not see significant addition of Hispanic traits, in

the way of decorative technique, wheel-made pottery, glazing, and vessel shapes, until a considerable time after the Spanish conquest, an event I would correlate with the establishment of reducciones. In the Jauja-Huancayo basin, therefore, we do not seem to be able to talk about Spanish 'prestige' ware until nearly 50-60 years after the conquest, and when it does appear, it results, no doubt partly through the introduction of wheel-made pottery, in the rapid and nearly complete replacement of the local ceramic inventory by a European-dominated inventory.

A final point which should be touched upon is the strong emphasis upon occurrence patterns and development patterns as a basis of seriation, and the relatively little attention given to frequency patterns. Among others, Rouse (1967:187) has argued that "frequency patterns also have the advantage over occurrence patterns in that they give more precise results." It has been my experience with the surface collections for the Jauja-Huancayo basin, that occurrence and development patterns have allowed me to distinguish phases of 50-100 years duration, but that except in rare instances, frequency patterns have been of little utility. For the problems at hand, then, occurrence and development patterns have given more precise results than possible by utilizing frequency patterns, a result different than that postulated by Rouse. In order to subdivide the 50-100 year phases into subphases of shorter duration, however, I would agree that frequency patterns would assume a position of much greater prominence. There are certain mechanical limitations imposed by the use of

frequency patterns which simply could not be met by the majority of the sites included in this survey--requirements such as statistically large samples, single component and short-duration occupations, a stratigraphic excavation level where the context is secure, and so on. That is, frequency patterns may be viewed as being of paramount importance when one can deal with specially selected samples, but in the case at hand they would require us to discard the majority of materials from our site survey, so that utilization of frequency patterns, except where the site samples were such as to permit it, is seen as the next step after the initial chronology has been established.

B. Survey methodology and vessel seriation patterns

Before defining the various ceramic phases, it seems useful to outline in a general way the methodology used during survey, in analysis, and some of the general patterns resulting.

Since, as pointed out in Ch. 2, we could only identify a handful of the ruins in the valley from the previously published literature, a two man crew spent three months methodically surveying as much of the valley as possible. In this period we identified 300 sites, cataloging 6,197 lithic artifacts and 53,354 ceramic artifacts from these sites. It was not practicable to handle both the preceramic and the ceramic periods, so that preceramic sites were in the main simply bypassed; hence the 300 sites surveyed represent only 3,000 years of the approximately 15,000 years of human occupation in the area. We were able to define two preceramic assemblages since some of the ceramic

sites also coincided with preceramic occupations.

In general, only diagnostics such as rims, bases, angles, handles and decorated pieces were collected, with a major emphasis placed upon rims and decorated pieces. For sites where our sample was small, we saved all decorated fragments, but for sites where our sample was large, particularly later sites, we saved only larger fragments which had significant design portions. The ratio of sherds saved and catalogued after collecting and washing varied from about 1 in 5 for small sites to 1 in 20 for large late sites, with an average ratio of about 1 in 8. That is, we discarded about 85-90% of the sherds after washing and sorting to reduce the approximately 500,000 sherds collected to the 53,354 sherds utilized for analysis.

For the lithic collections, the procedure was similar, with about 1 tool in 10 saved, thus processing about 60,000 lithic pieces to obtain the 6,197 tools treated in analysis. Except in the case of the test cuts, only a limited sample of the best worked stone tools was collected for a representative collection. Some sites had literally hundreds of stone hoes and blades and dozens of mortars, but we collected only a handful of blades and hoes to give us an idea of the ideal type and range in material, and found that we could not spare the time and effort to collect the mortars and rocker mills we observed. Similarly, for early sites, we tended to pick up only the projectile points and well-shaped knives and scrapers, plus a representative sample of the large pebble core tools.

Excavated collections:	Sherds	Lithic
PJuM 501	395	-
PJuM 502	1,670	164
PJuM 525	230	64
PJuM 613	4,460	618
PJuM 614	41	-
PJuM 618	385	11
PJuM 625	44	-
PJuM 677	22	-
sub-total:	7,247	857
Surface collections:	46,107	5,340
Total sample analyzed	53,354	6,197
Estimated discards:	450,000	55,000

In constructing chronological units by similiary seriation, we were forced to disregard some rather interesting unique or rare decorated pieces and rims. Unless a sherd was clearly a member of a single component site or in some sort of incontrovertible association, it was not considered, due to the obvious problems of contamination in surface collections and the concomitant difficulties of extracting the various component units from a multi-phase occupation site.

The ceramics were first seriated on the basis of vessel inventory; this initial seriation is shown in Table 6 in this chapter and its chronological ordering shown in Chart 1. These fairly large units were then further subdivided on the basis of developmental and occurrence patterns primarily, with a relative frequency pattern utilized where possible; frequency became particularly important in ordering the transitional units, such as Huacrapuquio. Though ware was considered, as well as vessel shape, decoration techniques and so forth, ware

		Jauja-Huancayo	Southern Sierra	Northern Sierra	Coastal Peru
Terminal Preceramic	2000 BC 1800 BC	Tinyari	Cachi	Lauricocha III	Gaviota
Initial Period	1600 BC 1400 BC 1200 BC				
Early Horizon	1000 BC 800 BC 600 BC 400 BC 200 BC	Pirwapuquio Cochachongos	Marcavalle Wichqana Atalla Chanapata Rancha Chupas	Kotosh--levels DEF/4 Kotosh--levels BC/23 Chavin--Mosna and San Blas San Blas Huaylas	Curayacu CD Los Patos Ocucaje 8-10 Topara (Chongos)
Early Intermediate Period	0 AD/BC AD 200 AD 400	Uchupas Usupuquio Huacrapuquio	Wimpilley Caja Huarpa Chakipampa	Huamachuco	Miramar Nieveria
Middle Horizon	AD 600 AD 800 AD 1000	Calpish Quinsahuanca	Ocros Viñaque (Huarpa II) Coras Pillpintuyoq	Cajamarca III	Pachacamac AB (Atarco)
Late Intermediate Period	AD 1200	Matapuquio Arhuaturo	Arjalla Patarjay		
Late Horizon	AD 1400	Arhuaturo-Inca Viques Llaqsa	Inca (Angara)	(Chimu?)	Pachacamac-Inca
Colonial	AD 1600	Ocopa Retama			
Republican	AD 1800 AD 2000	Modern			

turned out to be a criteria of little usefulness. In a gross sense, there have been only two wares throughout most of the basin history, both varying mainly from reddish-orange to orangish-tan--one with sand temper primarily of whitish particles, the other with sand temper including a number of colored particles.

Vessels were grouped into four broad categories--jars, open bowls, enclosed bowls, and ollas, with bottles, in the few instances in which they occurred, grouped with jars. For each phase, rim types were grouped with two measurements given for each form--a 'mode' and the ranges of mouth or rim diameter. Referring to Table 1, which shows the distribution of mouth diameters for Cochachongos Enclosed Bowl Form 2, we see that the mouth diameter ranges from 7-23 cm, but that the mode, in the sense used here, is 14 ± 4 cm. In general, the definition of the mode was made so that at least two-thirds of the vessels of that form would fall within the range of one standard deviation. Initially the calculation of modes was undertaken as a possible chronological indicator. In a limited sense this succeeded, as there are significant differences between some units with respect to the vessel mouth modes, and it is clear, for example, that the mode for the Viques mitmaqkuna open bowl forms is different from that of either the contemporary local Arhuaturo-Inca or the Inca. The more important result of these modes listed in Tables 2-5, and one which was unexpected, is the basic continuity in modes, and the relatively limited possibilities as far as preferred mouth diameters.

Hence for ollas, only three mouth sizes exist (in an ideal sense)--

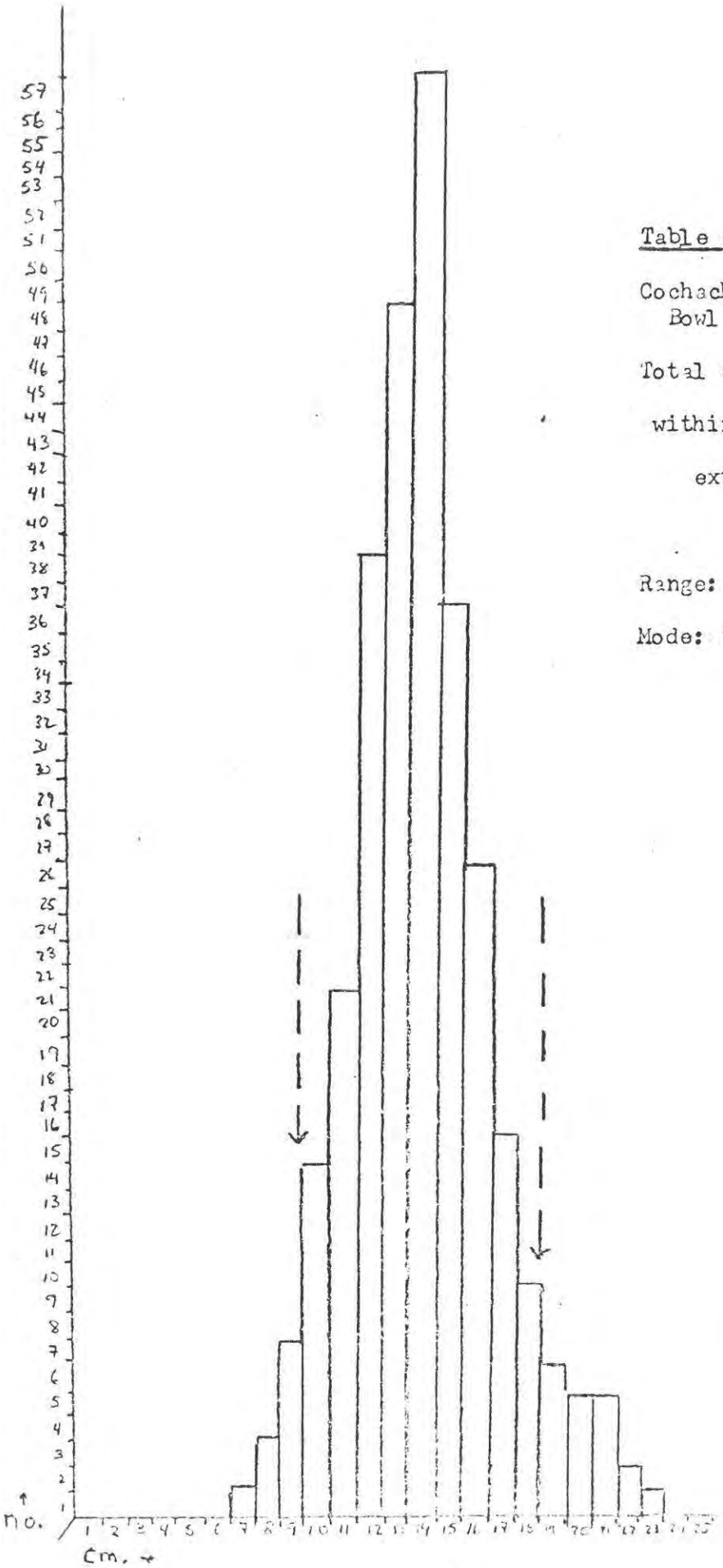

Table # 1

Cochachongos Enclosed Bowl Form #2

Total sample:	295	100%
within mode:	265	90%
extremes:	30	10%

Range: 7-23 cm.

Mode: 14 ± 4 cm.

Table 2

OLLA MODES

Pirwapuquio	15 ± 3	21 ± 4	32 ± 5
Cochachongos	15 ± 4	--	--
Uchupas	--	--	--
Usupuquio	--	--	--
Huacrapuquio	--	24 ± 4	--
Calpish	--	23 ± 3	32 ± 4
Quinsahuanca	--	--	--
Matapuquio	--	22 ± 2	--
Arhuaturo	--	--	--
Arhuaturo-Inca	--	--	30 ± 6
Inca Ware 1	--	--	--
Inca Ware 2	--	--	--
Viques	--	--	--
Llaqsa	--	--	36 ± 6
Ocopa	--	19 ± 4	35 ± 5
Retama	--	19 ± 3	29 ± 3
Modern	--	19 ± 2	27 ± 3

(Mouth/rim diameter modes; measurements in cms.)

Note: indicates the standardized vessel sizes by style

Table 3

ENCLOSED BOWL MODES

Pirwapuquio	--	15 ± 4	--
Cochachongos	10 ± 2	15 ± 4	22 ± 4
Uchupas	--	15 ± 3	--
Usupuquio	--	16 ± 3	--
Huacrapuquio	--	--	--
Calpish	9 ± 2	15 ± 3	--
Quinsahuanca	11 ± 2	--	19 ± 2
Matapuquio	--	--	20 ± 4
Arhuaturo	--	17 ± 5	--
Arhuaturo-Inca	9 ± 4	17 ± 5	--
Inca Ware 1	--	14 ± 3	--
Inca Ware 2	--	14 ± 3	--
Viques	--	--	--
Llaqsa	--	16 ± 3	--
Ocopa	--	--	--
Retama	--	--	--
Modern	--	20 ± 2	--

(Mouth/rim diameter modes; measurements in cms.)

Note: indicates the standardized vessel sizes by style

Table 4

OPEN BOWL MODES

Pirwapuquio	--	15 ± 4	22 ± 3	32 ± 6
Cochachongos	--	15 ± 4	22 ± 4	32 ± 4
Uchupas	--	16 ± 4	--	34 ± 6
Usupuquio	--	18 ± 3	--	--
Huacrapuquio	--	--	20 ± 3	30 ± 4
Calpish	9 ± 2	16 ± 3	22 ± 4	32 ± 4
Quinsahuanca	--	--	19 ± 4	29 ± 4
Matapuquio	--	17 ± 3	--	27 ± 5
Arhuaturo	--	17 ± 4	--	28 ± 3
Arhuaturo-Inca	--	17 ± 4	--	27 ± 4
Inca Ware 1	--	16 ± 4	--	29 ± 3
Inca Ware 2	--	16 ± 4	--	29 ± 4
Viques	--	--	19 ± 4	--
Llaqsa	--	17 ± 3	--	--
Ocopa	--	18 ± 5	--	30 ± 4
Retama	--	18 ± 2	--	--
Modern	--	--	--	--

(Mouth/rim diameter modes; measurements in cms.)

Note: indicates the standardized vessel sizes by style

Table 5

JAR MODES

(Bottles)

Pirwapuquio	6 ± 2	10 ± 3	15 ± 4	--	--
Cochachongos	--	9 ± 3	15 ± 3	21 ± 3	--
Uchupas	--	10 ± 2	16 ± 3	22 ± 3	--
Usupuquio	--	9 ± 2	17 ± 3	22 ± 3	34 ± 8
Huacrapuquio	--	10 ± 2	18 ± 3	--	32 ± 6
Calpish	6 ± 2	11 ± 3	19 ± 4	--	29 ± 3
Quinsahuanca	--	10 ± 2	19 ± 4	--	28 ± 4
Matapuquio	--	11 ± 3	19 ± 4	--	30 ± 6
Arhuaturo	--	9 ± 3	20 ± 4	--	32 ± 4
Arhuaturo-Inca	--	9 ± 3	19 ± 4	--	30 ± 4
Inca Ware 1	6 ± 2	10 ± 2	19 ± 4	--	30 ± 4
Inca Ware 2	--	9 ± 2	20 ± 4	--	30 ± 4
Viques	--	10 ± 2	19 ± 5	--	30 ± 4
Llaqsa	--	10 ± 2	17 ± 4	24 ± 3	--
Ocopa	--	10 ± 2	20 ± 4	--	36 ± 10
Retama	--	10 ± 1	19 ± 5	--	30 ± 4
Modern	--	8 ± 2	20 ± 4	--	--

(Mouth/rim diameter modes; measurements in cms.)

Note: indicates the standardized vessel sizes by style

Table 6-1: Vessel Form Seriation

	Pirwapuquio			Cochachongos				Uchupas		Usupuquio			
	A	BC	DEF	AB	C	D	E	AB	C	AB	C	D	E
Olla 3	X												
Olla 5	X												
Open Bowl 8	X												
Open Bowl 9	X												
Jar 11	X												
Olla 1	X	X											
Olla 6	X	X											
Olla 8	X	X											
Jar 10	X	X											
Olla 4	X	X	X										
Olla 7	X	X	X										
Enclosed Bowl 4	X	X	X										
Enclosed Bowl 5	X	X	X										
Open Bowl 10	X	X	X										
Enclosed Bowl 1	X	X	X	X	X	X							
Enclosed Bowl 3	X	X	X	X	X	X							
Jar 3	X	X	X	X	X	X							
Olla 2	X	X	X	X	X	X							
Open Bowl 1	X	X	X	X	X	X	X						
Open Bowl 12	X	X	X	X	X	X	X						
Jar 1	X	X	X	X	X	X	X						
Enclosed Bowl 2	X	X	X	X	X	X	X	X	X				
Jar 6	X	X	X	X	X	X	X	X	X				
Jar 2	X	X	X	X	X	X	X	X	X	X	X	X	
Jar 5	X	X	X	X	X	X	X	X	X	X	X	X	X
Jar 7	X	X	X	X	X	X	X	X	X	X	X	X	X
Open Bowl 3		X	X	X	X	X	X	X	X				
Jar 9		X	X	X	X	X	X						
Open Bowl 4		X	X	X									
Olla 9		X	X										
Open Bowl 2		X	X										
Enclosed Bowl 7		X											
Olla 10			X										
Enclosed Bowl 6			X										
Open Bowl 7			X										
Open Bowl 11			X										
Jar 8			X	X	X	X	X						
Open Bowl 5			X	X	X	X	X	X					
Open Bowl 6			X	X	X	X	X	X	X	X	X	X	X
Enclosed Bowl 11				X	X	X	X	X	X	X	X	X	X
Enclosed Bowl 10				X	X	X	X	X	X				
Open Bowl 14				X	X	X	X						
Jar 12				X	X	X	X						
Enclosed Bowl 9				X									
Open Bowl 13				X									

Table 6-2: Vessel Form Seriation

	Cochachongos				Uchupas		Usupuquio				Huacrapuquio		
	AB	C	D	E	AB	C	AB	C	D	E	A	B	C
Continued forms:													
Jar 5	X	X	X	X	X	X	X	X	X	X	X	X	X
Jar 7	X	X	X	X	X	X	X	X	X	X	X	X	X
New forms:													
Jar 14		X	X										
Jar 16		X	X										
Enclosed Bowl 13		X	X										
Enclosed Bowl 8		X	X	X									
Jar 4		X	X	X									
Jar 13		X	X	X									
Jar 15		X	X	X									
Jar 17		X	X	X									
Open Bowl 16		X	X	X	X	X	X	X	X	X	X	X	X
Open Bowl 15			X	X	X	X	X	X					
Enclosed Bowl 14			X	X	X								
Open Bowl 17					X	X	X	X					
Open Bowl 19					X	X	X	X					
Open Bowl 20					X	X	X	X					
Open Bowl 21					X	X	X	X	X				
Open Bowl 18					X	X	X	X	X	X	X		
Jar 18							X	X	X	X	X	X	X
Jar 20							X	X	X				
Jar 19							X	X					
Open Bowl 22								X	X	X	X	X	X
Jar 21									X	X	X	X	X
Open Bowl 23									X	X	X		
Jar 22									X	X			
Jar 23										X	X	X	X
Open Bowl 24											X	X	X
Open Bowl 25												X	X
Olla 11												X	X
Jar 24												X	X
Jar 25												X	X
Olla 12													X
Enclosed Bowl 15													X
Jar 26													X

Table 6-3: Vessel Form Seriation

	Calpish				Quinsa-huanca		Mata-puquio	Arhua-turo	A.-Inca	Inca Wares	
	A	AB	B	C	A	B	-	-	-	1	2
Continued forms:											
Jar 5	X	X	X	X	X	X	X	X	X		X
Jar 7	X	X	X	X	X	X	X	X	X	X	X
Enclosed Bowl 15	X	X	X	X	X	X	X	X	X		X
Open Bowl 24	X	X	X	X	X	X	X	X	X		X
Jar 24	X	X	X	X	X	X	X	X			
Open Bowl 25	X	X	X	X	X	X	X				
Jar 21	X	X	X	X	X	X					
Jar 26	X	X	X	X							
Olla 11	X	X	X	X							
Olla 12	X	X									
New forms:											
Open Bowl 27	X	X	X	X	X	X	X	X	X	X	X
Open Bowl 28	X	X	X	X	X	X	X	X	X	X	X
Jar 30	X	X	X	X	X	X	X	X	X		X
Olla 14	X	X	X	X	X		X				
Open Bowl 26	X	X	X	X							
Open Bowl 29	X	X	X	X							
Jar 29	X	X	X	X							
Jar 32	X	X	X	X							
Olla 13	X	X	X								
Enclosed Bowl 16	X	X									
Jar 36	X	X									
Olla 15		X	X	X	X		X	X	X		
Open Bowl 30		X	X	X	X	X	X	X	X		X
Jar 33		X	X								
Olla 16			X	X							
Olla 17			X	X							
Jar 31			X	X							
Jar 34			X	X	X						
Jar 35			X	X	X	X					
Jar 28			X	X	X		X				
Jar 27			X	X	X	X	X	X			
Jar 39					X	X	X	X	X		
Open Bowl 31					X	X	X	X	X		
Enclosed Bowl 17					X	X	X				
Jar 37					X	X					
Jar 40					X	X					
Jar 41					X	X					
Open Bowl 32						X	X	X			
Jar 42						X	X				
Open Bowl 33						X					
Jar 38						X					

Table 6-4: Vessel Form Seriation

	Mata-puquio	Arhua turo	Arhua.-Inca	Inca Ware 1	Inca Ware 2	Llaqsa	Ocopa
Continued forms:							
Jar 5	X	X	X		X	X	X
Jar 7	X	X	X	X	X	X	X
Open Bowl 24	X	X	X		X	X	X
Olla 15	X	X	X			X	X
Enclosed Bowl 15	X	X	X		X	X	
Jar 30	X	X	X		X	X	
Open Bowl 27	X	X	X	X	X	X	
Open Bowl 28	X	X	X	X	X	X	
Open Bowl 30	X	X	X		X		
Open Bowl 31	X	X	X				
Jar 39	X	X	X				
Open Bowl 32	X	X					
Jar 24	X	X					
Jar 27	X	X					
Open Bowl 25	X						
Jar 28	X						
Jar 42	X						
Olla 14	X						
Enclosed Bowl 17	X						
New forms:							
Open Bowl 34	X	X	X	X	X	X	
Jar 43	X	X	X			X	
Jar 47	X	X	X			X	
Jar 48	X	X	X			X	
Jar 49	X	X	X			X	
Jar 44	X	X					
Jar 45	X						
Jar 46	X						
Open Bowl 35	X						
Open Bowl 38		X	X			X	X
Jar 53		X	X			X	X
Jar 50		X	X			X	
Jar 51		X	X			X	
Open Bowl 36		X	X		X		
Open Bowl 37		X	X				
Enclosed Bowl 18		X	X				
Jar 52		X	X				
Open Bowl 39		X					
Enclosed Bowl 19			X				
Enclosed Bowl 20			X				
Enclosed Bowl 21			X				
Enclosed Bowl 22			X				
Enclosed Bowl 23			X				
Open Bowl 40			X				
Jar 55			X				
Jar 56			X				
Jar 61			X				

Table 6-5: Vessel Form Seriation

	Arhuaturo Inca	Inca Ware 1	Inca Ware 2	Llaqsa	Ocopa
Continued forms:					
Jar 5	X		X	X	X
Jar 7	X	X	X	X	X
Open Bowl 24	X		X	X	X
Open Bowl 38	X			X	X
Jar 53	X			X	X
Olla 15	X			X	X
Enclosed Bowl 15	X		X	X	
Open Bowl 27	X	X	X	X	
Open Bowl 28	X	X	X	X	
Open Bowl 34	X	X	X	X	
Open Bowl 35	X			X	
Jar 30	X		X	X	
Jar 47	X			X	
Jar 48	X			X	
Jar 49	X			X	
Jar 50	X			X	
Jar 51	X			X	
Open Bowl 30	X		X		
Open Bowl 36	X		X		
New forms:					
Jar 58	X			X	X
Jar 64	X				X
Jar 54	X			X	
Jar 57	X			X	
Jar 59	X			X	
Jar 63	X			X	
Jar 60	X	X	X		
Jar 62	X	X	X		
Open Bowl 41	X		X		
Open Bowl 42	X		X		
Jar 66		X	X	X	
Enclosed Bowl 25		X	X	X	
Enclosed Bowl 27		X	X		
Enclosed Bowl 28		X	X		
Jar 65		X	X		
Jar 67		X	X		
Enclosed Bowl 24		X			
Enclosed Bowl 26		X			
Enclosed Bowl 29			X	X	
Olla 18				X	
Olla 19				X	
Jar 68				X	
Jar 69				X	
Jar 70				X	
Jar 71				X	

Table 6-6: Vessel Form Seriation

	Ocopa	Retama	Modern
Continued forms:			
Olla 15	X	X	X
Jar 5	X	X	
Jar 7	X	X	
Open Bowl 24	X		
Open Bowl 38	X		
Jar 53	X		
Jar 58	X		
Jar 64	X		
New forms:			
Olla 20	X	X	X
Olla 21	X	X	X
Olla 22	X	X	X
Olla 23	X	X	X
Jar 74	X	X	X
Jar 73	X	X	
Open Bowl 43	X	X	
Open Bowl 44	X	X	
Open Bowl 45	X		
Open Bowl 46	X		
Olla 24		X	
Olla 25		X	
Enclosed Bowl 30		X	X
Olla 26			X
Olla 27			X

one at 15 cm., a second at 20 cm. and a third at 30 cm. What seems particularly impressive is the fact that when ollas are reintroduced into the vessel inventory after the 600 year gap between their Early Horizon occurrence and their subsequent Middle Horizon re-occurrence, the preferred mouth sizes are essentially the same. Similarly, we have three rather constant modes for enclosed bowls, four for open bowls, and five for jars. Anothering interesting facet of these tables is the indication that bottles and miniature vessels are in general foreign concepts to the Jauja-Huancayo basin potters; these forms only occur in Early, Middle and Late Horizons where they seem to be wholly introduced from outside influence, and seem to drop out of the vessel inventory as soon as the outside impetus is terminated.

It should be clear from a comparison of Table 1 with Table 3 that in general each particular vessel is characterized by only one of the possible modes in each period, so the fact that the ranges of some of the modes in the various tables overlap has little significance. There are cases, particularly commonly occuring among jars, when a vessel is apparently frequently found in more than one of the common modes for that period, yielding a double-peaked or multi-peaked distribution rather than the normal distribution illustrated in Table 1.

The initial seriation of vessel forms is presented in Table 6. Some vessels have a relatively short history--perhaps one generation of potters--while others extend over several centuries. A number of finer subdivisions can be made in these first units utilizing the decorative vocabulary discussed in Ch. 5 and illustrated in Figs. 34-221. All the differing forms found on the survey have been compacted

into 176 different categories--including 27 olla forms, 30 enclosed bowl forms, 46 open bowl forms and 74 jar forms.

C. Excavations

Excavations were effected at eight sites, in part to confirm the results of the initial seriation, but mainly to answer a number of questions raised or not answerable through the initial survey, such as dwelling utilization, settlement patterns for Early Horizon occupations, burial practices, economy and so forth. A number of small shovel tests were made at the various Pirwapuquio period sites in a futile attempt to find some stratigraphy in order to better define this unit, and with the vain hope of finding some Initial Period ceramics. In every case, however, we ran into the underlying cemented gravels described in Ch. 1 within 20-30 cm of the ground surface, so we did not find either undisturbed stratigraphy or any ceramics earlier than the Pirwapuquio unit. There are, however, two sites where these might exist--PJuM 791 which we could not test since it was a modern cemetery, but which has at least two meters of midden, as revealed by some freshly excavated graves, most of which is Usupuquio period refuse, but at the base of which are some undisturbed Pirwapuquio materials; and site PJuM 777, a composite site consisting of 15 caves which contained Pirwapuquio materials on the talus slopes in front of their mouths, but which were not tested as we lacked the proper equipment. Some of these caves should prove very valuable to test, as they are large and dry and therefore likely to contain a good record of the organic materials,

including domesticates, utilized by the Pirwapuquio peoples.

The eight sites where some significant excavations were made are PJuM 501, 502, 525, 613, 614, 618, 625, 677. The system of enumeration for these sites bears some explanation as it differs from others in use presently. The numbering system proposed by Rowefor highland Peru has not proved useful in our area. Under Rowe's system we would number sites PJu1-1, where P = Peru, Ju = Junin department, 1 = province within Junin by alphabetical order, and -1 = the site by number. In our section of the Mantaro valley there are three provinces--Concepcion, Huancayo and Jauja--but there is no map readily available delimiting exactly the province boundaries. Indeed, when Rowe and Menzel collected in the area, they numbered all the sites PJu1-, even though they collected sites in all three different provinces and should therefore have used PJu1, PJu2 and PJu3. In part owing to the difficulty of establishing such province boundaries, and in part owing to the fact that the modern political boundaries made little sense in studying a quite distinctly naturally defined geographical area, we adopted a modified version of the system used for coastal Peru. Accordingly, sites are designated PJuM, where P = Peru, Ju = Junin department, and M = Mantaro river drainage. Numbering of sites surveyed started at 501 since Ramiro Matos Mendieta had listed approximately 200-300 sites between Lake Junin and Ayacucho in work he was doing for the Smithsonian Institution, and we did not want to produce any unnecessary confusion by duplication of numbers. In our immediate area, Matos had listed only a few sites (see Appendix B) so that the possibility of conflict is negligible.

From these eight sites, we can demonstrate almost the entire sequence defined seriationally also on a stratigraphic basis:

PJuM 613	Usupuquio
	Uchupas
	Cochachongos
PJuM 502	Arhuaturo-Inca and Inca
	Arhuaturo
	Matapuquio
	Quinsahuanca
	Uchupas
PJuM 501	Inca
	Arhuaturo
	Quinsahuanca
	Calpish
PJuM 618 + 625	Quinsahuanca
	Calpish
	Usupuquio
PJnM 525	Arhuaturo
	Matapuquio

These sites, then, verify the entire sequence stratigraphically except for the placement of Pirwapuquio and the ordering of the Colonial phases. As previously noted, we observed Pirwapuquio materials stratigraphically below Usupuquio materials in the Orcotuna cemetery (PJuM 791) so that the only part of our seriation which has not been demonstrated stratigraphically is our ordering of the colonial units of Llaqsa, Ocopa and Retama.

PJuM 501 excavation:

The site of Wariwilka (PJuM 501) was visited at frequent intervals to observe the destruction of the site during the process of restoration by the pueblo of Huari. In addition, Ramiro Matos Mendieta had asked us to put some more test cuts into the site and to analyze the materials excavated by Shea. At this point in 1968, neither Matos nor I was aware

that Shea was writing his doctoral thesis on the materials he had excavated some years previous (see Shea 1969). Due to political problems, our excavations at the site consisted of repeated, quick testing of a segment of wall pre-dating the current temple structure, from which a charcoal sample (see Appendix B) and a number of local and foreign (Cajamarca and Huari) sherds were obtained. During our frequent trips to the temple site, we watched with regret as the workmen of the pueblo ripped out unknown and unmapped structures inside the temple precinct and rebuilt the walls as they thought they should be. Most of these demolished structures dated to the Inca occupation, and as I pulled Inca sherds out of the undisturbed wall mortar 5 meters down, just opposite Shea's Cut 4 and approximately the same depth as his Level 14 (Shea 1969), it appears that the temple precinct of the oracle was extensively renovated during Inca times, and that the interior of the temple precinct was extensively modified, so that at this point one cannot say whether the structure being restored has much relationship to the structures housing the oracle in pre-Incaic periods.

The PJuM 502 excavations:

The large site of Patankoto (PJuM 502) is constructed in large part upon a rocky ridge standing isolated among Pleistocene Lake Jauja sediments. As some of the local prehistorians believed this to be a huaca of the coastal variety with meters upon meters of refuse, there was considerable desire to have us make a major excavation. The site

itself extends over two kilometers in length, so we had divided it into four sectors, South to North, of A, B, C, D. Testing proved that the northern portion (Sectors C and D) of the site was almost exclusively a Late Horizon occupation; that is, the sections of the site on the lowest flanks of the ridge and extending nearly a kilometer onto the terrace was Inca. In sectors A and B, however, we noted Quinsahuanca, Matapuquio and Arhuaturo sherds in our surface collections, and so elected to test in these areas. Ten test cuts were made in these two sectors; those in Sector B rather uniformly yielded a thin deposit of plow zone with mixed Inca, Arhuaturo-Inca, and Quinsahuanca sherds, with an underlying deposit of from 5 to 50 cm of undisturbed Quinsahuanca refuse. The excavations in Sector A proved a bit more useful (Fig. 2), for we were able to clearly separate Matapuquio from Arhuaturo, and Arhuaturo from Arhuaturo-Inca in some cuts, and cut 17-3 (Fig. 2) proved to be an Uchupas period storage (?) pit, indicating a period of occupation of the site we had not detected from our surface collections. This Uchupas pit was 50 cm deep and 110 cm in diameter; it had been excavated into the decaying mica-schist rock, but its function as a storage pit is, at the moment, based only upon conjecture. Excavation of the rectangular building in cut 18 showed the dwelling to be an Arhuaturo dwelling, but did not provide us with any data about structure or ceramics not already known from seriational analysis of the survey material. In the excavation of cut 16, we recovered a Matapuquio phase burial (Burial 1, Fig. 2) of a child approximately two or three years of age. This was a bundle burial, with the bundle wrappings now completely decayed; the

head was oriented southwest and the child had been lain on its left side, and had been placed into a shallow pit 35 cm x 35 cm x 50 cm. The tightly flexed burial had an offering of a jug and plate placed near its head (Fig. 153). Sra. Felicia Soto said that infants are still buried in the puna today in this fashion by non-Westernized Indians, with chiche in the jar, and choclo and chuña on the plate. It is interesting to note that the individual buried in Tomb 7 of PJuM 677 (see below) also was flexed and buried with a dish and a jar as offerings, suggesting that perhaps there is quite a long burial tradition in this area of flexed burial with offerings of chiche and dried comestibles such as chuña and chocle, from Usupuquio phases to the present.

PJuM 525 excavation:

Excavations were made at this large site to differentiate Matapuquio from Arhuaturo wares, and to investigate the difference in dwelling utilization in this apparently class stratified town. Excavations in the upper barrio where there were tow house styles, one circular and the other square with rounded corners, indicated that these two house forms were occupied contemporaneously. These structures were plastered with a white clay on the interior and several had remnants of what must have been a red wash paint. Fig. 9 shows a cross-section of a typical building; most had interior diameters varying between 4-5 m. in this upper barrio. Attached to a number of the buildings were either small rectangular buildings, no larger than 2 m. x 3 m., or hemispherical structures, 1.5-2.0 m. in

diameter, both presumably utilized for storage. Rains terminated excavations before the other barrios could be tested; for pertinent data regarding the difference in settlement pattern between the various segments of the site see Ch. 7.

PJuM 613 excavation:

Survey operations had revealed a minor incised decoration type of Cochachongos ware which seemed to have some relationships with the South Coast Ocucaje series. PJuM 613 was trenched (Fig. 1,4) with the intent of trying to elicit the exact relationship of this incised ware to the Cochachongos wares. In the process of the excavation we turned up some rather large sherds which appeared to be direct trade sherds from the Cañete-Paracas area (Figs. 60,61), a housepit area, two burials, an offering pit, and some other excavated features of uncertain function. The trench across the housepit was segregated into two large parts (the Area 1-2 distinction made in Fig. 1)--one part being the materials excavated from the trench outside of the housepit area, the other part within the housepit area. On the western lip of Housepit 1, an offering pit had been constructed (Fig. 4)--this pit was 30 cm. deep and 50 cm. in diameter; four large flat river cobbles had been placed on edge to form a square enclosure, within which had been placed a jar (Fig. 54), and the top of this enclosure had then been capped with a fifth large flat river cobble.

The housepit area was quite complex; for some reason a large area 6 m. or more in size seems to have been excavated to a depth of 20-30 cm.

below the surrounding surface. Into this excavated area then were excavated at least three house pits, 1 m. deep, and 2.0-2.8 m. in diameter. The large shallow depression may have been excavated as a workfloor area; in the southeast corner of the excavation was a small shallow pit, presumably for storage, 85 cm. in diameter and 20 cm. deep, on this work platform area. Our first interpretation was that the entire 6 m. depression had been covered over, and that these housepits were various rooms associated with a central workspace. Subsequent analysis of the ceramics, however, indicated that the housepits were not all occupied contemporaneously; perhaps as much as 100-200 years separated the occupation of Housepit 1 and the last occupation of Housepit 2. Not a large enough sample was obtained from Housepit 3 to place it exactly, but it appeared to be contemporaneous with Housepit 2. Housepit 1 was used as a refuse pit after it was abandoned, presumably for the refuse from Housepits 2 and 3.

Into the north wall of Housepit 1, subsequent to its abandonment, a shallow pit had been scooped, in which an adult had been buried (Burial 1, Fig. 1). This individual was tightly flexed, and lying on its left side. Two unusual features were note--one that the only artifact with the burial was a ceramic square (Fig. 48) which had been placed in the crotch/groin; and the other was that the skeleton was complete up to the lower mandible, but completely lacked a cranium. The orientation of the burial was East, and it had been covered over with 8-10 large cobbles. The lack of a cranium and several fragments

of two or more human crania found in the refuse of Housepit 1 suggested that the brain may have been ritually consumed. Further evidence for this might be argued from Burial 2, though the evidence is not clear cut. During one of the periods subsequent to its abandonment, part of Housepit 1 had been used as a roasting pit: a pile of ash, fire-cracked rock, partially burnt animal bones and other debris at one edge of this roasting pit contained the remains of what loosely was termed Burial 2--a completely disarticulated collection of fragments of human crania, pelvis, femur and radius mixed in with the animal bones.

In Stratum 4 (Fig. 1), two shallow pits had been scooped into the sterile clay base to a depth of about 10-15 cm., and 30-35 cm. diameter. These were filled with guanaco and deer bones, and seem to represent small deposits of buried garbage. Stratum 4 contained an extensive hearth area; associated ceramics suggests that it was either contemporaneous or slightly prior to the occupation of Housepit 1, so that it might be regarded as the associated cooking area of the semi-subterranean pithouse represented by Housepit 1.

PJuM 614 excavtion:

The excavation of this Cochachongos period housepit was done as a quick salvage operation over a lunchhour, fortunately a period of about three hours due to the Latin inclination for siestas. This subterranean housepit (Fig. 3) was exposed in the process of road improvement operations, and the bulldozer operator fortunately stopped by to inspect the excavations in process at PJuM 613 during his lunchhour. Acting on his comments, we salvaged what we could before

he completely destroyed the pit later that afternoon. The floor of the 1.8 m. deep housepit had been covered with sand; on top of this lay a thin midden deposit and some hearths; the housepit then, as had been the case with Housepit 1 at PJuM 613, was filled with later Cochachongos refuse. In this refuse were the remains of two burials, and adult and an infant. Both the bulldozer operations and the previous dynamiting of the calcreted Stratum 2 (Fig. 3) had so seriously disturbed the upper refuse of the housepit that the exact nature of these burials could not be ascertained. The size (4.5 m.) and the depth (nearly 2 m.) of this pit was greater than the housepits found in the later deposits of PJuM 613; it could be argued that the earlier housepits were subterranean, that there was a gradual change to semi-subterranean houses later in Cochachongos phases, and that by Usupuquio occupations the pithouse was abandoned in favor of brush or llama-hide shelters constructed on low raised house platforms.

PJuM 618 excavation:

The temple site of Calpish is obviously an important area to be excavated; in Fig. 7 its relative configuration is compared with that of Wariwilka and Ñahuinpuquio. The modern pueblo of Huari effectively masks the relationship of the occupation area to the temple precinct of Wariwilka, but both at Calpish and Ñahuinpuquio there are occupation areas immediately outside the walled temple precinct, and the enclosures themselves have relatively sparse sherd distributions except in direct association with some of the structures. As noted in Ch. 7, there are

some three-tiered circular structures similar to those reported in the Sulla Cruz sector of Huari and also in the Pampas area by Isbell. The actual excavations at Calpish were nothing more than a test of a structure which appeared to be a semi-subterranean temple upon first inspection. The interior of this structure is presently 0.8 m. lower than the surrounding surfaces outside the walls, and it was assumed that the structure might relate to the semi-subterranean temples known from various Middle Horizon sites around Lake Titicaca. Surface indications suggested a rectangular building about 8 m. x 14 m., and with an interior sunken court a meter or more below the Middle Horizon living surface. By referring to Fig. 8, one can observe that the surface indications were misleading; the living surfaces on both sides of the wall are at the same level, and it has just been an accident of history that the fill on the interior was such as to have suggested a difference in occupation surfaces existed. An interesting feature of the excavations was the presence of a number of guinea pig offerings on the outside of the wall of the structure; as we excavated the deposits just outside the wall, we came upon seven small lenses, each with one or two complete guinea pig skeletons in ash and charcoal, in most cases with all the bones articulated so as to suggest a complete cui or a pair of cui had been burnt as offerings; in addition, three of these had llama hoof and limb bones, suggesting that portions of llama had simultaneously been burnt as offerings.

PJuM 625 excavation:

During the process of the survey, we became aware of the fact

that the hill Wilkaurco (PJuM 625) behind the town of Chupaca had a number of tombs, and that some of these might be multi-chambered tombs. We observed three tombs almost completely filled in with rock during our survey; one of the farmers working the fields said that he had participated in the discovery and search of one of these some fifteen years before, that it had had several chambers, but that they had found nothing of worth. Our periodic visits to the area finally paid off when one of the entrances to the multi-chambered tomb illustrated in Fig. 6 was revealed when a plow caught the capstone and turned it aside. The field owner was exceedingly reluctant to allow excavation, and only relented after a suitable payment plus rights in any metal found.

The floor of the deepest room was 310 cm. below the surface, but most of the rooms were roughly 0.5 m. shallower. Room size varied from ca. 1 m. in diameter to ca. 2 m. in diameter for the side chambers, with the two main chambers being approximately 2.0-2.5 m. in size. Rooms 2 and 3 (Fig. 6) were essentially just small alcoves; Room 3 contained the remains of Burial 1, which consisted of a dark stain with a few remnants of bone and two copper tupu pins. Room 4 was not excavated; a large flat stone was set in as a porthole 120 cm. above the floor of main chamber 1; this rock, roughly 0.5 x 0.6 m. in size, was placed in clay mortar, and when removed, revealed a chamber filled with rubble which the landowner would not permit us to excavate.

Room 5 was filled with ancient backdirt; it measured 1.5 x 2.0 m. in size, and 1.2 m. to the ceiling. When this backdirt was cleaned out, an extension, room 6, was found, 1.3 x 1.5 m. in size, and 1.3 m. in

height. The floor sloped down here from 2.5 m. in the centralchamber to 3.0 m. deep at the back of room 6. At the very back of this room was the decayed remains of a burial (Burial 2), mostly soil stains, but with enough bone left to show that it was flexed, and partially covered with red ochre; the body had been places on the left side, with the head oriented South.

Room 7 was the next excavated; it was entered by a small doorway about 0.6 x 0.8 m. in size off mainchamber 1. The floor of this room was stepped 0.6 m. below that of mainchamber 1 and 0.8 m. below the floor of the second mainchamber, room 8. After we cleaned out the rooffall, we discovered burial 3, lying on a bed formed by a dozen large flat river cobbles. The body was flexed, on its left side, with the head oriented South. Around the head was a double band of rectangular Cu-Ag alloy plaques(Fig. 27), held together by wool/ cotton string and fastened in place by a small copper pin. Attached at the temple at each side was one, perhaps more, dangles (Fig. 27). The plaques making up the two bands varied somewhat in dimensions, but apparently were roughly 8 cm. long, as judged from the one complete specimen, varied from 2.8-3.4 cm. in width, and were about 0.03 cm thick. The twine used to fasten the plaques together was preserved on a few pieces due to metal salts; it was a three-ply twine of S-Z twist, apparently wool. Underneath one of the fragments was a tiny fragment of cloth; it was a plain weave, of thread count 30 x 27/in., of Z-twist thread, again apparently wool. Either we have here evidence of a headdress with cloth backing, or a metal headdress placed over some sort of cloth swaddling of the burial.

During the process of excavating room 7, we noticed the door opening onto mainchamber 8 through an opening of about 0.6 x 0.8 m. in size. This mainchamber was essentially the same size as the first mainchamber, being 2 m. in diameter, 2 m. in height, so one could readily stand in it. On the west side of this mainchamber was room 10; it was stepped down 0.3 m. below the floor of chamber 8, was about 1.5 x 1.0 x 1.0 m. in size, and was empty. We at first missed the carefully concealed entrance to room 9, but after paying a suitable price to the landowner to allow us to remove the capstone from the entrance of chamber 8, we noted that the south wall had been plastered over with earth while the other walls of the chamber were untouched. Probing revealed an earth plug in the porthole doorway to room 9; this plug consisted of midden with Cochachongos, Usupuquio and Calpish sherds in it. Removal of the plug revealed a porthole about 0.6 m. in diameter opening onto a room 1.5 x 1.3 m. in size, and 1.1 m. high. This room contained burial 4, which was flexed, lying on its right side, with the head oriented Southwest. Between the elbows and the knees was one jar (Fig. 131) and grouped around the torso in pairs were six garment pins or tupu of three different sizes (Fig. 27).

PJuM 677 excavation:

The tombs of the hill of Pucupata were exposed during a road project in Jauja. During the time I was able to observe the bulldozer operating in the area, I observed seven tombs--two stone-lined and five merely excavated into the clay. All the tombs were shaft-tombs, such

as illustrated in Fig. 5. A vertical shaft was excavated to the depth of approximately 2 m., at which point a small chamber, usually about 1.5 m. x 1.0 m. in size and from 1.0-1.5 m. in height, was hollowed out horizontally from the base of the shaft. After the emplacement of the burial, the mouth of the room was closed by a single large flat boulder, sometimes with some smaller rocks bracing it from behind, and the entire shaft was then filled up with the backdirt. There were a number of small boys in the area who had completely looted the two rock-walled tombs and two of the unlined tombs before we arrived, so we have little knowledge about the content or significant features of these tombs. Two more tombs were destroyed by the bulldozer; for these six tombs, all we can note is the orientation of the chamber with respect to the shaft--in three cases this orientation was West, in on case North, and in two cases indeterminate.

Tomb 7 was excavated shortly before it was destroyed by the bulldozer (Fig. 5). The stone blocking the entrance to the chamber at the base of the shaft was chinked with some smaller cobbles, and the entire lot plastered over with a white calcareous clay. The base of the shaft was about 2.0 m. down from the surface; both the shaft itself and the entrance to the chamber were about 0.8 m. in diameter. Inside the mouth of the chamber was a small step between the base of the shaft and the floor of the tomb about 0.6 m. deeper. The chamber was 1.4 x 0.9 m. in size and 0.9 m. in height. On the floor was a flexed burial of an adult, lying on its left side, with the head oriented South. The skeleton was in a bad state of decay, but it was apparent

that the head and upper thorax had been covered with red ochre. Near the head was an undecorated jar (Fig. 84) while between the pelvis and the feet was a typical late Usupuquio style decorated open bowl (Fig. 85).

Chapter 4

Lithic, Bone and Metal Implements

A. Lithic Material

As we noted previously, the greatest amount of emphasis has been placed upon ceramic analysis as it is felt that ceramics are more sensitive indicators of cultural changes and also can provide a finer chronology. Nevertheless a significant amount of lithic and other materials was collected, and this material has given us a number of insights into the cultural history which we would have neglected otherwise, such as the emphasis upon hunting and pastoralism until the Huari conquest. Our lithic tool inventory includes projectile points, shaped flake bifaces or knives, unshaped flake bifaces, shaped flake scrapers, unshaped flake scrapers, large prismatic backed and unbacked blades, drills and gravers, core bifaces, core scraper planes, pebble and cobble choppers, chipped stone adzes or axes, hoes, digging weights, mace heads, mortars, flat milling stones with spherical mortars, rocker mills, amorphous hammerstones, elongate pebble flakers or end hammers, spall scrapers and bifaces, stone beads, steatite pendants, stone spindle whorls, obsidian mirror, utilized quartz crystals, and painted pebbles.

Projectile Points

Type 1 (N = 1) (Fig. 12)
Large leaf-shaped point; some secondary retouch; cross-section

diamond-shaped
Material: chalcedony
Length: 8.9 cm.
Width: 3.5 cm.
Thickness: 1.8 cm.
Period: Jurpac

Type 2 (N = 1) (Fig. 12)
Questionable large triangular point with rounded base; secondary retouch; cross-section diamond to lozenge shape
Material: chalcedony
Length: 6.8 cm.
Width: 4.1 cm.
Thickness: 1.0 cm.
Period: Jurpac

Type 3 (N = 1) (Fig. 12)
Large triangular point; basal thinning; flat base; cross-section triangular
Material: obsidian
Length: 3.7 cm.
Width: 2.4 cm.
Thickness: 0.7 cm.
Period: Jurpac

Type 4 (N = 4) (Fig. 12)
Long, relatively narrow points, tending toward isosceles triangular shap with rounded corners; cross-section lenticular to diamond shape
Material: chalcedony
Length: 5.9-6.7 cm.
Width: 2.1-2.6 cm.
Thickness: 0.7 cm.
Period: Jurpac, Tinyari

Type 5 (N = 9) (Fig. 12)
Bipoint shape, characterized by rather crude workmanship with no secondary retouch; cross-section lenticular to diamond shape
Material: chalcedony, basalt, chert
Length: 4.3-4.8 cm.
Width: 2.0-2.3 cm.
Thickness: 0.7-0.9 cm.
Period: Jurpac, Tinyari

Type 6 (N = 5) (Fig. 13)
Elongated tear-drop shape; cross-section plano-convex to lenticular
Material: chalcedony, chert
Length: 3.7-4.8 cm.
Width: 1.6-2.1 cm.
Thickness: 0.5-0.9 cm.
Period: Tinyari through Cochachongos

Type 7 (N = 9) (Fig. 14)
A smaller variant of Type 6, generally much thinner and much narrower; cross-section usually plano-convex to lenticular

Material: chalcedony
Lenght: 3.5-4.6 cm.
Width: 1.2-1.6 cm.
Thickness: 0.3-0.7 cm.
Period: Pirwapuquio, Cochachongos

Type 8 (N = 15) (Figs. 13, 14, 15)
A bipoint form, often shouldered, approaching a rhomboid outline; cross-section usually diamond-shaped or triangular

Material: masper, chalcedony, chert
Length: 2.7-3.2 cm.
Width: 1.1-1.7 cm.
Thickness: 0.6-0.9 cm.
Period: Tinyari through Usupuquio

Type 9 (N = 33) (Figs. 13, 14, 15)
A triangular type, approaching an equilateral triangle in outline; base flat; lenticular to plano-convex cross-section

Material: chert, chalcedony, obsidian
Length: 2.3-3.4 cm.
Width: 1.5-2.5 cm.
Thickness: 0.3-0.8 cm.
Period: Tinyari through Huacrapuquio

Type 10 (N = 36) (Figs. 14, 15)
A somewhat triangular type, with parallel sides, approaching pentagonal shape; sides parallel for some distance up from base; cross-section lenticular to planoconvex

Material: chert, chalcedony, obsidian
Length: 2.6-3.8 cm.
Width: 1.5-2.1 cm.
Thickness: 0.3-0.5 cm.
Period: Pirwapuquio through Huacrapuquio

Type 11 (N = 60) (Figs. 14, 15)
A teardrop shaped point with a round base; usually extensive secondary retouch; cross-section lenticular to plano-convex

Material: chert, chalcedony
Length: 2.4-3.4 cm.
Width: 1.3-1.8 cm.
Thickness: 0.3-0.7 cm.
Period: Pirwapuquio through early Calpish

Type 12 (N = 29) (Figs. 14, 15)
A teardrop shaped point like Type 11, but a small variety; cross-

section lenticular to plano-convex
Material: chert, jasper, obsidian, chalcedony
Length: 1.9-2.4 cm.
Width: 0.9-1.4 cm.
Thickness: 0.3-0.5 cm
Period: Pirwapuquio through early Calpish

Type 13 (N = 6) (Figs. 14, 15)
A small triangular point, like Type 9, only a small variety, and generally much more of an elongate isosceles triangle shape than the more equilateral tendencies of Type 9; cross-section lenticular to plano-convex
Material: obsidian, chalcedony, chert
Length: 1.6-2.2 cm.
Width: 1.0-1.6 cm.
Thickness: 0.2-0.5 cm.
Period: Cochachongos through Usupuquio

Type 14 (N = 1) (Fig. 14)
A ground porphory or siltstone point, with very distinct bevels; symmetrical; cross-section of center section diamond-shaped
Material: siltstone?
Length: 6.0 cm.
Width: 1.9 cm.
Thickness: 0.6 cm.
Period: Cochachongos

Type 15 (N = 1) (Fig. 14)
A stemmed point with bilateral barbs, converging stem; cross-section lenticular
Material: chalcedony
Length: 3.4 cm.
Width: 1.6 cm.
Thickness: 0.4 cm.
Period: Cochachongos [PJuM 613 excavation]

Type 16 (N = 1) (Fig. 14)
A basically triangular point, with a concave base giving a winged effect; concavity of the base essentially a variety of basal notching; cross-section lenticular
Material: chalcedony
Length: 2.5 cm.
Width: 1.6 cm.
Thickness: 0.5 cm.
Period: Cochachongos

Type 17 (N = 3) (Fig. 14)
A long triangular variety, with essentially parallel sides, flat base,

diamond-shaped cross-section
Material: chalcedony
Length: 5.3-6.8 cm.
Width: 1.8-2.4 cm.
Thickness: 0.8-1.1 cm.
Period: Cochachongos through Usupuquio

Shaped Bifaces or Knives

Type 1 (N = 24) (Fig. 16, 23)
Flakes worked by primary and secondary retouch to an oblong shape, approaching rectangular. Frequently a transverse is cut along one edge (Fig. 16, upper right; Fig. 23, upper right) giving a sharp point to the knife. Made on flakes of varying thickness, generally lenticular in cross-section.
Material: chert, chalcedony, jasper, opalized wood
Length: 2.1-4.5 cm.
Width: 1.5-2.5 cm.
Thickness: 0.3-1.2 cm.
Period: Pirwapuquio through early Calpish

Type 2 (N = 8) (Fig. 16)
A small pointed knife, always made on a thin flake, generally ogival in shape. Cross-section lenticular to plano-convex.
Material: chert, chalcedony
Length: 2.9-4.4 cm.
Width: 0.9-1.8 cm.
Thickness: 0.2-0.7 cm.
Period: Pirwapuquio through Usupuquio

Type 3 (N = 32) (Figs. 16, 23)
Large, generally leaf-shaped, pointed knifes. Vary in amount of fine secondary retouch, but mainly well-worked. Cross-section lenticular to diamond-shaped.
Material: siltstone, chert, chalcedony, obsidian
Length: 2.9-6.8 cm.
Width: 2.0-3.5 cm.
Thickness: 0.8-1.9 cm.
Period: Pirwapuquio through early Calpish

Shaped Scrapers

Type 1 (N = 14) (Figs. 17, 23)
Small, thumbnail variety scraper. Varies from flakes worked to a completely circular or ovoid shape to flakes worked to a convex

hemispherical working edge, with one edge unmodified. Cross-section profile always low plano-convex.

Material: chalcedony, chert
Length: 2.7-3.4 cm.
Width: 1.7-3.2 cm.
Thickness: 0.4-0.8 cm.
Period: Pirwapuquio through early Calpish

Type 2 (N = 10) (Figs. 17, 23)
Long flakes, with usually two edges worked to long, straight, approximately parallel working faces. Cross-section varies from trapezoidal to triangular to plano-convex.

Material: obsidian, siltstone, chert, chalcedony
Length: 2.3-4.5 cm.
Width: 1.4-2.0 cm.
Thickness: 0.4-0.8 cm.
Period: Pirwapuquio through Usupuquio

Type 3 (N = 14) (Fig. 17)
Large, rather amorphous flakes, with one edge worked to a long regular and continuous convex edge, and with generally the thick edge situated such as to be a useful handhold. Some of these flakes have been slightly 'backed'; that is, the edge opposite the cutting edge has been worked so as to remove the natural sharp edges and to dull the back edge to a safe and comfortable handhold. Cross-section variable, from plano-convex to trapezoidal to triangular.

Material: basalt, siltstone, jasper, chert, chalcedony
Length: 5.5-9.4 cm.
Width: 2.5-4.4 cm.
Thickness: 0.7-1.7 cm.
Period: Tinyari through Cochachongos

Type 4 (N = 8) (Figs. 13, 17)
Hogback or keeled type scraper; a relatively narrow and thick scraper, perhaps functioning as a gouge. Usually the long edges and one end are worked to a good cutting edge. Cross-section varies from pentagonal to trapezoidal to high-humped plano-convex.

Material: chalcedony, chert
Length: 2.9-4.4 cm.
Width: 1.3-2.0 cm.
Thickness: 0.9-1.3 cm.
Period: Tinyari through Cochachongos

Gravers (N = 3) (Fig. 16, 23)
Uniface flake tools, with one or two bits. Except for the bit, the tool is rather amorphous in outline. The bit cross-section is always

trapezoidal, and the bit tip sometimes snapped off.
Material: obsidian, chalcedony
Length of bit: 0.7-1.2 cm.
Width of bit: 0.4-0.5 cm.
Thickness of bit: 0.3-0.5 cm.
Period: Pirwapuquio through Usupuquio

Core Bifaces (N = 117) (Fig. 18)
Discoidal core bifaces, in the ideal form worked to an ovoid cleaver, with secondary retouch to sharpen the cutting edge, and occasionally battering blows to dull the opposite edge for a handhold. Though found in Huacrapuquio and Calpish assemblages also, they are particularly frequent in Pirwapuquio through Usupuquio assemblages, and seem to be more prominent in Pirwapuquio assemblages than in subsequent periods.
Material: basalt, siltstone, chalcedony
Length: 4.6-7.4 cm.
Width: 3.8-6.4 cm.
Thickness: 1.9-3.4 cm.
Period: Tinyari

Core Scraper Planes (N = 73) (Fig. 19)
There is a tremendous variation in the general shape of these scraper planes--some project a low-profile, relatively flat discoidal to tortoise shell configuration, while others project a high-profile concoidal configuration, and others are rather amorphous-profile scraper planes. Some of the tools exhibit secondary retouch, while others exhibit only use retouch. A number of the flat discoidals are more or less denticulate in nature. Perhaps it would prove useful to subdivide this category into a number of sub-categories if one had more stratigraphic data with which to work.
Material: basalt, siltstone, chalcedony, chert
Length: 4.6-7.5 cm.
Width: 3.3-5.7 cm.
Thickness: 1.2-3.3 cm.
Period: Tinyari through Usupuquio

Prismatic Blades

Type 1 (N = 96) (Fig. 29)
Large blades, made on medium-grained rock; seem to exhibit a prepared striking platform; most specimens exhibit one or more pronounced percussion scars on the ventral proximal face; Type 1 has only one

arris and a triangular cross-section; it is distinguished from Type 2 which has two arris and a trapezoidal cross-section in large part because it frequently has a convex, dagger-cutting edge; sometimes the only secondary retouch is a dulling or blunting backing retouch, giving backed blades; other pieces exhibit both the backing retouch and also sharpening retouch on the usually convex cutting edge.

Material: siltstone (and rarely, chert)
Length: 6.7-11.1 cm.
Width: 2.3-4.0 cm.
Thickness: 0.6-1.8 cm.
Period: Matapuquio through Arhuaturo-Inca

Type 2 (N = 106) (Fig. 30)
Large prismatic blades, made on medium-grained rock; exhibit a prepared striking platform; most specimens exhibit one or more pronounced percussion scars on the ventral proximal face; Type 2 has two arris and a trapezoidal cross-section; it is distinguished from Type 1, which has one arris and a triangular cross-section, in large part because it tends to have the distal end snapped off more frequently and the outline frequently is rectangular, leading to a single straight cutting edge in this type compared to the usually convex cutting edge more common in blades with a triangular cross-section. Sometimes the only secondary retouch is a dulling or blunting backing retouch, leading to backed blades; other pieces exhibit both the backing retouch and also a sharpening retouch on the usually straight cutting edge.

Material: siltstone (and rarely, chert)
Length: 6.8-10.2 cm.
Width: 2.7-3.7 cm.
Thickness: 0.8-1.7 cm.
Period: Matapuquio through Arhuaturo-Inca

Celts/Adzes (N = 5) (Fig. 26)
Small, flat, oblong pebbles, all from Calpish sites, have been worked to have a cutting edge at right angles to the long axis. Each of these shows signs of extensive battering use. From their configuration, they could be either children's hoes or adzes/celts. The latter explanation seems more likely since the method of manufacture differs considerably from that used in making hoes, and since the working edge exhibits battering-type scarring rather than the silica polishing seen on stone hoes.

Material: siltstone (?)
Length: 6.9-9.3 cm.
Width: 3.8-4.4 cm.
Thickness: 1.2-1.7 cm.
Period: Calpish

Digging Weights

Type 1 (N = 4) (Fig. 24a)
All Type 1 digging weights were made of medium-grained siltstone rather than the coarse-grained grey-green granitic-gneiss rock used for Type 2. These digging weights were uniconically drilled into larger stones, which were then chipped away. The upper portion (as oriented in Fig. 24a) of some of these has been partly polished; of one it is only the natural cortex. The bottom half to two-thirds is an extremely irregular chipped surface formed when the digging weight was chipped away from the parent rock, and no attempt has been made to smooth this chipped area.

Material: siltstone
Outside diameter: 7.8-10.0 cm.
Inside diameter: 2.4-3.2 cm.
Thickness: 2.8-3.5 cm.
Period: Cochachongos through early Usupuquio

Type 2 (N = 15) (Fig. 24b)
All of the digging weights of this type are biconically drilled, pecked to shape, and then well-polished. a distinct change from the uniconically drilled, unshaped, and unpolished nature of Type 1. They generally are much thicker than Type 1, and are heavier and better balanced. All are made of the grey-green granitic-gneiss type large grain rock that the agricultural hoes are made from.

Material: grey-green granitic-gneiss type rock
Outside diameter: 8.5-12.0 cm.
Inside diameter: 2.5-3.5 cm.
Thickness: 2.8-4.3 cm.
Period: Usupuquio through Inca

Star-shaped maces (N = 6) (Fig. 33)
All of these 'maces' are from Inca sites, and all but one are made on a foreign rock, not the grey-green granitic-gneiss used to make the digging weights and hoes. These maces appear to consist of two varieties--one six point and the other eight point.

Material: presumably foreign, large grain rock
Outside diameter: 8.7-11.5 cm.
Inside diameter: 2.5-3.9 cm.
Thickness: 2.8-3.4 cm.
Period: Inca

Stone Hoes (N = 137) (Figs. 31, 32)

Type 1 (Fig. 31)
This type tends to be rather poorly constructed. It is made on either

purplish siltstone or grey-green granitic-gneiss; an oblong pebble of one of these materials is roughly and crudely chipped to a hoe shape. These hoes are always rather small and thick.

Material: siltstone, granitic-gneiss
Length: 9.5-11.1 cm.
Width: 6.0-7.3 cm.
Thickness: 1.9-2.8 cm.
Period: Calpish through Matapuquio

Type 2 (Fig. 31)
This type is made exclusively on a large flake chipped from a grey-green granitic-gneiss type boulder. One surface is always almost totally the natural cortex and the other side the usually unmodified flake surface. Sometimes there is thinning at the butt of the flake. The axis of the flake sometimes is parallel to the axis of the hoe, and other times perpendicular, suggesting that the flake was a large spall of roughly ovoid to circular outline. Notches are chipped for the hafting, and the working edge of the blade generally shows use polish, with occasional small chips apparently representing damage caused by striking stones in the soil.

Material: granitic-gneiss
Length: 9.4-11.1 cm.
Width: 7.3-9.2 cm.
Thickness: 1.0-1.9 cm.
Period: Calpish through Matapuquio

Type 3 (Fig. 32)
This hoe type is made almost exclusively on a large flake or core of the same reddish-purple siltstone used in making the large late prismatic blades; in rare cases the greyish-green stone of hoes Types 2 and 4 is used. As contrasted with both hoes 2 and 4, this hoe is a relatively shoulderless style and tends to be much narrower. These hoes are nowhere near as common as hoe Type 4, probably owing to the fact that their lessened surface area makes them less effective tools. The same sort of use polish and small damage chips as seen on hoe Type 2 also occur on this type.

Material: siltstone, rarely granitic-gneiss
Length: 10.5-14.0 cm.
Width: 5.2-7.5 cm.
Thickness: 1.4-2.1 cm.
Period: Matapuquio through Arhuaturo-Inca

Type 4 (Fig. 32)
In many respects, Type 4 hoe is merely a larger size hoe than Type 2, but as this larger variant is essentially chronologically distinct from Type 2, it seems to be a useful distinction. In most cases, Type 4 hoe is made from the grey-green large-grain rock that hoe 2 is made from, but occasionally examples of this variety occur in the

reddish-purple siltstone that the large prismatic blades are made from. These larger hoes also represent a change or improvement in removing larger spall flakes from the gneiss boulders--in most cases the flake removed is much broader than long, so that the flake axis is aligned perpendicular rather than parallel to the hoe axis. This hoe has distinct shoulders in comparison with hoe Type 3. Generally it is chipped only to shape, although thinning flakes of the spall bulb of percussion at one shoulder usually is quite extensive. As with hoe Type 2, one surface is always an unmodified or only slightly modified original cortex. The working edge exhibits the same use polish with small damage chips as hoe Type 2.

Material: granitic-gneiss, rarely siltstone
Length: 10.5-13.4 cm.
Width: 7.3-9.2 cm.
Thickness: 1.3-2.4 cm.
Period: Matapuquio through Inca

Type 5 (not illustrated)
There are only two examples of this hoe type, both from Viques mitmaqkuna occupation sites. The outline of these both appears to approximate the outline of a modern round-nosed shovel; they are much broader than Type 4 of the local Arhuaturo (Huanca) peoples, and have very distinct and acute shoulder tangs. Only one example was complete.

Material: schist
Length: 14.5 cm.
Width: 14.6 cm.
Thickness: 1.6 cm.
Period: Viques mitmaqkuna

Type 6 (not illustrated)
Four examples of this type were recovered, all from Inca-contemporary sites. This type consisted of nothing more than an oblong spall, and in fact, were first classed in amongst the spall scrapers. Their oblong shape does not provide the same sort of hafting opportunities as for hoes of Types 1-5, so it is not clear how they were used. The four specimens in question all exhibited the same extensive soil polish along one edge as the other hoes did, so it appears that they were used as a sort of spall hoe.

Material: granitic-gneiss
Length: 10.3-13.9 cm.
Width: 7.3-7.9 cm.
Thickness: 1.3-2.0 cm.
Period: Inca

Painted Pebbles (N = 5) (Fig. 33)

Five pebbles were found that had remnants of a reddish pigment

as a painted design on the surface. The two which could be dated securely and upon which the design was sufficiently clear to determine what it was are reproduced in Fig. 33; they both occur in Inca period sites. In one case the design was clearly on one side of the flat pebble only; in the other case it could not be determined whether it was on one side only or whether it had eroded off the other side.

Stone Beads and Pendants (Fig. 21-8,9; Fig. 22-7; Fig. 26-lower)

About a dozen beads and pendants of stone were recovered during the survey and excavations, but only five could be placed in chronological context. One of those which could not be dated was a flat rhomboid steatite pendant, incised on both sides with a cross-hatch pattern. Since steatite does not occur naturally in the valley, this piece was most likely traded in from elsewhere; unfortunately it occurs at a site which has materials from Uchupas through Inca.

Cochachongos beads and pendants: The stone decorative items in Fig. 21-8,9 and Fig. 22-7 were recovered from the excavations at PJuM 613. Fig. 21-8 is a small natural pebble of chalcedony which has been biconically drilled at one end. Fig. 21-9 is half of a stone bead of steatite; it was biconically drilled, and appears to have been shaped and polished. Fig. 22-7 represents an ordinary flat pebble which has been biconically drilled to use as a pendant. Three other such drilled flat pebbles were picked up on survey, but could not be securely fixed in the sequence.

Calpish stone disc or spindle whorl: The perforated circular stone disc in Fig. 26-lower and an identical unillustrated specimen came from Middle Horizon temples--one from Ñahuinpuquio and the other from Calpish. Both had a straight central shaft 0.7 cm. in diameter, were 0.8 cm. thick, and had a beveled edge, so that the outer diameter of one face was 2.6 cm. while the other was 2.9 cm. They look like stone beads or stone spindle whorls, but the fact that they both are associated with Middle Horizon temple precincts is curious, and it may well be that they had some religious significance.

Obsidian Mirror Fragment (not illustrated)

A fragment of an obsidian mirror, presumably circular, ground and polished to 0.4 cm. thickness, was found in a single occupation Calpish site. The fragment was too small to measure the diameter, but the curvature indicated that the mirror should have been circular.

Mortars, Rocker Mills, Handstones, Milling Stones

A large number of cup mortars and rocker mills were noted on survey, but their size precluded their collection. Generally speaking, mortars of various sizes, and particularly well-shaped and polished mortars, were most common in Arhuaturo and Inca sites; in pre-Matapuquio sites they were rare. All of the small stone mortars that had been well-shaped and polished, some of them small pigment mortars, others almost stone bowls, were recovered from Arhuaturo-Inca and Inca sites. The earliest mortar comes from an Usupuquio site, but it seems

likely on the basis of work done elsewhere in Peru that they may well occur earlier. The earliest rocker mill was recovered from the debris of Housepit 1 of the Cochachongos site PJuM 613. The most common vegetal processing apparatus during Cochachongos times, however, was a large flat milling stone base upon which a hand stone pecked or worn to a ovoid or spheroid shape was used. A number of spheroid stones and flat milling stone bases were observed in the survey of Cochachongos and Uchupas sites, but it was not realized at that time that the two were associated. It was not until the excavation of site PJuM 613 that we realized they were clearly associated: three different sets of flat milling stone bases directly associated with spheroid hand stones were recovered from the housepit area. The spheroid stones varied from 4.6-8.5 cm. in diameter; the flat bases in two of the cases were merely unmodified large flat river cobbles, with indications of wear in a circular area in the center; in the third case, a flat river cobble had been chipped to a rectangular shape, 14 x 17 cm. in size and 4 cm. thick. It also had a circular pattern of use in the center. None of the use patterns was distinct enough to suggest the actual pattern of hand movement in using the spheroid miller stones. Three disc shaped cobbles, one from the PJuM 613 excavations, were also presumed to be associated with a milling complex. These disc shaped river cobbles, also found at Kotosh, were flattish stones about 8 to 11 cm. in diameter, and 2.5-4.0 cm. thick, and all three were heavily abraded around the circumference. Their exact function is not clear.

Elongate and Amorphous Hammerstones

Battered hammerstones of amorphous configuration were recovered from all units, but there is one baton-shaped variety which deserves mention. This variety was an elongate, naturally shaped, cylindrical river pebble, which was battered only on the ends. They varied in ovoid to circular cross-section roughly of 2.5-4.0 cm. diameter, and in length 8.5-11.5 cm. for the five which could be definitely chronologically placed. These five came from Arhuaturo and Arhuaturo-Inca sites, and I would speculate that they were utilized in the production of the large prismatic blades.

Quartz Crystals

Two quartz crystals, heavily battered on one end, were recovered during survey, one from an Usupuquio site, the other from a multi-component site. The multi-faceted crystals were small (1.5-3.4 cm. in length, 1.2-1.5 cm. in breadth); the cause of the battering was not clear, other than being man-made.

Spall Scrapers, Cobble Tools, Amorphous Flake and Core Tools

Spall scrapers were found in collections from all periods; generally they bore evidence only of use retouch, though some had been worked to produce a more continuous and smooth convex working edge. By far the most numerous lithic artifacts in all periods were the amorphous flake and core tools; generally flakes and cores from pre-Middle Horizon sites exhibited more consistent flake removal and flake

configuration than did those of later sites. Cobble biface 'choppers' and cobble uniface 'scrapers' were found in all periods. There seemed to be a tendency to be more bifacial cobble tools in earlier periods, with some examples almost pick-like. In Late Horizon sites, there are an unusually large number of cobble end-scrapers--rather long flat clobbles with one end unifacially worked.

Developmental notes

In addition to the items of chronological significance evident from the enumeration of the various lithic categories above, there are some additional observations to be made. Projectile points as a group became smaller over time, and Early Intermediate Period points were noticeably smaller than the same point types from Early Horizon sites. It should be noted that though we had over 1,000 whole and partial projectile points, only 222 were finally used--these were all complete points which could be fairly securely dated. Black obsidian was a common material until the end of the Calpish period, while black-and-red banded obsidian was rare, being found only at a few Usupuquio and Calpish sites. Black obsidian was presumably obtained from the volcanics to the west, but the banded obsidian is rare enough to be considered as a possible trade item. The Calpish period marks a fairly radical change in the lithic assemblage--before Calpish there are a good number of tools made of cryptocrystalline materials, but these tools rather suddenly disappear in early Calpish times. The lithic inventory is rather reduced from Calpish times until Matapuquio times, when the large prismatic blade industry on medium-grained rocks

appears, and when agricultural hoes become common. Basalt as a material for tools drops out during Pirwapuquio times, and core tools of chalcedony disappear essentially by Cochachongos times, leaving essentially cryptocrystalline materials for shaped flake tools and siltstone for core tools.

During the Late Horizon we can also make some distinctions about materials utilized and lithic inventories. Tools that appear only during this time have already been enumerated. The Late Horizon sites in the vicinity of Huayao and Huachac switched from the use of the more typical purplish siltstone for prismatic blades to a whitish chert/chalcedony which tended to produce blades of a different character. A group of about a dozen sites, all contiguous, participated in this break from the general Arhuaturo-Inca valley tradition, and we might postulate some nature of political ties, perhaps in the form of a guaranga. There are a number of important differences between the lithic inventory of the Viques mitmaqkuna sites and the local Arhuaturo-Inca [e.g. Huanca] sites in addition to those already pointed out. The Viques sites completely lack the large prismatic blade industry of their neighbors. Their lithic tools are rather small and chunky chalcedony and chert amorphous flakes, which are lacking from the Arhuaturo inventory. In addition to using cryptocrystallines while their neighbors are using siltstone, the Viques mitmaqkuna are making some hoes and other tools out of schist, a material generally not used by the indigenous folk. We can list a number of points of difference between the Viques mitmaqkuna and the

local Arhuaturo-Inca, but only one similarity--the use of Type 4 hoe--so we can fairly correctly say that the lithic technology and the lithic inventory of the Viques mitmaqkuna was strikingly different from that of the local Arhuaturo-Inca.

B. Metal implements

The earliest metal comes from the Cochachongos D level of site PJuM 613. This short copper rod (Fig. 21-10) is 3.7 cm. in length and 0.4 cm. in diameter; the bent flattening of one end suggests that it may have been utilized as a pin holding some perishable wooden artifact together.

Copper tupu clothing pins and copper needles were observed in a collection said to have come from the looted stone-lined tombs of PJuM 677 (Ch. 3, Sec. C). Gold and silver discs 3 cm. to 10 cm. in diameter were excavated by the workmen at Wariwilka; as most of the deposits being hauled away were Incaic, these metal discs presumably were Incaic, but some of them may have been derived from the underlying Middle Horizon middens as well.

The copper tupu pins, silver-copper alloy bands, and silver-copper alloy dangles (Fig. 27) have already been described (Ch. 3, Sec. C). The illustrations in Fig. 27 are all life-size, as are all the illustrations of collected materials, so that additional measurements may be taken directly from the illustrations.

From Late Horizon sites, or perhaps terminal Late Intermediate Period and Late Horizon, we recovered a large amount of corroded

metal fragments--various small fragments of tupus and dangles, serrated discs and zoomorphic/anthropomorphic designs, all of copper; and some silver discs similar to those observed at Wariwilka. In addition, we found two Arhuaturo or Arhuaturo-Inca face-neck jars which had deliberately drilled holes filled with lead; these holes were so placed on the neck that they could not have functioned as repair holes. A similar example of this filling of holes with lead is reported for La Oroya by Wells (1940).

C. Shell Beads and Pendants

Shell beads such as the one excavated from the Cochachongos site PJuM 613 (Fig. 21-6) were picked up on a scattering of sites, from Pirwapuquio sites to apparently pure Inca sites. They varied in diameter from 0.5 cm. to 2.0 cm. Of greater significance is the Spondylus shell pendant illustrated in Fig. 21-7 from the excavations of PJuM 613. On the basis of present information, southern Ecuador would have been the closest coastal area where such a shell could have been obtained, so that it would suggest a number of middle men were required between the Jauja-Huancayo basin and southern coastal Ecuador, and this would further imply that the shell had considerable value and that the people of the Jauja-Huancayo area were producing or had access to some resource of sufficient value to be traded for such a shell. Due to the presence of a number of copper mines in the area today, we might suggest copper as the item exchanged, but to accept this we

should be able to point to a greater amount of copper in early periods than we can at present.

D. Bone Implements and Faunal Remains

Except for the excavated deposits, no bone tools were recovered. Therefore the record is spotty--the bone implements from Cochachongos are illustrated in Figs. 20-22, from Calpish in Fig. 25, and from Matapuquio-Arhuaturo in Fig. 28.

One of the more important bone artifacts from Cochachongos was a large piece of whale vertebrae. This vertebra was traded in from the coast, and inasmuch as today powdered whale vertebrae is regarded as a powerful magical substance in many parts of the sierra, we might well hypothesize a similar function for this 2,000 year old piece. Fig. 20 illustrates the fanciest bone artifact, a spear-thrower handle piece. This piece very closely resembles one illustrated from the contemporaneous deposits of the Paracas Peninsula (Engel 1966b:184, Fig. 50a). Most of the other bone objects are more mundane, such as the shaped and polished bone awls (Fig. 21-2,3), bone splinter awls, bone points (Fig. 21-1), bone needles, bone spatulates (Fig. 21-4), bone splinter scoops, antler tip flakers or punches (Fig. 21-5), tubular bone beads of varying sizes (Fig. 22-5,6), disc bone beads, and bone plaques or pendants (Fig. 22-4). More unusual are the cut and drilled terminal portion of an ungulate calcaneous (Fig. 22-3), which has no obvious function, and the cut and shaped and abraded ungulate scapula pieces (Fig. 22-1,2). One of these latter (Fig. 21-1) appears to be a complete specimen; inspection

suggests that the most probable function of these pieces was a smoothing function, so it may be that these tools were utilized in the production of ceramics.

The bone tools from the Calpish excavation include shaped ulna awls (Fig. 25-1), bone splinter awls, shaped and polished bone spatulates (Fig. 25-6), bone splinter spatulates, ladles or scoops fashioned from small skullcap portions (Fig. 25-4), bone foreshaft collars (Fig. 25-3), rodent (viscacha?) incisor gravers (Fig. 25-5), drilled llama carpals (see Shea 1969 for a similar Calpish specimen) which were found both at Wariwilka and Calpish, and a large number of rather amorphous longbone splinters which have been heavily abraded and smoothed, again found at both Wariwilka and Calpish (see Shea 1969 for illustrated examples). These latter two categories of modified bone can perhaps best be seen as associated with the religious activities at these temples as they have no other obvious functional purpose.

The bone tools in Fig. 28, mainly from Arhuaturo excavations, indicate continued importance of bone as a tool media. Particularly prevalent were the hollow bone pieces, smoothed and abraded at each end (Fig. 28-4) that have been termed bone foreshaft collars, and which were also found in fair frequency in Calpish middens. Also continued were such items as polished bone awls (Fig. 28-1), bone splinter awls, bone needles (Fig. 28-3), bone saws (Fig. 28-5), deer antler flakers or punches, bone splinter flakers or punches (Fig. 28-2), and bone splinter spatulates.

Faunal Analysis:

Utilization of the native fauna, as far as the kinds of species exploited are concerned, seems fairly consistent over time. Excavations In Cochachongos, Calpish and Arhuaturo middens revealed that in all three periods that at least two different llamoids (guanaco/llama and alpaca), deer, guinea pig, large birds (ducks and geese), and a canid (dog/fox) were utilized. In addition, we have noted (Ch. 3) possible evidence for ritual consumption of humans in Cochachongos times, and for Calpish times we must speculate upon trade for the origin of the rodent incisor gravers, for they appear too large to be viscacha incisors. Shea (1969) mentions a horn core from the refuse at Wariwilka; identification of this specimen would be most interesting as no animal native to the valley area has horn cores. This rather limited faunal assemblage appears to be rather typical for the Andes; Mohr-Chavez (1969:50) has a nearly identical assemblage, save for the addition of peccary, for the Cuzco-Puno area.

An interesting change in butchering technique occurs between the Cochachongos period and the Calpish period. There is, of course, a reduced emphasis upon hunting and herding in Middle Horizon times, but in addition, there seems to be a change in butchering style and/or carcass utilization. For faunal analysis, I utilized for identification only those bones which had articulatory features; for the guanaco-llama-alpaca-deer group, this included the calcaneus, naviculo-cuboid, astragalus, phalanges, metapoidals, ulna-radius, humerus, tibia-fibula, femur, pelvis, sacrum, vertebrae, ribs, scapula, mandibles, cranium,

miscellaneous teeth, and antlers. During Cochachongos times, roughly two-thirds of the bones represented are from what I have for convenience loosely termed the bony or 'waste' portion, that is, that portion representing the distal extremities of the legs and bones associated with the head, while only one-third of the bones were what I have termed for convenience the 'meat' portion of the animal--the upper limb portions and the main trunk. This percentage is almost exactly reversed for both the Calpish and Arhuaturo samples, so that two-thirds of the bones for these later periods now represent the 'meat' portion of the animal and only one-third of the bones now represent the 'waste' portion. One possible explanation for the percentages of bone in Cochachongos middens would be the 'schlepp effect' (Daly 1969, for example). Whether this is the correct explanation or not, it certainly is clear that butchering style and treatment of the hoofs and head had changed radically between Early Horizon hunters and herders and Middle Horizon agriculturalists. Shea (1969) included all bone splinters in his count of animal bones present at Wariwilka; in looking at this count, there seem to be the same rather constant ratios that we observed. In counting the bones from his sample, about four-fifths of the bones are from the 'meat' portion and about one-fifth from the 'waste' portion. The differences in actual percentage between Shea's material and our material for the Middle Horizon no doubt are due to the fact that we counted only identifiable articulatory surfaces while Shea counted all bone fragments; what is important is that his work can be shown to independently verify the results we obtained in relative change of 'meat' with respect to 'waste' portions of the animals.

E. Comparative materials

Insofar as lithic tools are concerned, most of the similarities that can be observed are between various projectile point types. The best sources for all preceramic periods are the Lauricocha reports (Cardich 1958, 1964) and the Huanta project report (MacNeish 1969), though for any one particular point in time one can find other reports equally as useful. Our survey produced nothing of the antiquity of the Ayacucho complex (MacNeish 1969), but it may well exist in the area as Ramiro Matos Mendieta and Julio Espejo Nuñez (personal communication) have tools with burin removals from the aceramic site of Humpunc or Humpac on a hill above Lago Paca.

The first phase of our survey, the Jurpac phase, has some general similarities with a number of Central Peruvian complexes, but most particularly with the material published from the Ayacucho region. Point types 1-4 (Fig. 12) have equivalents in both MacNeish's (1969) Piki and Chihua complexes, but type 5 seems most similar to his Cachi Plain which occurs only in the Chihua complex. Of the various Lauricocha assemblages, the materials from Levels M-O at Cave L-2 have the closest similarities to the Jurpac materials; this material corresponds to what Cardich (1964) calls Lauricocha II; but it should be noted that this definition of Lauricocha II for Cave L-2 differs from that given for Cave U-1 (Cardich 1958). The only other materials that seem similar are from coastal Peru--there is some general resemblance between the solitary Corbina point found, and also some of the Encanto-Lachay points (Lanning 1963b), though the latter seem more similar to

the succeeding Tinyari phase points. On the basis of these similarities and on the basis of radiocarbon determinations associated with similar materials (Appendix B), Jurpac phase materials most probably date to 4700-2800 B.C.

The terminal preceramic phase, Tinyari, is much more securely defined, and has a number of similarities with other Central Peruvian materials. The points illustrated from Quishqui Puncu (Lynch 1967b) could fit into this phase, but apparently this is just a spurious similarity. The closest similarities once again are with the Ayacucho sequence developed by MacNeish--the Cachi phase of Ayacucho and the Tinyari phase of Jauja-Huancayo appear to be almost identical. There are also similarities between Lauricocha III (Levels L, LL) at Cave L-2 (Cardich 1964) and some of the Encanto-Lachay points (Lanning 1963b), but the resemblance is not as close. Closer resemblances can be drawn to the Diablomachay material at Huanaco Viejo (Ravines Sanchez 1969a) and the Cuchimachay material from Mt. Pariacaca near Yauyos (Bonavia and Ravines Sanchez 1968). Radiocarbon determinations (Appendix B) and typological similarities suggest a date of 2800-1500/1000 B.C. for the Tinyari phase.

Included in the Tinyari phase may be part of the materials from San Juan Pata near Jauja (Fung Pineda 1959) and Ledig-Tschopik Rockshelter 2 near Huayao (Tschopik 1946; Fung Pineda 1959). The majority, if not all, of the materials from Ledig-Tschopik Shelter 1 and part of the material from San Juan Pata do not belong to this terminal preceramic Tinyari phase but rather belong to the Early

Intermediate Period Usupuquio phase. Owing to the initial report by Tschopik (1946) that both shelters were aceramic, the two assemblages were lumped together, and have led to some interesting but erroneous conclusions. The indication that Tschopik's Shelter 1 was ceramic, as indicated by Fung's (1959) excavations, did little to clarify the picture. Lanning (Lanning 1963, Lanning and Hammel 1961) asserts that "the Huancayo lithic industry was contemporary not only with agriculture but with ceramics as well" and that the rockshelters were the camping places for "pottery-making farmers off on a hunt." We have already argued that not all the materials in this "Huancayo lithic industry" are contemporaneous; the assertion of the materials being associated with agriculture and farmers is purely speculative as the only organic material recovered by either Ledig or Fung was a piece of wood (Fung Pineda 1959:255), and the only agricultural implement, a stone hoe, came from the surface of the site where it is associated with Inca style ceramics. More confusingly, Lanning (Vescelius 1963:44) has defined an Ica-Huancayo complex which includes the late preceramic South Coast sites of San Nicolas and Casavilca with the Early Intermediate phase materials from the Ledig-Tschopik shelter--not only are these materials spatially and temporally distinct, but later work by Vescelius (1969) has shown the South Coast materials to be typologically distinct from the Central Highlands assemblages.

For ceramic periods, similarities in a specific sense become much more difficult to make. From verbal descriptions, it appears that the Ayacucho materials should still be quite similar (MacNeish 1969), but

illustrations of this material have not yet been published. The best time markers seem to be the triangular points (Types 9, 13), the bilaterally barbed point (Type 15), the concave base triangular point (Type 16), and the polished stone point (Type 14). The polished stone point seems to have been quite widespread in the Central Andes during the latter part of the Early Horizon. In addition to the Jauja-Huancayo basin, it occurs in Lauricocha IV assemblages at Cave L-2 (Cardich 1964) and at Ranracancha (Cardich 1960), and it occurs in greatest numbers in the northern highland sites of Ticipampa in the Callejon de Huaylas (Muelle 1957), Chavin de Huantar (Muelle 1957; Tello 1960), and Kotosh (Izumi and Sono 1963). In all cases where they are dated, these points occur in late Early Horizon assemblages and probably early Early Intermediate Period assemblages as well. As the Cochachongos people lacked a stone-polishing industry, these points were likely obtained by exchange from the north, possibly from the San Blas region.

The small triangular points and the concave-based triangular points seem to have definite correlations with the Southern Highlands. They are quite common at Pikicallepata and other sites in the Cuzco-Puno region (Mohr-Chavez 1969) and in the Huancavelica area (Ravines Sanchez, personal communication to T. C. Patterson), while in the published material to the north they seem rare (Ravines Sanchez 1969a).

For lithic implements in addition to projectile points, we find ourselves hard put to find comparative materials. The similarities between Ayacucho and Jauja-Huancayo become even more convincing when we observe that the core scraper planes and core bifaces (Figs. 18, 19)

suddenly become prevalent in the Cachi complex (MacNeish 1969:44) in Ayacucho and the Tinyari complex in Jauja-Huancayo, and they continue to be found in significant numbers on into early ceramic periods in both localities. Judging from the illustrations, the tools are identical. For gravers, scrapers, knives and other shaped crypto-crystalline tools, we have observed only general similarities with materials from outside the valley. To my knowledge, the large, late prismatic blade industry has not been described before. Stone digging weights, stone hoes, and stone maces have been illustrated from a number of areas, and are all generally similar to the Jauja-Huancayo specimens. It is interesting to note that most areas apparently used stone hoes centuries earlier than they first appear in the Jauja-Huancayo basin. Unidentified stone discs with abraded edges also occur at Kotosh (Izumi and Sono 1963, Pl. 72) so they are not unique to our survey area; the explanation of their function may well tell us something important about plant utilization in the Jauja-Huancayo basin.

For bone implements, the general similarity caused by the structural limitations of the media and desired function makes comparison rather less meaningful than it might be. The bone/antler atlatl handles, being decorated, are more susceptible to this sort of analysis--we have already observed a marked similarity between the handle piece in Fig. 20 and a specimen illustrated by Engel (1966b:184, Fig. 50a) from Paracas, and a vague similarity exists between Fig. 20 and the handle piece illustrated by Rowe (1944, Fig. 17-3) from Chanapata.

Other similar handle pieces have been observed in museums, but have less secure proveniences. The use of small mammal skull hemispheres for ladles also is known from other sites--Rowe (1944, Fig. 16-17) illustrates one from Chanapata. I have not found scapula smoothers similar to those in Fig. 22, or bone foreshaft collars similar to those in Figs. 25 and 28 in the literature; they appear specific enough to be good chronological indicators.

The metal artifacts in general do not appear to be unusual in either form or material. Another copper tupu pin like those in Fig. 27 has been illustrated for Jauja, perhaps from Hatun-Xauxa, by Marshall (1964). The silver-copper alloy bands appeared to my untrained eye to be unusual, but apparently are not uncommon, particularly on the North Coast (Heather Lechtman, personal communication).

The first appearance of copper during Cochachongos D, however, may have some significance, as it is during Cochachongos CDE that we have extensive indications of contact with the Paracas Peninsula-Cañete area, and it is precisely at this time that copper suddenly begins to occur in the Cañete-Paracas-Ocucaje area (Lanning 1960:594). The other noteworthy occurrence of metal is the deliberate drilling of non-functional holes in large face-neck jars and the filling of these holes with lead. Outside of the nearby La Oroya area (Wells 1940), this trait does not seem to have been observed before.

Chapter 5

Ceramic Assemblages

The seriation by vessel form has already been given in Table 6 (Ch. 3). Additions of painted and incised designs, changes in pigments, jar neck appliques, handle decoration and shapes, spoon types, bowl and jar lugs, tops, geometrics, ring and pedestal bases, pan-pipes, and other ceramic features result in a tabulation too complex to be economically handled. Therefore the important features are enumerated in this chapter with the significant range and character of the ceramic vocabulary and inventory for each style and phase illustrated in the accompanying figures (Figs. 34-221). In general, rather than tiresomely describing all attributes for all phases, reference to the illustrated typical and diagnostic pieces is made, thus avoiding in part tedious repetitious description of what can be quickly and much more readily grasped by referring to the illustrations. The various descriptions that follow, then, mainly deal with the significant features of each phase, trying to detail the significant continuities and changes, and pointing out in a general way some of the diagnostic features of each phase. At the end of the descriptive passages for each style, the vessel forms for that style are listed, along with the range of the mouth or rim diameters, and the mode or modes of diameter for each vessel. The utilization of the term 'mode'

has already been described in Ch. 3; it basically assumes a normal distribution, in a statistical sense, and gives the limits of one standard deviation, so that a mode of 15 ± 3 cm. indicates a peak at 15 cm., a standard deviation of 3 cm., and thus indicates that two-thirds of the rim or mouth diameters of that vessel form are between 12-18 cm.

Of the 300 sites recorded, there were ceramic collections from all but eight of the sites, which were wholly lithic sites. All the ceramics were processed for possible use in seriation, though in the case of many multi-component sites we could only use the materials to amplify the limited vocabularies from single component sites. The following list gives the number of sites which exhibited refuse from each of the respective styles given:

Pirwapuquio	11
Cochachongos	16
Uchupas	15
Usupuquio	79
Huacrapuquio	43
Calpish	63
Quinsahuanca	42
Matapuquio	36
Arhuaturo	98
Inca	126
Viques	4/31 [4 major sites, 31 total with some Viques sherds]
Llaqsa	7
Ocopa	6
Retama	8
Modern	2 [Ceramic centers: San Isidro de Aco, Quichuay]

A. Pirwapuquio (1000-650 B.C.)

There are five major ware categories in Pirwapuquio--four local and one foreign. As pointed out in Ch. 3, the four local wares could

be considered as only two major wares, each with different temper variants. Throughout much of the history of ceramics in the Jauja-Huancayo basin we see the use of two different tempering sands--one predominantly sub-angular whitish grit with some black and grey inclusions, and the other essentially a colored variety, with roughly equal portions of red, green-grey, black, and white particles. However, the predominantly whitish sand must come from a different locality in the basin in Pirwapuquio times than in many subsequent periods, as there is a considerable amount of gold-colored mica (iron pyrites?) in some sherds. It is interesting to observe that the two wares that contain significant quantities of mica are the earliest, Pirwapuquio, and the most recent, Modern, being produced today.

The major ware category in Pirwapuquio is a brown ware--it varies from dark red-brown to dark brown to brown to light brown to tan-brown to tan, but mainly is a dark brown to slightly reddish brown. The ollas as a class tend to be the darkest in color, while the bowls tend to be lightest in color, being generally more tan-brown. Temper seems to vary between 5-10%, with one variant having the whitish temper and the other having the colored temper. As noted above, some of the ware has considerable mica, while others have very little. The thickness of sherds varies roughly from 0.3-1.3 cm., largely depending on vessel configuration, with most sherds 0.5-0.8 cm. in thickness. Ollas of the brown ware in particular are well smoothed, quite compact, and sometimes polished to a semi-lustrous finish.

The second major ware category, with its two usual temper variants,

occurs only in Pirwapuquio BC and DEF; it is lacking in Pirwapuquio A and is much more frequent in Pirwapuquio DEF than Pirwapuquio BC, and goes on to become a major ware in the succeeding Cochachongos style. This ware is a buff-tan to light tan-brown to light orange-tan to orange-buff to tan. This light tan ware category lacks the mica inclusions found in the brown ware. When this ware first appears, it is limited exclusively to open bowls, but it is found in many vessel categories in subsequent phases. Even in the latest units, however, the light tan ware is clearly a minor ware in comparison with the brown ware, never comprising more than 10-20% of the collections.

The third ware category, the fifth ware, is a foreign black ware which occurs only as a few sherds in the BC and DEF units. Figs. 32:a and 32:g are both pieces of this ware; Fig. 32:a is essentially indistinguishable from the local vessels in shape and design vocabulary, although the design is much more distinctly executed, but Fig. 32:g is a unique sherd, clearly distinct from the local style.

A red slip or wash, the red being of a more violet red cast than the bright red pigment used on the zoned painted pieces, is frequently used on the brown ware category vessels of all shapes, though it is particularly common on ollas and enclosed bowls. Though it continues to be used in all Pirwapuquio units, it is more frequent and therefore more characteristic of the earlier phases. In the later units several factors cause this decline in the frequency of totally red slipped or washed vessels. Ollas decrease numerically from being one of the predominant vessel forms in Pirwapuquio A until they disappear in early

Cochachongos AB; since they are one of the vessel forms most commonly red slipped, as they numerically decline the total number of red slipped vessels declines. A second factor is the increase of the light tan ware through time. By the end of Pirwapuquio DEF, most of the open and enclosed bowls are of this light tan ware instead of the brown ware. Since the light tan ware is never red washed or slipped, and since open and enclosed bowls increase numerically, the increase in use of light tan ware also reduces the net number of red slipped or washed vessels. The third factor is the appearance of the cream-white to off-beige wash/slip which comes to dominate the subsequent Cochachongos style . This slip first occurs on rare examples of Pirwapuquio BC, but becomes much more apparent in Pirwapuquio DEF. This off-white wash is used on all vessels; it becomes an alternative to red wash as a total vessel decorative technique, and thus also tends to reduce the occurrence of red wash vessels.

The entire decorative vocabulary of the three major divisions A, BC and DEF are not completely understood. On the basis of frequency, occurrence and developmental seriation of the vessel inventory (Table 6), we ordered and grouped the six major units into three seemingly coherent groups--A, BC and DEF, which we suggest will eventually be subdivisible chronologically into separate A, B, C, D, E, F phases. The relative proportions of light tan ware to brown ware, and white wash to red wash seemed to verify these orderings. On the other hand, if one refers to the decorative vocabulary (Fig. 39-42), it

seems more reasonable to order the units A-DEF-BC. This is a very serious problem, which I cannot solve on the material available. Until such time as more information is available, I have opted for the seriation suggested by the vessel inventory, which reflects the gradual change of all vessels, decorated and undecorated, and which includes the utility vessels as well, feeling that this ordering is less susceptible to fortuituous preservation, idiosyncratic preference, and sampling error than the ordering suggested by reliance on the decoration of relatively few vessels.

The most common decorative technique of Pirwapuquio A is zoned and unzoned punctation. Zoning is used in a rather limited sense to indicate punctation outlined by broad, shallow incision. The most frequent types are horizontal running bands of triangles filled with careful punctation, and both horizontal and vertical bands filled with punctation. The unzoned, that is, the unoutlined punctations usually occur as horizontal bands running around the necks or rims of vessels, and most frequently around the top of olla rims. Generally these ten to be straight bands of punctations, but undulating patterns (Fig. 39e), and more complex patterns (Fig. 39d) are not uncommon. Punctation is almost exclusively limited to small round punctates such as illustrated in Fig. 39; rarely the small ovoid punctate jabs and small triangular punctate jabs found in later Pirwapuquio units do occur in contexts where we would expect the regular round punctates. Punctates also occur on circumferential appliques just below the rims of vessels (Fig. 39h).

Slashes and cane-stamped circles are utilized in much the same fashion as punctates. Various patterns of short slash incisions occur just below vessel rims, most frequently on vessels with raised rim platforms (Fig. 39:k,n,o). Much more common are the cane-stamped circles, varying in diameter from 0.5-1.0 cm. These cane-stamped circles occur in a variety of patterns and decorations. Some occur in zoned patterns circumferentially around the rim of the vessel (Fig. 40d), some in unzoned circumferential patterns (Fig. 40c), some on circumferential applique bands (Fig. 39i), some on the red-washed vessels, and others on a variety of zone-painted vessels (Fig. 40:a,b). These zone-painted vessels are almost exclusively bowls--the rim is painted red, then there is a circumferential unpainted band filled with cane-stamped circles in various patterns, and this is outlined on the bottom again with red paint. Although most of the cane-stamping consists mainly of simple circles, rare examples of the 'bulls-eye' type, with a central dot in the circle (Fig. 40c) do occur.

The other major category of decoration is the zone painting illustrated in Fig. 40:e-g. This category consists of various red-painted zones outlined by broad, shallow incision, and occurs only on bowl forms. In all examples, the rim is painted red and bounded by a circumferential incised line. Below this is a variety of rectilinear squares, rectangles, angles and other rectilineal patterns outlined by incision--in some cases the design area is unpigmented and the background painted red; in other cases the zoned patterns are painted red and the background unpigmented. In rare cases, the design pattern

commonly found in Pirwapuquio DEF is also observed--that of a band of laternating red-painted and unpainted rectangles circumferentially below the bounded rim (Fig. 42:i,k). In most cases the incisions and angles consist of right angle patterns, but some acute angle patterns also exist.

Scalloping, fluting, and notching of rims occurs. Scalloping is affected in two ways. On bowls such as Enclosed Bowl 3 and 4 or Open Bowl 11, which have external thickening of the rim, depressions are regualrly impressed or excised along the external thickening, giving an undulating scalloping. The second method of producing this sort of undulating scalloping is found on open and enclosed bowl lacking the external thickening, occuring mainly on Enclosed Bowl 1. In this case a number of appliques are added to the external face of the rim in such a fashion to produce the same general scalloping effect. Fluting occurs only on some of the short, striaght necked jars (Jar 2). In these cases vertical or diagonal flutes are produced, being about 1.0-1.5 cm. in width, so that the mouth of the jar, as viewed from above, would have a polygonal configuration, while the side view of those with vertical fluting would resemble an abbreviated greek column. Notching occurs only in the open bowl forms with unthickened rims, and is produced by regularly excising notches along the rim. Scalloping, fluting and notching are recorded only for Pirwapuquio A, and are relatively rare there.

Other decorative features of Pirwapuquio A are limited to handles and figurines. Strap handles rarely are decorated with long parallel

incisions (see Pirwapuquio BC, Fig. 41:i,j); this decoration becomes much more frequent in later phases. The only figurine from Pirwapuquio A was a seated figurine, consisting of a tabular piece of clay, bent in a bow of 'C' shape, with modeled arms extending from the shoulders to the knees/feet, with an applique collar such as illustrated for the Cochachongos ABC figurines (Fig. 53), and with a head with applique nose and eyes, pierced ears and some sort of headdress/headpiece, with the entire head being nearly identical to the figurine head illustrated by Engel (1956, Fig. 9f) from Curayacu. This sitting variety of figurine is represented by only two examples, both from Pirwapuquio phase units. The standing figurine (Fig. 41:k) is more common, at least in Pirwapuquio BC and DEF, and is the only type of figurine found in succeeding phases.

In addition to strap handles, there are some small lug-ring handles such as illustrated in Fig. 41:c; this type disappears in the subsequent Cochachongos units. There are some large horizontal, cylindrical, lug-type handles, which stick striaght out from the sides of jars, which only occur in phase A. Vessel bases of bowls and ollas are either rounded or flat (Fig. 40), but jars have annular bases produced by the addition of clay to the base (Fig. 40)--this type of jar base continues on into Cochachongos units where it becomes much more pronounced, and then disappears in the succeeding Uchupas phases. Ladles and spoons occur in all Pirwapuquio phases; the spoon shape occurs in much the same form and shape from Pirwapuquio through Arhuaturo-Inca, but the ladle form disappears by Cochachongos units.

A unique pedestal-base occurs in the local brown ware in Phase A. Bottles occur in all phases of Pirwapuquio (Fig. 38) but drop out early in Cochachongos phase occupations.

In Pirwapuquio BC, punctation is exclusively ovoid or triangular shaped (Fig. 41:a, b, d), rather than circular-shaped as was predominantly the case in phase A. Both zoned and unzoned punctation patterns occur. Patterns of large type slash incision (Fig. 39:k; Fig. 41:c) still occur. But we don't have a number of the decoration motifs of Pirwapuquio A, and some of the new decoration styles do not occur in our sample from Pirwapuquio DEF but reoccur in our collections from Cochachongos. Among such features are the pendant triangle design (Fig. 41:f), lazy "S's" (Fig. 41:e), running curvilinear designs (Fig. 41:g), and isolated zone-painted squares (Fig. 41:h). One of the new designs, alternating circumferential bands of red and unpigmented areas (Fig. 42:j) occurs first in BC, continues on in DEF and also into Cochachongos AB.

The strap handles continue to have roughly rectangular cross-section, a typical Pirwapuquio feature, and more of them have the parallel incisions running their length (Fig. 41:i, j). In this unit we have the first mostly complete standing figurine, exhibiting such typical features as the standard hand type, the two drilled holes (apparently for suspension), the slash incisions to indicate the feet, and an applique vulva. Other fragments have portions of the applique neckband/necklace already described.

In Pirwapuquio DEF, punctation is still present, again in the form of ovoid slash-type punctates. Our sample of decorated wares

consists almost exclusively of cane-stamping and zoned painting of the Pirwapuquio A style rather than the new painting style defined for BC. The cane-stamping, which we did not pick up in our BC assemblages, is different than the Pirwapuquio A cane-stamping. Cane-stamp circles vary in size from 0.5-1.2 cm., but whereas most of the cane-stamped circles in phase A varied from 0.5-0.8 cm., the greater majority of cane-stamped circles in phase DEF were from 0.8-1.2 cm. in diameter. Moreover, the bulls-eye motif (Fig. 42:a,c) comprises the majority of cane-stamped sherds, and a new variant of the bulls-eye motif (Fig. 42:d), a larger cane-stamped circle with a smaller cane-stamped circle in the center instead of a punctate, first appears. Though some sherds with the rim painted red, then an unpainted zone circumferentially with cane-stamping, outlined by red paint again on the bottom (Fig. 42:b) occur, white wash and red wash vessles with cane-stamping randomly patterned over a large area of the surface also appear (Fig. 42:e,f). Commonly the zoned painting consists of bowls with red rims, bounded by circumferential incision, below which is a circumferential band of alternating red painted and unpainted rectangles outlined by incision (Fig. 42:i,k)--this type was rare in phase A, but is almost the only variety of phase DEF. In addition, certain curvilinear painted designs outlined by incision also first occur (Fig. 42:h). As previously noted, the alternating circumferential bands of red paint and unpainted areas also occur in some quantity in phase DEF (Fig. 42:j). The apparent design vocabulary discrepancies between phases A, BC, DEF and Cochachongos AB probably can only be resolved with larger, excavated samples.

Pirwapuquio vessel forms:

Olla 1 Range: 8-24 cm Mode: 15 ± 3
Olla 2 Range: 8-19 cm Mode: 15 ± 3
Olla 3 Range: 11-24 cm Mode: 14 ± 3
Olla 4 Range: 14-27 cm Mode: 17 ± 3
Olla 5 Range: 16-30 cm Mode: 22 ± 3
Olla 6 Range: 21-44 cm Mode: 32 ± 5
Olla 7 Range: 27-40 cm Mode: 33 ± 3
Olla 8 Range: 10-19 cm Mode: 15 ± 3
Olla 9 Range: 22-38 cm Mode: 34 ± 4
Olla 10 Range: 10-26 cm Mode: 20 ± 3
Enclosed Bowl 1 Range: 9-25 cm Mode: 16 ± 4
Enclosed Bowl 2 Range: 10-21 cm Mode: 15 ± 3
Enclosed Bowl 3 Range: 12-21 cm Mode: 16 ± 3
Enclosed Bowl 4 Range: 12-23 cm Mode: 16 ± 4
Enclosed Bowl 5 Range: 15-23 cm Mode: ?
Enclosed Bowl 6 Range: 13-23 cm Mode: 15 ± 3
Enclosed Bowl 7 Range: 12-21 cm Mode: 16 ± 3
Open Bowl 1 Range: 11-34 cm Mode-dual: 14 ± 4; 32 ± 2
Open Bowl 2 Range: 10-21 cm Mode: 15 ± 3
Open Bowl 3 Range: 17-48 cm Mode-dual: 20 ± 5; 34 ± 6
Open Bowl 4 Range: 20-48 cm Mode: 34 ± 5
Open Bowl 5 Range: 16-38 cm Mode: 32 ± 5
Open Bowl 6 Range: 12-27 cm Mode: 15 ± 3
Open Bowl 7 Range: 11-17 cm Mode: 15 ± 2
Open Bowl 8 Range: 18-40 cm Mode: 34 ± 6
Open Bowl 9 Range: 12-21 cm Mode: 16 ± 5
Open Bowl 10 Range: 12-34 cm Mode-dual: 15 ± 3; 32 ± 4
Open Bowl 11 Range: 13-18 cm Mode: 15 ± 3
Open Bowl 12 Range: 12-17 cm Mode: 15 ± 2
Jar 1 Range: 9-19 cm Mode: 15 ± 2
Jar 2 Range: 7-14 cm Mode: 10 ± 3
Jar 3 Range: 9-14 cm Mode: 10 ± 2
Jar 5 Range: 12-22 cm Mode: 17 ± 5
Jar 6 Range: 10-24 cm Mode: 15 ± 4
Jar 7 Range: 9-24 cm Mode: 15 ± 4
Jar 8 Range: 5-13 cm Mode: 9 ± 4
Jar 9 Range: 5-11 cm Mode: 7 ± 2
Jar 10 Range: 18-30 cm Mode: 21 ± 3
Jar 11 Range: 6-10 cm Mode: 8 ± 2
Lids Range: 9-13 cm Mode: 11 ± 2
Bottle necks Range: 2.0-3.5 cm Mode: 2.3 ± 0.3

B. Cochachongos (650 B.C.-A.D. 0/50)

Seven different wares were defined for Cochachongos--five local

and two foreign trade wares. The five local wares comprise three bowl wares and two jar wares. Local bowl ware 1 is a continuation of the brown ware from Pirwapuquio; the rare ollas in Cochachongos AB are of this ware, and throughout Cochachongos phases the open cooking bowls (Open Bowls 3-5) that replace the cooking ollas toward the end of Pirwapuquio are made almost exclusively of this ware. These large (30-35 cm. diameter) open cooking bowls plus the jar rims of Jar 15 are two of the most diagnostic vessel features for Cochachongos phases. This brown ware continues to be red brown to dark brown to light brown; it seems to have more grit temper than before (10-20% temper) and is made mainly in the colored temper area of the valley.

Local bowl ware 2, local bowl ware 3, local jar ware 1 and local jar ware 2 are all essentially variants of the same ware, the light tan ware that began to become prominent in the late Pirwapuquio phases. The main difference between bowl ware 2 and 3 is that the first has the predominantly whitish local temper variant while the second has the colored local temper variant. Both bowl wares are light orange-buff-tan to tan-buff to light orange-tan to tan to orange-buff to salmon-tan to cream-buff; temper in both is usually about 5-10% of the visible surface area; both are compact, with the surfaces scraped, with ware varying 0.4-1.2 cm. thick, but mainly about 0.5-0.7 cm. thick. The two jar wares also are distinguished on the basis of temper--the first having the whitish grit temper and the second the colored grit temper. These wares were distinguished from bowl wares mainly on firing color, which tends to be more orange than the bowl wares--firing colors

varied from orange-tan to orange- salmon to orange-brown to light orange-buff to light tan-brown. The central cores of these sherds was often an incompletely fired grey or black. Larger sand particles up to 0.15 cm. sometimes were included; temper tended to be heavier than bowl wares, averaging 10-20% of the visible surface. Most of these jars were plain wares, but some were vertically pebble polished, with the pebble polish tracks consciously well-defined parallel tracks for decorative purposes, and most of these were slipped cream-white.

The most common foreign trade ware was the trade ware with Paracas-like traits (Fig. 61). The temper of this ware was a very fine sand of whitish particles barely visible, with temper proportion less than 5%. Firing leaves a light brown to pink brown coloration, sometimes with some banding of the cross-section of the core. Both interior and exterior surfaces are scraped, and in most cases, polished to a good luster.

The second trade ware is tentatively identified as Chupas-Rancha. It is a black ware; in cross-section the ware is dark brown near the surface with a black core, and with both surfaces reduced to a black. Some of the ware has been highly polished and red slipped (Fig 62:q) while others have been painted (red and white) and incised (Fig. 69:e). Most of this ware has reasonably visible mica, with colored particle sand temper, usually 5-10%.

Incised decoration, punctation, and cane-stamping are rare; more than 95% of the decorated ware is red on white bichrome. We have illustrated a disproportionate amount of the rare decorative features

(Figs. 49, 55, 61, 62, 69) for two reasons--one that it is with the incised ware that most of the foreign influence can be seen, and second that most of the bichrome consists of the same limited design vocabulary repeated over and over again.

In Cochachongos AB, all the incised, cane-stamped and punctate ware appears to be local, but many of the pieces seem to be local copies of some other style. Though produced on local wares and with local pigments, the combination of bichrome painting with incision and with cane-stamped bulls-eyes (Fig. 49:a,b) is a new addition to the design vocabulary which continues in rare examples through phase E. The type of zoned ovoid punctation (Fig. 49;c,f) also appears in different contexts and conformations than does the local zoned punctation, and appears to be associated with some foreign influence. These two pieces (Fig. 49:c,f) did not have any remnants of white resin-pigment rubbed in the incisions, but many of the similar pieces in Cochachongos CDE did have remnants of post-fired pigment in the incisions and sometimes in the punctates. Fig. 49:d,e are typical local pieces which have antecedents in the Pirwapuquio phases, and which are found in some number in succeeding Cochachongos phases.

In Cochachongos C, there is continuing influence in the incised wares. All the sherds in Fig. 55:a-j are trade wares. The sherds of Fig. 55:a-i are a brown ware, most of which are clearly related to external influence coming from the Paracas-Cañete area, though some may be good local copies on local bowl ware 1 which is very similar to the Paracas-related bowl ware. All of the sherds in Fig. 55:a-i had traces

of post-fired white paint in the incisions; in addition, one piece (Fig. 55:f) had post-fired red pigment on a design similar to what is called a twined diagonal fret in the Ocucaje sequence. Fig. 55:j is an incised design on a ware similar to one identified as Chupas/Rancha for me by Augusto Cruzat of the Universidad Nacional del Centro. The two incised and punctate pieces in Fig. 55:k,l are local wares. In Cochachongos the zoned punctate designs once again tend to exhibit circular punctates rather than the ovoid punctates of the later Pirwapuquio assemblages. The face (Fig. 55:k) with the applique nose and incised eyes, nostrils, mouth and the series of incised 'tear-lines' under the eyes is quite common a local decoration on unslipped jars; associated with this face frequently is a pair of applique nubbins on the shoulder of the jar, decorated with four or five incised lines presumably representing stylized hands. There are some sherds with a variety of painted, incised and modeled features; most of these are parts of face-neck jars (Fig. 56), feline-effigy vessels (Fig. 57-left) and other vessels with anthropomorphic or zoomorphic features.

In Cochachongos D we have the best evidence for direct trade with the Paracas Peninsula-Cañete area. There are three sherds which can be directly tied to the coast (Fig. 61). The grater bowl (Fig. 61:a) is identical to specimens in various museums from Paracas Cavernas. The two bowls in Fig. 61:b,c are decorated with post-fired resin pigments; they have complete enough designs to be directly correlated to the coastal area, and are similar enough to the Ica valley Ocucaje style to be tentatively dated with respect to that sequence (Ch. 6). In

addition to the grater bowl illustrated, two other sherds of the central part of a grater bowl were found--one from PJuM 613 excavations, so possibly from the same bowl as Fig. 61:a, and another from a Cochachongos E occupation site near Chongos Bajo--so that two or three grater bowls are included in our sample.

The incised sherds illustrated in Fig. 62 from Cochachongos D appear to be all foreign or foreign-influenced. A number of them are very definitely foreign ware, but some may represent local copies--the minor brown ware used for cooking vessels is nearly indistinguishable from the Paracas-related brown ware--for example, the bowl in Fig. 64 with the circumferential incised design is a local copy on local brown ware. Most of the vessels illustrated in Fig. 62:a-p had remnants of white post-fired pigment in the incisions. In addition, the piece in Fig. 62:j had resin red pigment in the design area. Though there may be some local copies, the overwhelming majority of evidence indicates that they all are trade ware. The one piece that is not a Paracas-related trade piece is Fig. 62:r, which is a highly polished, red slipped, micaceous black ware which may be Rancha-related.

Local incision becomes rarer in the Cochachongos D assemblage; there are some vessels of the type illustrated in Fig. 55:k, some anthropomorphic effigy vessels (Fig. 66), and some incised handles and incised lugs (Fig. 68), but incision (and punctation) as a method of decoration is on the way out.

In Cochachongos E, there are virtually no incised local wares; the sherds illustrated in Fig. 69 are made on non-local wares with

non-local pigments and design technique. The two exceptions are Fig. 69:j,k, which continue design techniques from earlier units. There are more sherds in Cochachongos E that possibly may relate to Chupas or Chupas-related wares than any other phase of Cochachongos. Three of these sherds are illustrated in Fig. 69:c,e,i; all are on a micaceous blackish ware, decorated by incision with white resin pigment in the incisions, and with red or red and white design pigments. Paracas-Cañete-related sherds (Fig. 69:a,b,d,f-h,n,o) have white post-fired pigment in the incisions. Four curious specimens (two of which are illustrated in Fig. 69:l,m) were recovered from the excavations at PJuM 613; all four had notches excised along the rim of an open bowl form, but the ware, though it did not conform to local wares, also did not seem to fit either of the two previously defined foreign wares.

The pre-fired bichrome red on white decoration of Cochachongos AB can be partly derived from the previous Pirwapuquio assemblages but must be regarded also partly as a new local development. Designs such as seen in Fig. 50:d,f,h; Fig. 51:a,b; Fig. 52:e can be shown to have definite Pirwapuquio antecedents; moreover, these sherds are in large part a monochrome continuation, with red painted desings on light tan-buff ware rather than the more typical Cochachongos red painted designs on a cream-white slip. The step design (Fig. 51:c,d) is more or less limited to Cochachongos AB, though it does occur rarely in some later phases. The most typical Cochachongos designs are the "Z's", "S's" and dots (Fig. 51:f,g; Fig. 52:a-g)--these designs account for

roughly two-thirds of all the decorated sherds at any Cochachongos site, but are sparsely represented in the accompanying illustrations since they are repetitive and since it is the minor and rare types which are the important chronological indicators. Most typically a design is displayed circumferentially around the outside lip of a slipped bowl. The top of the rim usually is decorated with red dots interspersed at intervals with longer red dashes (Fig. 59:i). The design is repeated between four and a dozen times, when there is a design terminator or separator in the form of a large square or rectangle; the design then is repeated the same number of times until another terminator and so on around the circumference of the bowl. The design area is set off from the rest of the bowl by a circumferential red line just below the design area.

In Cochachongos C, the same "S's", "Z's", and dots found in phase AB still form the majority of all decorated pieces. But some new designs are added--very small "S's" and "Z's" begin to be made (Fig. 59), and we begin to get a proliferation of a number of zig-zag variations (Fig. 58,59), plus the addition of "C's" and "E's". Jar decoration is much clearer--we have the jar from the offering deposit at PJuM 613 (Fig. 54) plus some large decorated jar sherds (Fig. 58). During Cochachongos C we see the first appearance of polychrome--red and black on white (Fig. 56; Fig. 59:a).

In Cochachongos D we have the large "S's", "Z's" and dots as illustrated for Cochachongos AB still being most common. The large and small zig-zags, "E's", "C's", and small "Z's" and "S's" illustrated for

Cochachongos C are nearly as popular as the large "S's" and "Z's". The polychrome black and red on white is still rare, though somewhat more frequent (Fig. 65:a-d). The red on white bichrome, however, begins to change. Some new motifs such as "I's" and backward "C's" (Fig. 67:i,j; Fig. 68:b) are added, but the basic idea of a repeated design separated by a square or rectangular terminator begins to alter--we begin to get circular terminators rarely (Fig. 67:j) or drop the terminator out all together (Fig. 64); sometimes there is more than one design repeated (Fig. 68:b); and we begin to get a number of continuous rectilinear fine line designs around the bowl rim (Fig. 65:h,j). In addition we add a new bichrome--black on cream-white (Fig. 65:e-g,i,k; Fig. 64). These black on white designs are, in large part, in a new style, being rectilinear continuous motifs running around the vessel rims--some being very carefully executed fine line motifs (Fig. 65:k, Fig. 64) while others are very carelessly applied (Fig. 65:g; Fig. 67:c).

In Cochachongos E we still have a continuation of all the "Z's", "S's", "C's", "E's", "I's", dots, zig-zags and so forth that have been added throughout Cochachongos phases in the red on white bichrome, but these have become much less important. The black on white designs become more important and add new designs (Fig. 70:c,e). One important observation to make is that old designs and new designs first begin to appear very rarely on the interior of bowls (Fig. 70:d), so we see the beginning of a process which becomes much more pronounced in the succeeding Uchupas phases, culminating in the Usupuquio style where the

designs have totally moved from the exterior to the interior; at that time all designs are on the interior and none on the exterior, while the converse is true for Cochachongos.

There is a rare negative painted ware which almost assuredly correlates with the resin-painted incised wares from the Cañete-Paracas peninsula axis. This negative ware (Fig. 60) occurs only in Cochachongos C and D, and seemingly can be divided into two different groups--the phase C group with predominantly zoned dots and almost wholly negative decoration, and the phase D group with its more complex linear designs, which also has a good deal more positive pre-fired red paint in combination with the negative design. This simultaneously positive and negative decorated ware occurs in the collections of the Museo Nacional de Antropologia y Arqueologia in Lima from the Paracas Peninsula.

Bottles have essentially disappeared by Cochachongos times. In our total collection we have one spout of native ware (Fig. 47-left) and one spout with a portion of a handle or bridge of the presumed Rancha trade ware (Fig. 47-middle)--a spout of black micaceous ware slipped with a glossy red, highly burnished.

Bowl bases are round, but jar bases in the main have the annular base form they did during Pirwapuquio, but in a more exaggerated fashion (Fig. 63). Some of the fancy slipped jars (Fig. 58, 67) apparently had flat bases without the annular addition, others had the annular base, some in the form of a ring base. Unslipped plain ware jars always had the annular base. There were quite a variety of

small bowl lugs--most of the bowls apparently had a pair of lugs such as those illustrated in Fig. 63, particularly in the later Cochachongos phases. Lugs tended to get slightly larger over time. Handles change in cross-section from the rectangular cross-section of Pirwapuquio to an oblong to ovoid cross-section for strap handles during Cochachongos. Strap handles were decorated either by painted lines or by the parallel incision first seen in Pirwapuquio (Fig. 68:e,g). Spoons were common, and frequently decorated with red on white bichrome (Fig. 66).

In Cochachongos D and E we see the first appearance of the jar neck appliques applied circumferentially around the necks, which have a 2000 year history in one form or another, lasting up until the Retama style. Cochachongos neck appliques differ from Usupuquio appliques, and so on, so that these appliques themselves are fair chronological indicators even though they persist into the middle of colonial times. Cochachongos appliques (Fig. 66; Fig. 70:f,g) are characterized by their cross-section and by the general tendency toward punctates. This is particularly clear if these Cochachongos neck appliques are contrasted to typcial Usupuquio appliques (Fig. 83:i-k) which have a different cross-section and which are characterized by slash incision instead of punctates.

There are some diagnostic non-vessel ceramic artifacts. Among these are ceramic tops (Fig. 48); these tops have been recovered only in Cochachongos assemblages, though they may exist in others. Generally the top is a conical clay piece, with a groove incised to receive the

whip-cord, and a small depression made in the top to receive the pivot when starting. Many of the tops are still functional, and proved to have good spinning characteristics during our trials.

Another interesting group of artifacts observed only in Cochachongos sites was the 'geometrics'--geometrical shapes such as triangles, squares and circles (Fig. 48) made from sherd fragments. The function of these items is vague--we have remarked (Ch. 3) that a square geometric was found in the groin/crotch of the decapitated burial from PJuM 613, Housepit 1, so that it may well be that these geometrics were more than idle curios.

Ceramic pendants and beads also occur (Fig. 47). One of the most interesting beads was a textile impressed example recovered during the excavations of PJuM 613. This bead had been fashioned from a roughly square piece of clay that bore textile impressions on both sides, so that it appears that the clay was flattened between two pieces of cloth of plain weave, which, incidentally, gives us our first direct evidence for the use of textiles in the Jauja-Huancayo basin. The flattened clay was then rolled into a tubular form, and was apparently only sun-baked, not fired.

The figurines of Cochachongos remained rather conservative in Cochachongos ABC; they are very similar to the Pirwapuquio figurines and represent a slow evolutionary trend (Fig. 53). But in Cochachongos DE, presumably due to the extensive external influence, a number of new figurine forms flourished in addition to the more conservative variants. Some of the new forms (Fig. 57) appear to be derived directly

from vessel appliques. Some the forms seem evolutionary to the Usupuquio sexual figurines (Fig. 68:f,h; Fig. 71), and there are other apparently unique forms (Fig. 71).

Cochachongos vessel forms:

Olla 2 three examples--11, 12, 30 cm
Enclosed Bowl 1 Range: 8-21 cm Mode: 15 ± 3
Enclosed Bowl 2 Range: 7-23 cm Mode: 14 ± 4
Enclosed Bowl 3 Range: 10-20 cm Mode: 15 ± 2
Enclosed Bowl 8 Range: 7-28 cm Mode-dual: 12 ± 5; 24 ± 4
Enclosed Bowl 9 Range: 14-19 cm Mode: 16 ± 2
Enclosed Bowl 10 Range: 9-21 cm Mode: 14 ± 3
Enclosed Bowl 11 Range: 9-20 cm Mode: 16 ± 3
Enclosed Bowl 12 Range: 8-25 cm Mode-dual: 14 ± 2; 22 ± 2
Enclosed Bowl 13 Range: 8-22 cm Mode-dual: 11 ± 2; 20 ± 2
Enclosed Bowl 14 Range: 12-20 cm Mode: 15 ± 3
Open Bowl 1 Range: 11-25 cm Mode-dual: 15 ± 4; 22 ± 2
Open Bowl 3 Range: 18-44 cm Mode: 32 ± 4
Open Bowl 4 Range: 18-40 cm Mode: 32 ± 4
Open Bowl 5 Range: 20-42 cm Mode: 34 ± 4
Open Bowl 6 Range: 9-25 cm Mode-dual: 15 ± 4; 22 ± 2
Open Bowl 11 two examples--15, 20 cm
Open Bowl 12 Range: 11-20 cm Mode: 15 ± 4
Open Bowl 13 Range: 14-28 cm Mode: 22 ± 4
Open Bowl 14 Range: 9-25 cm Mode-dual: 15 ± 4; 22 ± 2
Open Bowl 15 Range: 11-16 cm Mode: 15 ± 2
Open Bowl 16 Range: 10-27 cm Mode-dual: 15 ± 3; 21 ± 2
Jar 1 Range: 6-22 cm Mode-dual: 10 ± 2; 15 ± 2
Jar 2 Range: 4-19 cm Mode-dual: 9 ± 2; 16 ± 3
Jar 3 Range: 5-13 cm Mode: 9 ± 4
Jar 4 Range: 12-20 cm Mode: 16 ± 4
Jar 5 Range: 6-25 cm Mode-dual: 10 ± 2; 15 ± 3
Jar 6 Range: 10-24 cm Mode: 15 ± 3
Jar 7 Range: 8-40 cm Mode-dual: 14 ± 2; 21 ± 3
Jar 8 Range: 7-14 cm Mode: 9 ± 2
Jar 9 Range: 4-40 cm Mode: 8 ± 2
Jar 12 Range: 7-12 cm Mode: 9 ± 2
Jar 13 Range: 5-19 cm Mode-dual: 9 ± 2; 16 ± 3
Jar 14 three examples: 7, 15, 19 cm
Jar 15 Range: 6-19 cm Mode-dual: 10 ± 3; 16 ± 2
Jar 16 Range: 7-16 cm Mode-dual: 9 ± 2; 14 ± 2
Jar 17 Range: 8-18 cm Mode: 14 ± 2
Lids Range: 9-12 cm Mode: 10 ± 1
Bottle spouts two examples: 1.5 cm; 2.5 cm

C. Uchupas (A.D. 0/50-300)

Judging from the ceramic record, the Uchupas phases might well be seen as a time of extreme social stress or crisis--whether this is to be seen in a creative sense as a period of new innovations, or in a negative sense, as a period of deterioration and collapse of former institutions, depends to a large extent upon one's perspective. On the one hand, contacts with the South Coast cease; settlements are moved from the valley floor to relatively isolated, barren defensible hills, and in general, the evidence seems to indicate a deteriorating political and economic situation, from a period of relatively widespread trade and presumably peaceable economic abundance to a time of isolation and internecine raiding, and presumably some concomitant economic hardships. One can look to the ceramic record, and interpret the great reduction in the number of vessel categories and the complete disintegration of the Cochachongos decoration vocabulary as possible support for this hypothesis. However, the Uchupas style is characterized by a number of innovations in ceramic technology. The best fired, most carefully executed, and generally technologically most sophisticated ceramics for the entire 3000 year history of ceramic production in the Jauja-Huancayo basin are produced during the short Uchupas phases. In addition, figurines become numerically more abundant at this time and during the succeeding Usupuquio phases, perhaps suggesting elaborations in the religious and symbolic activities of society. And in a sense we can speak of architectural innovation during this time, with dwellings moving people out of the ground into the air--the Cochachongos pattern

of subterranean and semi-subterranean pithouses is apparently abandoned at this time and a new pattern of perishable superstructures on low platform mounds was instituted.

Two wares can be defined for this style, but once again they are the same two temper variants seen in so many periods of the valley's history--a sand temper of sub-angular particles of predominantly a whitich caste, and a similar sand consisting of various different colored particles--red, white, greenish-gray and black. Both wares are light cream-pink to cream-white to pale pink-orange to cream-buff to salmon-buff to tan-pink; temper particles are fine and constitute less than 5% of the visible surface area--in many cases there is apparently no tempering sand added at all. The ware is distinctly thinner than either the preceding Cochachongos phases or succeeding Usupuquio phases, both of which average 0.5-0.8 cm. thick, while the average Uchupas thickness is 0.3-0.4 cm., with a usual range of 0.2-0.8 cm. In contrast with Cochachongos, the concept of slipping seems to have disappeared from the ceramic repertoire. Designs are painted on both the inside and outside of the vessels, in contrast to the preceding Cochachongos phases where they appear on the outside only and the succeeding Usupuquio phases where they appear only on the inside. The designs themselves are characterized by extremely careful and precise application--straight lines are of regualr thin width and are so true that they appear to have been drawn by use of a ruler.

During the initial appearance of Uchupas (phase AB), there are still a number of red on white and black on white bichrome pieces

from the previous Cochachongos phases, but by Uchupas C, Cochachongos vessels have disappeared. It is difficult to succinctly characterize the differences between phases AB and C. Interior beveled rims (Open Bowls 17, 18, 20) are much more frequent in phase C than AB; associated with these beveled rims are rim designs of rows of lines or paint daubs (Fig. 75:a, b, g; Fig. 76:c). Panel designs (Fig. 74:h; Fig. 75:e, k; Fig. 76:g, i, l) occur about equally in both phases. Elaborate convoluted curvilinear designs (Fig. 74:f, g, k, l) appear in our collections only in phase AB, while the fish-head motif (Fig. 76:d, e) appears only in phase C. Not surprisingly there are considerably more designs in phase C which carry on into Usupuquio. Designs in both units seem to be nearly wholly geometric combinations of undulating lines, straight lines, zig-zags, and dots (Figs. 74-76). There is one probable San Blas trade sherd in phase AB (Fig. 74:p); inspection of the literature (Kroeber 1944; Nomland 1939) and unpublished collections in the Museo Nacional de Antropologia y Arqueologia in Lima supports this assessment. Collections of Caja ceramics from Huancavelica at the Museo Nacional contain some sherds which are strikingly similar to Uchupas, so much so that it might be difficult to separate the two if intermixed (though Caja ware is distinctly more orange-tan). Though most of the design features we have noted apply only to the bowls since the jars in this tyle, in contrast to Cochachongos, are undecorated, there is another feature of the jars, in addition to the changing rim configuration, which is diagnostic--that of the handle cross-section and the frequent horizontal slash-incision along the exterior curve of

the handle (Fig. 76:r). This sway-back handle cross-section and corresponding incised decoration are typical both of Uchupas and the succeeding Usupuquio phases--perhaps this should be qualified by saying it is typical for Uchupas C, for Uchupas AB has many Cochachongos style handles.

The rather abrupt change from the majority of bowls and bowl forms being enclosed bowls, as true for Cochachongos, to the almost total production of open bowls in Uchupas, is interrelated with a great many changes in the ceramic inventory. This sudden change to a preponderance of open bowl forms also coincides with a reduction both in the number of jar shapes and in the absolute number of jars in the collections, and with the disappearance of the large open cooking bowls (Open Bowls 3,4,5). The most plausible explanation at this point seems to be that mass production was discovered--that is, for the first time with open bowls of the types being produced, a potter could fire large stacks of open bowls piled one upon the other. The stacking characteristics of these forms would yield a ten-fold or greater increase in the number of vessels a potter could fire for the same amount of fuel and energy as the older, less efficient forms. This greater efficiency in firing is supported in part by our evidence, for prior to this time we have no evidence of fire shadowing or other discolorations caused by stacking vessels; but suddenly in Uchupas, vessels start showing up with vague circumferential firing discoloration patterns. Most frequently one gets the sort of skewed discoloration that we would expect for stacking vessels, with the bottom half of the

exterior showing a color slightly darker or less oxidized than the unmasked areas near the rim. Moreover, there is faint fire-shadowing of the painted design on the interior of one bowl onto the exterior of a second bowl; these faint designs are complete enough in some cases so that we can definitely say that bowls of different designs were stacked together and fired at one time. This stacking discoloration and faint fire-shadowing is a very prominent feature of Uchupas C and the succeeding early Usupuquio phases. The change from enclosed bowls to open bowls obviously was a most important determinant in the change of design location from the exterior to the interior surfaces. As the bowls changed from enclosed to relatively straight sided open bowls and than to the broad low profile open dishes, on can actually witness the design crawling over the rim from the outside to the inside; the Uchupas phases become very interesting from this point of view because we can observe the quick change from exterior bowl designs only to both exterior and interior bowl designs to interior bowl designs only.

Uchupas vessel forms:

Enclosed Bowl 2 Range: 7-23 cm Mode: 14 ± 2
Enclosed Bowl 10 Range: 9-18 cm Mode: 15 ± 2
Enclosed Bowl 11 Range: 13-20 cm Mode: 16 ± 2
Enclosed Bowl 14 three Uchupas A examples: 14, 19, 30 cm
Open Bowl 3 Range: 29-44 cm Mode: 34 ± 6
Open Bowl 5 Range: 27-48 cm Mode: 38 ± 8
Open Bowl 6 Range: 12-25 cm Mode-dual: 16 ± 3; 22 ± 2
Open Bowl 15 Range: 13-20 cm Mode: 16 ± 3
Open Bowl 16 Range: 12-21 cm Mode: 15 ± 3
Open Bowl 17 Range: 17-28 cm Mode: 22 ± 3
Open Bowl 18 Range: 10-22 cm Mode: 16 ± 2
Open Bowl 19 Range: 9-19 cm Mode: 16 ± 3
Open Bowl 20 Range: 14-20 cm Mode: 17 ± 2
Open Bowl 21 Range: 15-21 cm Mode: 18 ± 2
Jar 2 Range: 6-17 cm Mode: 15 ± 3
Jar 5 Range: 14-20 cm Mode: 18 ± 2

Jar 6 Range: 9-23 cm Mode: 16 ± 4
Jar 7 Range: 9-23 cm Mode-multiple: 10 ± 2; 16 ± 2; 21 ± 2
Jar 9 Range: 6-19 cm Mode-dual: 10 ± 4; 16 ± 3
Jar 17 Range: 15-20 cm Mode: 17 ± 2

D. Usupuquio (A.D. 300-500)

Four bowl wares and two jar wares may be defined for the Usupuquio style. Bowl ware 1 is merely the terminal aspects of Uchupas ware; this Uchupas ware only continues through Usupuquio AB. Bowl wares 2 and 3 are essentially the same, once again the dividing criteria being the two different tempers, the predominantly whitish-grey temper and the temper containing a variety of different colored particles. Usupuquio bowl ware varies from pink to buff-pink to orange-pink to orange-buff to orange-tan to tan to purple-pink; it is well compacted like the Uchupas ware, and similarly has very little temper, usually 5% or less, but it is considerably thicker than Uchupas and gets progressively thicker through time, as well as being relatively orangish in contrast to the pink-buff of Uchupas. The unmasked portion near the rims tends to be more pink-purple, while the portion of the bowl partially masked by the stacking process during firing is distinctly more orange, and frequently has faint fire-shadow marks from the bowl nested on top of it. The exterior of the bowl has a ripply surface quality apparently intentionally produced for esthetic reasons. During Usupuquio ABC, the thinner bowl forms (Open Bowls 15, 16, 18, 19, 20) predominate while during phases DE the thicker bowl forms (Open Bowls 6, 22, 23) are most common. Usupuquio ware in phases ABC ranges from 0.4-1.2 cm in thickness, averaging 0.5-0.6 cm in thickness, while

Usupuquio bowl ware in phases DE ranges from 0.5-1.3 cm in thickness and averages 0.7-0.9 cm in thickness. Phases ABC tend to have a greater proportion of light red and purple-red pigments, while phases DE have a greater proportion of designs done in black. In over-all configuration, the ware of phases ABC is paler (pinker) and thinner, while the ware of phases DE is darker (oranger) and thicker. Usupuquio bowls of the early phases have narrower diameters in general and less flaring sides so they are deeper, while later phases have bowls of generally greater diameter and more flaring sides, and thus are shallower.

Bowl ware 4 occurs rarely in the terminal phase of Usupuquio; this is Huacrapuquio ware which comes to dominate the succeeding Huacrapuquio phases. It is tan to tan-buff to cream-buff to tan-orange to light tan-brown; in thickness it is like the later phases of Usupuquio, but it has more temper than Usupuquio, the temper varying from 5-10% of the visible surface area in comparison to 5% or less for Usupuquio. The Huacrapuquio ware has the same temper variants--the whitish sand temper and the colored sand temper--but since it is a minor ware the temper variants were lumped together for the Usupuquio definition, though separated for Huacrapuquio definitions. The two jar wares are similar except that one is the white temper ware and the other the colored temper ware. Owing to the thicker nature of the vessels, and possibly slightly different firing conditions, the jar ware varies in color from pink-orange to tan to orange-buff to orange-brown to red-brown. The temper particles seem to be somewhat less fine that the bowl ware, being medium to medium coarse, with particles up to 0.15 cm. in diameter, in contrast to the fine particle size of the

bowl ware temper. The percentage of temper in these thicker jars is also greater, from 10-15% of the surface in contrast with 5-10% for the bowls.

In addition to the ware and vessel characteristics already noted, Usupuquio AB is characterized by a discreteness in design motif in contrast to the later phases. For example, the llama design in Usupuquio AB (Fig. 81) is a quite discrete and recognizable design with little or no variation permitted in its design characteristics. In Usupuquio C we begin to get variations on the llama designs (Fig. 82:e,f); this variation continues in phase D (Fig. 87:d) during which time a degeneration of the design as a discrete entity occurs so that by Usupuquio E the llama design has become a running freize (Fig.91:a). Similarly the 'eye' motif (Fig. 80:d) starts out as a discrete motif with little variation possible, but during phases CD it begins to become modified in various ways (Fig. 82:a-c; Fig. 85; Fig. 86:b,i; Fig. 87:d,e) so that by Usupuquio E it is considerably changed in an abstract direction (Fig. 91:b,d,e). With the discreteness goes a basic simplicity in design, which can best be seen by comparing phase AB (Fig. 80,81) with phase D (Fig. 86,87).

The typical jar neck applique is decorated with slash incision (Fig. 80:m); this slash incision continues throughout the entire Usupuquio sequence (Fig. 83:i-k; Fig. 89; Fig. 92:d), but the shape of the applique gradually changes. The circumferential applique with punctates is also present (Fig. 80:n, Fig. 89), but it is rare and not as diagnostic as the slash variant. The various slash incision

patterns (Fig. 80:k,l) along the outer rim of the strap handles are quite common in phases ABC, but become rarer in phases DE and have disappeared by the Huacrapuquio phases. This slash decoration plus the typical sway-backed or bowed or kidney-bean cross-section (Fig. 80:k,l) of the strap handle makes the strap handle a good diagnostic for early Usupuquio phases.

Our sample of figurines for Usupuquio AB is poor, but these human figurines must have had the same sorts of features seen in the later figurines (Fig. 83:g; Fig. 89; Fig. 90)--plaque figurines with pronounced applique noses, with eyes of long appliques slit down the middle, mouths (when present) simply incised, arms modeled in low relief; navels being present for the first time, reproductive organs (vulva, penis, testicles) being elaborately depicted, and now a new foot and leg style (contrast Fig. 70, 71 with Fig. 89). Note that emphasis here is nearly wholly upon reproduction--navels, vulva, penis, and testicles, rather than sexuality in a more contemporary sense; breasts are completly absent on all specimens. The increase in emphasis on the sexual organs per se is accompanied by a corresponding appearance and emphasis upon the navel-umbilical cord, so that the figurines are related to birth and fertility rather than to the blatant eroticism such as characterizes the works of the contemporaneous Moche. Bowl lugs, similar to those illustrated for Cochachongos, rarely occur.

Tendencies in the Usupuquio C style have already been remarked upon in part above. There are a number of new motifs (Fig. 82:d,g-j,l; Fig. 83:e,f) and center decoration, rare or absent in phase AB, becomes

common (Fig. 85, 89). One important characteristic is the proliferation of a number of design terminators (Fig. 82:c; Fig. 86:b,f; Fig. 87:d,e,g) which continues on into phase D, and the addition of a number of dots, lines or small designs to previous designs (Fig. 83:e,f; Fig. 85; Fig. 87:b,c), a feature beginning in phase C, but more strongly exhibited in phase D. In general, there is a tendency toward much more elaborate and complex designs, and a corresponding tendency toward eliminating blank areas on the bowls by filling all areas with various designs (Fig. 85). Human figurines, jar neck appliques and strap handles are like those described for phase AB above.

The llama figurines first appear in our collections in phase C, though we might reasonably expect them to have appeared earlier. Inasmuch as we have postualted pastoralism as one of the mainstays of the economy, the information these llamas give us is very important. As males and females appear in about equal numbers amongst the human figurines, I think we can attach some signifcance to the fact that about 80% of the llama figurines are female. In addition, all the female llama figurines depict the udder or teats, while only some depict the genital area or the anus. The emphasis appears to be upon the milk-giving or suckling qualities of the female, rather than the sexual aspects of fertility and reproduction. Though admittedly speculative, it seems possible to suggest that Usupuquio peoples kept herds much the same way as modern day herders, with a few males to service a large harem of females. Evidence from the figurines also indicates that they may have been marked or branded--the male in Fig. 88

almost certainly has such an identification mark on his left hindquarter. The kind of backpack used on these animals, perhaps during the seasonal semi-nomadism, is suggested by the applique on the large-uddered female in Fig. 88. Directly under this figurine is a fragmentary figurine which contains a portion of an incised and painted back decoration; the remnant left perhaps can best be seen as representing a luxuriant fleece, for the wool of these animals was obviously utilized and valued.

There are some distinctly new designs in phase D, in addition to some new variants of previous designs (Fig. 86:a,d,g,h; Fig. 87:a,c,g). Basically phase D is marked by a continuation of a number of trends already discussed in phases ABC plus the beginning of a new direction in design toward strictly abstract rectilinear geometric motifs such as parallel lines, cross-hatching, various triangle designs and so forth. A unique sherd with an almost feline-like design (Fig. 87:a) belongs to this phase. It is tempting to draw parallels between this sherd and similar appearing designs elsewhere in Peru, particularly in the North Highlands, but as there is no other indication of any sort of cultural contact, this sherd may well be only a variant of the llama theme. Human figurines, llama figurines, handles, jar neck appliques (Figs. 88-90) have already been discussed in previous phases. The painted decoration of human figurines becomes much more elaborate in phase D, but remains monochrome, in contrast with phase E, where bichrome designs appear with regularity.

Usupuquio E sees the acceleration of the trend toward geometric motifs constituted by rectilinear designs. Curvilinear designs

generally become either eliminated or modified into rectilinear designs (Fig. 91,92). Jar neck appliques (Fig. 92:d), llama figurines, and human figurine bodies (Fig. 92:g,h) remain much as before, but there are changes in the human figurine head and in the painted decoration. Heads become much more elaborately modeled and painted (Fig. 92:i; 93). In Fig. 93, the modeled and painted attributes are illustrated separately to indicate their respective features. The painted design inovles the use of alternating design elements done in black and white pigment. The modeled portion contains two new elements--a stylized chin and a pair of appliques low on the side of the face which apparently represent ears.

From Usupuquio E phase sites we recovered two examples of two-pipe panpipes or flutes (Fig. 92:e,f). These two panpipes are unique in our collections, representing the only two examples of panpipes found at any period. Today the people of the valley still play a flute of two reeds (a pinkullo) which is probably a descendant of the ceramic examples we have, and further suggests that the reason we have not found other such examples is that they were made from perishable reed rather than ceramics. The method of manufacture of one example was strikingly clear--two clay tubes of the same diameter were formed about a reed; when these had dried sufficiently, a flat piece of clay was run the length between the two, and then the whole joined assemblage of a tube, a clay separator, and a second tube, was enclosed in an outer casing (Fig. 92:f).

Usupuquio vessel forms:

Enclosed Bowl 11 Range: 11-22 cm Mode: 16 ± 3
Open Bowl 6 Range: 14-27 cm Mode: 20 ± 2
Open Bowl 14 Range: 12-25 cm Mode: 19 ± 1
Open Bowl 16 Range: 13-24 cm Mode: 18 ± 2
Open Bowl 17 Range: 14-25 cm Mode: 18 ± 2
Open Bowl 18 Range: 11-25 cm Mode: 18 ± 2
Open Bowl 19 Range: 11-21 cm Mode: 17 ± 3
Open Bowl 20 Range: 12-21 cm Mode: 17 ± 1
Open Bowl 21 Range: 14-22 cm Mode: 18 ± 2
Open Bowl 22 Range: 14-27 cm Mode: 20 ± 2
Open Bowl 23 Range: 14-25 cm Mode: 18 ± 2
Jar 2 Range: 6-25 cm Mode-dual: 8 ± 2; 22 ± 3
Jar 5 Range: 11-23 cm Mode: 17 ± 2
Jar 7 Range: 9-46 cm Mode-dual: 16 ± 3; 34 ± 8
Jar 9 two examples, Usupuquio A: 6,9 cm
Jar 18 Range: 10-24 cm Mode: 18 ± 2
Jar 19 three examples, Usupuquio ABC: 23,34,34 cm
Jar 20 Range: 6-18 cm Mode: 16 ± 2
Jar 21 Range: 17-28 cm Mode: 21 ± 2
Jar 22 three examples, Usupuquio DE: 6,7,9 cm
Jar 23 Range: 14-22 cm Mode: 17 ± 3
Lids Range: 16-22 cm Mode: 17 ± 2

E. Huacrapuquio (A.D. 500-600/650)

The Huacrapuquio phases are another time of rapid ceramic change and cultural crises, and are terminated by the Huari conquest almost before we can see what direction they were taking. Huacrapuquio ware proper is very similar to Huarpa ware of Ayacucho, and there is good reason to believe that the production of Huacrapuquio ware was at least in part a result of stimulus diffusion from Ayacucho. Shea and Matos Mendieta (personal communication) have suggested that Huacawato ware may have some Ocros relationships. Whatever its origin, it is clear that the rapid change and basic ceramic instability toward the end of Huacrapuquio is due to the ever increasing influence of the

expanding Huari empire, until the Huacrapuquio style is abruptly terminated by the Huari conquest.

Eight different wares can be defined for Huacrapuquio--six bowl wares and two jar wares. The six bowl wares include two temper variants each of three major categories--Husupuquio, Huacrapuquio and Huacawato ware. The two temper variants are the standard ones for the valley--one temper being predominantly a whitish sand, the other temper a many colored particle sand (red, white, grey-green, black). The Usupuquio ware is slightly more orange than the Usupuquio ware of Usupuquio phase E; it varies in color from orange-pink to pink to orange-buff, and contains 5% visible temper or less. The Huacrapuquio ware is cream-buff to tan to tan-buff to tan-brown; it has slightly more temper than the Usupuquio ware, with the temper constituting about 5-10% of the visible surface area. The Huacawato ware is distinctly thinner than both the Usupuquio and Huacrapuquio wares; they both range from 0.6-1.3 cm. in thickness and average about 0.8-1.0 cm. in thickness, while Huacawato ware ranges from 0.5-1.1 cm. in thickness and averages about 0.6-0.8 cm. in thickness. The Huacawato ware varies from orange to orange-buff to orange-tan to orange-brown; it has roughly the same amount of temper as the Huacrapuquio ware, about 5-10% of the visible surface area.

Huacrapuquio phase A has about 50-75% Huacrapuquio ware and 25-50% Usupuquio ware; Huacrapuquio B has 90-100% Huacrapuquio ware and 0-10% Usupuquio ware; and Huacrapuquio C contains about 90-95% Huacrapuquio ware and about 5-10% Huacawato ware. Huacawato ware turns out to be

quite an important ware--it starts out as a minor ware in Huacrapuquio, and has its development partly truncated by the Huari conquest; it continues to be a minor ware through Calpish AB, but in Calpish C it becomes increasingly important, and in Quinsahuanca its derivative becomes the major ware, and seems to be tied in with a movement of archaisms in the ceramic vocabulary. The two jar wares probably can best be considered as two temper variants of a firing variant of the Huacrapuquio bowl ware. The ware is generally tannish, with a slight orange cast; it varies from tan-buff to light tan-brown to tan-orange, and contains 5-15% of one of the two temper variants, either the whitish temper or the colored temper.

The Usupuquio ware of Huacrapuquio A is decorated with wholly geometric motifs, some obviously derived from Usupuquio E and others apparently new. The design pigments of red, purple and black are the same as Usupuquio however. The Huacrapuquio ware of phase A appears to have the same design pigments as the Usupuquio and the geometric motifs are quite similar, but the ware is different, and moreover most often the designs are applied over a cream-white slip. In phase A there is a recurrence of the popularity of the ledge lug handles on bowls (Fig. 98:h) which continues through the succeeding Huacrapuquio phases. The jar neck appliques are of a new cross-section (Fig. 99:a,c) and also have a new decoration in addition to carryovers from Usupuquio. The carryover decorations are the punctate row and the row of parallel vertical slashes; the new decoration is the row of parallel diagonal slashes (Fig. 99:d,e). Strap handles have a new

oblong cross-section in contrast to the Usupuquio sway-back cross-section, and the row of incisions along the outside diameter have disappeared except for a few rare survivals (Fig. 99:g). Figurines develop new characteristics, at this time in the placement of the hands--previously they had been placed along the side of the body, but now they are crossed or folded, and sometimes seem to be holding a staff (Fig. 99:h,i).

Phase B seems primarily characterized by the disappearance of Usupuquio ware and the complete dominance of Huacrapuquio ware; and also the appearance of brown as a design pigment along with the gradual disappearance of red and red-purple as design colors. In phase B, Huacrapuquio is characterized by brown or black geometric designs (Fig. 100) on a natural background or on a cream-white slip.

Phase C sees the first appearance of Huacawato ware. This ware frequently is washed orange, and is decorated with a brown or black pigment. The designs are always various seemingly randomly intersecting or diverging lines (Fig. 101)--a characteristic that continues to typify the ware through Calpish occupations into the Quinsahuanca period. Some similar designs appear on Huacrapuquio ware (Fig. 102:e,g,i), but they are rare. Huacrapuquio C designs added new elements in the addition of several different patterns of dots (Fig. 102:c-e) and in new combinations of curvilinear cross-hatched designs (Fig. 103:a,b) in addition to the older designs added in Huacrapuquio AB.

Huacrapuquio jars are decorated by a series of vertical red-brown to brown to black stripes on a cream-white to cream-buff slip or on a natural background (Fig. 104). Face-neck jars definitely appear at

this time (Fig. 104:a). They are distinctly different than the face-neck jars of the succeeding Calpish phases, but they are a new feature probably introduced by stimulus diffusion shortly before the Huari conquest. The jar neck appliques take on some new features (Fig. 104-106); the parallel incision slashes and dots continue as do the diagonal incision slashes, but a new cane-stamping is introduced (Fig. 106), and the design is sometimes applied on the jar-neck applique and in other cases simply applied on the same location it would be if it were on an applique; that is, the applique decoration is executed directly on the vessel neck, and the applique itself is absent. Some of the figurines in Huacrapuquio C are similar to Usupuquio (Fig. 107), but there are also some with new features (Fig. 106) which include a smaller head size and smaller and more realistic eye and nose appliques, and oddly enough, drilling of a pair of holes for suspension, a common feature in Pirwapuquio and Cochachongos figurines that had disappeared with Usupuquio figurines. Arms are even more distinctly crossed and still hold staffs (Fig. 106). Some vessels in Huacrapuquio had side-spouts (Fig. 94), a new feature, possibly introduced by diffused Huarpa influence, though with no clear antecedent. This side spout apparently disappears in Calpish phases, but a variant is revived during Quinsahuanca and Matapuquio.

Huacrapuquio vessel forms:

Olla 11 two examples, Huacrapuquio C: 23, 29 cm
Olla 12 three examples, Hucrapuquio C: 22, 24, 34 cm
Enclosed Bowl 15 two examples, Huacrapuquio C: 16, 17 cm
Open Bowl 16 Range: 13-29 cm Mode-dual: 17 ± 1; 22 ± 2
Open Bowl 18 Range: 12-22 cm Mode: 18 ± 1
Open Bowl 22 Range: 14-28 cm Mode-dual: 17 ± 1; 21 ± 1

Open Bowl 23 Range: 11-25 cm Mode: 18 ± 2
Open Bowl 24 Range: 8-34 cm Mode-multiple: 17 ± 2; 22 ± 2; 30 ± 4
Open Bowl 25 Range: 15-34 cm Mode-multiple: 18 ± 1; 22 ± 1; 30 ± 4
Jar 5 Range: 8-25 cm Mode-dual: 9 ± 1; 18 ± 2
Jar 7 Range: 8-40 cm Mode-multiple: 9 ± 1; 18 ± 2; 32 ± 6
Jar 18 Range: 13-23 cm Mode: 18 ± 2
Jar 21 Range: 8-23 cm Mode-dual: 9 ± 1; 19 ± 2
Jar 23 Range: 16-30 cm Mode: 18 ± 1
Jar 24 Range: 10-22 cm Mode: 17 ± 3
Jar 25 Range: 12-22 cm Mode: 17 ± 2
Jar 26 Range: 15-22 cm Mode: 17 ± 2
Lid one example: 11 cm
Side spout Range: 2.5-4.0 cm

F. Calpish (A.D. 600/650-800)

For the first time in the history of ceramics in the valley, Calpish phase A sees a partial demise of one of the major ceramic producing areas in the valley. Previously we have tiresomely listed ware after ware which had two temper variants--a colored temper variant and a white temper variant. But in Calpish A, almost the total range of local wares is made only of one temper variant, the colored temper variant, and it is not until phase AB that the white temper variant begins to reappear, to gradually increase to essentially equal proportion with the colored temper wares by Calpish C. The implications are that some resistance to the Huari conquest was offered by the section of the valley where the white temper variant was produced to cause it to fall into such an eclipse. Since the population center moved from the east central part of the valley to the southwestern section of the valley at this time, and additionally since Calpish, Nahuinpuquio and Wariwilka (the three Huari temples) are all in the southern sector of the valley, there are some interesting

indications regarding the political situation in the valley suggested by the shift in ceramic evidence coincidental with the shift in demographic centers which should be followed up.

There are four local wares and four foreign wares for Calpish; the four local wares can be expanded to eight when we add the white temper variant in later phases. The local wares are vessel specific wares--two coarse wares, one for ollas and a second for jars, and two fine wares for bowls. The olla coarse ware is much browner than the jar coarse ware; it varies from light brown to orange-brown to dark brown, and has medium temper constituting 15-20% of the visible surface area. Ollas are made at first exclusively of the colored temper ware; since ollas decrease in popularity over time while the white temper ware is gradually being reintroduced, the net result is that the white temper variant of olla ware is uncommon. The jar coars ware is mainly light orange-tan in contrast to the browner olla coarse ware; it varies in color from buff-tan to tan to light orange-tan to orange to orange-brown. The amount of temper is significantly less than in olla coarse ware, usually about 5-15%. Though the first Calpish phase is predominantly composed of the colored ware variant, the white temper variant is rapidly re-established in jars; in fact, in subsequent periods the majority of jars appear to be of the white temper variant. Since the Calpish jar decoration is not much different from Huacrapuquio, this possibly indicates that the potters associated with the white temper area were basically more conservative than their compatriots in the colored temper area, and participated in the more conservative, more traditional aspects of the Calpish inventory. The first of the two

major bowl ware categories is Huacawato ware, previously defined for the Huacrapuquio C phase. This ware is rare in the early part of Calpish, but gradually assumes greater importance, particularly in Calpish C, and evolves into the major ware of the Quinsahuanca phases. It continues to manifest the local decoration vocabulary that it had in Huacrapuquio C, in contrast to the second major bowl ware, Calpish ware, which had exclusively local variations of Huari secular ware. Calpish ware is mainly a light orange-tan; it varies from orange-brown to orange-buff to orange-tan to buff-tan; it is either untempered or lightly tempered (5-10% of visible surface areas).

The foreign wares are all related to the Huari conquest; three of these wares seem to originate in the Huari capital area, Huari, and the fourth from the northern provincial capital and oracle in the Huamachuco-Cajamarca area. The first of these Huari wares is illustrated in Fig. 114:a,b,c,g (possibly also Fig. 114:i). Our sample was too small to accurately define the ware, but in general it seemed to be a tan-buff to orange-tan, with temper of colored sand particles between 5-10%; in this respect a completely undecorated specimen might easily get lost in the local styles, but the decoration was executed in pigments completely foreign to the Jauja-Huancayo basin and the ware is only found at the temple of Calpish (PJuM 618) and the temple-oracle of Wariwilka (PJuM 501). As indicated in Ch. 6, the designs on this ware bear some similarity to the Ocros style of Huari. The second Huari ware is the thin, temperless, well-fired 'brick' ware of the fancy Huari polychrome; most of the examples from our survey

(Fig. 114:h,j,k; Fig. 115:a-h; Fig. 116:a-h) appear to be Middle Horizon Epoch 2 Viñaque or Viñaque-related pieces. The third Huari ware is a lustrous black ware, under which we have included a matte black ware as a variant. The lustrous black ware seems limited to two shapes--keros and tripod bowls. The only decorations we have in our sample are kero bands and fine line incision (Fig. 114:e). The matte variant is represented by only a few sherds of a tripod vessel similar to the tripod vessels of the lustrous ware (Fig. 120, second right) with a horizontal strap handle. This black ware is only found at Middle Horizon temples--at Wariwilka and Calpish. The fourth trade ware is represented in our sample only at Wariwilka; it is a white kaolinite ware from the Cajamarca-Huamachuco area, and is most similar to the Cajamarca III floral ware (Fig. 117:a,b).

The occurrence of trade wares from the Cajamarca and Ayacucho areas in our collections, and from the Huamachuco area, Pachacamac and the North Coast in grave lots near Wariwilka (Matos Mendieta 1967; Flores Espinoza 1959; Menzel 1964) has important implications for arguments concerning the nature of the Huari empire. Many of these are discussed in Chs. 6 and 7. There seem to be two, not mutually exclusive, alternatives for the occurrence of these trade wares--one that the pattern of prestige trade wares suggests that the great prestige attached to the oracles at Wariwilka, Huari, Pachacamac and Huamachuco attracted pilgrimages and offerings from all corners of the empire, and the other that the establishment of political and military provincial centers at Pachacamac, Wariwilka, and Huamachuco-Cajamarca tied to the imperial capital at Huari resulted in a relatively

cosmopolitan nature for these centers. These two patterns reinforce one another and in all probability both can be seen to be operative in the functioning of the empire.

Calpish phase A can be identified at eight sites in a pure form, but features characteristic of phase A are found intermixed with phase B and even phase C features at a number of sites. Therefore at some points we can talk about phase A features as distinct from phase B features, and at other points we must talk about combined phase AB features. Phase A has relatively few basic designs manifested in a number of variations. One of the most frequent and more diagnostic is the series of parallel bands, frequently in the form of concentric triangles, of red, cream-white and gray pigments between black outlines, and with one or more wavy lines running down the length of one of the pigments, usually the cream-white band (Fig. 123:a-f). The second major design seen in a number of variations consists of dots in various patterns between parallel black outlines (Fig. 124:j; Fig. 123:f-h). A third pattern first appears in Calpish A as parallel wide black lines outlined by thin white lines, enclosing an area on dark red slip in which one or more black circles or ovoids have been placed (Fig. 123:i,k); this design by phase AB becomes more prevalent in an evolved form generally consisting of a rectangle of wide black bands crossed by a diagonal of wide black, outlined by thin, sometime fugitive, white lines, on dark red slipped open bowl interiors, and each triangle of the bisected rectangle with one or more black ovoids, each of which exhibits a number of small white dots, either in its

center or around its edges (Fig. 126:a-c, e-g). Huacawato ware comprises the fourth major design category, consisting of a number of variations of Huacawato designs first seen in Huacrapuquio C. Some of the Huacawato ware is identical to the first manifestions (Fig. 124:a, b), but there is an important variation (Fig. 124:c, d) where the orange-brown to orange wash is not applied over the entire interior surface of the bowl, but only over the bottom half or two-thirds, so the brown-black design then is painted directly on the unwashed base. The fifth major category consists of designs painted on the exterior of the bowls for the first time since Uchupas. In Calpish A, exterior decoration consists almost wholly of various designs of concentric curvilinear to hemispherical bands and lines (Fig. 124:g, k), while in succeeding Calpish phases the various designs of intersecting lines with various patterns of dots (Fig. 124:h), which occurs only rarely in Calpish A, dominate external decorative bowl motifs.

There is one relatively crudely incised piece (Fig. 123:j); since it has no pigments it is difficult to determine whether it is a piece of Huari tradeware or a local copy. In Calpish A we have an actual mold for the mold-made faces on the face-neck jars (Fig. 130, 132). The designs from phase A are too fragmentary so that description of technique for these mold-made face neck jars will be found in phase AB. The plaque or tabular figurines found from Pirwapuquio through Huacrapuquio cease. The llama figurines also have disappeared. The only sort of figurine recovered was an unfired, sun-baked fox head (Fig. 115:j) from Wariwilka, which may not even be indigenous. Jar lugs, somewhat similar to those found on Inca aryballoids, appear in

Calpish phase A, and continue through the entire Middle Horizon, disappearing in the final phases of Quinsahuanca, not to be found in the valley again until reintroduced by the Inca. Typical Calpish A and AB lugs are illustrated in Fig. 118. Bases for various bowl forms are illustrated in Fig. 120. Typical for the Calpish A and AB phases, in addition to round bases and flat bases, are ring bases, tripod vessels, and small foot-lug supports (Fig. 120). Tripod legs in phases A and AB tend to be shorter and smaller than in phases B and C (compare Fig. 120, 121). Typical short tripod legs in Calpish have a solid cross-section, but the larger legs are partially hollow and have a small perforation to allow air escape during firing (Fig. 120, 121). Ringe base bowls (Figs. 117, 120, 121) do not seem to vary, but the position and function of the small foot-lugs does. In Calpish A and AB the small lugs are so placed in some cases as to slightly elevate the vessel off a flat surface and therefore serve as small footlugs. In Calpish B and C there is a tendency both toward flatter bases to the round bottomed bowls and toward lugs moving upward on the side so that they then serve primarily to stabilize the bowl so that it will not rock from side to side on a flat surface, and they lose the earlier support function. Jar neck appliques in Calpish again add new features. Many of these appliques now have a sharply carinated cross-section (Fig. 122); some of these carinated jar-neck appliques are painted black only, and lack either punctates or parallel vertical and oblique slash incisions, while others are decorated with vertical and diagonal slash incisions and punctates as found on the previous Jauja-Huancayo basin jar neck appliques.

Calpish phase AB sees a continuation of a number of the motifs in phase A, with a greater emphasis on the various line and dot decorations (Fig. 117:c; Fig. 125:a-c,g-i), with more Huacawato style ware (Fig. 126:h-l; Fig. 127:d,f), and with the previously noted change to wide lined bisected rectangles outlined in white and with ovoid dots etc (Fig. 126:a-c,e-g). The so-called 'spaghetti-motif' (Shea 1969) has been firmly established by this time and is found on a large number of jar necks (Fig. 172:a).

Both mold-made (Fig. 130) and modeled (Figs. 128,129) face-neck jars are widely found at this time. Both face types have modeled ears (Fig. 128), some of which have been pierced, apparently for earrings. Modeled features vary somewhat as to configuration of eye, mouth and ear (Figs. 128,129), but mold-made faces are fairly uniform even though a number of different molds were used. The outline of the mold impression can be observed on some jar necks (Fig. 130); the major difference in mold-made faces insofar as the plastic decoration is concerned is the presence or absence of the nose-ring. Decoration of the mold-made and modeled faces differs considerably. Modeled faces have only relatively simple black outlines and designs (Figs. 128,129) while mold-made faces nearly always have a complex design of black curvilinear lines and black dots on a cream-white background (Figs. 130, 132). One specimen (Fig. 130) has an incised design on the forehead which appears to be similar to the stylized headpieces of various felines and birds in other Middle Horizon Epoch 2 styles. Jar-neck appliques, vessel supports and so on have been noted already in the phase A discussion.

Calpish B is characterized by the further elaboration of the geometric dot and line designs, both on the interior of the bowls (Fig. 133:f-p; Fig. 134:a,h,k) and on the exterior (Fig. 135:a-d); Huacawato designs continue in the same manner as before (Fig. 133:a-e); there are some new variations of the bisected rectangle (Fig. 131; Fig. 134:g,i,j); there are some new designs (Fig. 134:b-e); and the earlier diagnostic phase A design (Fig. 123:a-f) has disappeared. On jar necks, the 'spaghetti motif' still proliferates (Fig. 135:e-g); some of the small jars also have paired side lugs (Fig. 131) in addition to the larger jar rope-nubbin lugs (Figs. 118,119). The large lugs add a new dimension; though lugs of the earlier types (Fig. 118) still occur, most commonly the large lugs of phases B and C are of the face-lug type (Fig. 119). Face-neck jars remain the same as earlier phases (Fig. 132) as do the circumferential jar-neck appliques. We have previously commented on the fact that tripod legs in general get longer and larger (Fig. 121) and that basal bowl lugs become more lateral (Fig. 121).

Calpish phase C bowls still are decorated with various line and dot designs and the bisected rectangle design as defined for phase B above continues. The important change is in the rather marked increase in the abundance of Huacawato brown on orange ware, which had remained a minor ware from Huacrapuquio through most of Calpish. Some new designs are added, but basically the designs (Fig. 136) remain relatively indistinguishable from earlier Huacawato sherds. The only colander fragment from the survey (Fig. 136:i) is from a Calpish C site. Face-neck jars are rare, but are of the same type described for phase B;

tripods, basal lugs, large jar side lugs, circumferential appliques are as described for previous phases.

Calpish vessel forms:

Olla 11 Range: 18-32 cm Mode: 23 ± 3
Olla 12 Range: 18-40 cm Mode-dual: 25 ± 5; 36 ± 4
Olla 13 Range: 20-34 cm Mode: 26 ± 5
Olla 14 Range: 18-36 cm Mode-dual: 23 ± 3; 36 ± 4
Olla 15 Range: 15-40 cm Mode-dual: 24 ± 4; 32 ± 2
Olla 16 Range: 21-46 cm Mode: 36 ± 6
Olla 17 Range: 17-36 cm Mode: 34 ± 2
Enclosed Bowl 15 Range: 7-23 cm Mode-dual: 9 ± 2; 15 ± 3
Enclosed Bowl 16 Range: 11-19 cm Mode: 15 ± 2
Open Bowl 24 Range: 14-38 cm Mode-dual: 21 ± 5; 32 ± 2
Open Bowl 25 Range: 21-44 cm Mode-dual: 23 ± 2; 38 ± 6
Open Bowl 26 Range: 7-25 cm Mode: 16 ± 3
Open Bowl 27 Range: 8-21 cm Mode: 16 ± 3
Open Bowl 28 Range: 7-22 cm Mode: 17 ± 3
Open Bowl 29 Range: 9-23 cm Mode: 16 ± 3
Open Bowl 30 Range: 18-34 cm Mode-dual: 23 ± 4; 30 ± 2
Jar 5 Range: 14-32 cm Mode-dual: 19 ± 4; 26 ± 2
Jar 7 Range: 8-34 cm Mode: 19 ± 4
Jar 21 Range: 9-30 cm Mode: 19 ± 4
Jar 24 Range: 4-20 cm Mode-dual: 7 ± 2; 15 ± 3
Jar 25 Range: 12-29 cm Mode-dual: 20 ± 4; 27 ± 2
Jar 26 Range: 9-30 cm Mode: 19 ± 5
Jar 27 Range: 12-29 cm Mode-dual: 20 ± 4; 27 ± 2
Jar 28 Range: 4-24 cm Mode-multiple: 6 ± 2; 11 ± 3; 20 ± 4
Jar 29 Range: 4-19 cm Mode-dual: 6 ± 2; 12 ± 3
Jar 30 Range: 4-21 cm Mode-dual: 7 ± 2; 17 ± 2
Jar 31 two examples, Calpish BC: 13, 18 cm
Jar 32 Range: 9-21 cm Mode-dual: 11 ± 2; 18 ± 3
Jar 33 Range: 10-19 cm Mode: 13 ± 3
Jar 34 Range: 14-25 cm Mode: 20 ± 3
Jar 35 Range: 15-32 cm Mode: 20 ± 5

G. Quinsahuanca (A.D. 800-1050)

There is some evidence to suggest an archaizing tendency in the Quinsahuanca style. As we have noted previously, Quinsahuanca ware is a derivative of the Huacawato ware which first appears in Huacrapuquio. Phase A bowl ware is basiacally orangish to orange-brown, but there is a decided shift in phase B to a basically tan-brown to buff-brown mode.

The bowl ware is orange-brown to light orange-tan to tan to tan-brown to buff-brown to brown, with 5-10% sand temper, of both the whitish sand variant and the colored (mainly red, white, grey-green, black) sand variant, for both phases, but the majority of bowls of phase A are at the orange-brown to orange-tan end of the range while the majority of bowls in phase B are at the tan-brown to buff-brown end of the range. The Quinsahuanca jar ware may reflect the same sort of firing color shift, but it is not quite as clear. In both phases, jars vary from red-orange to orange-brown to orange-tan to tan-brown to buff-brown to brown, possibly slightly more orangish in phase A and slightly more tan-buff in phase B, with temper 10-15% of the visible surface, and with both the whitish sand variant and the colored sand temper variant. What is more evident in phase B is a change in firing duration--the cores of jars now are often incompletely fired, being grayish-black, while the Calpish jars had been fired throughout to a relatively uniform oxidized color. This incomplete firing becomes a nearly uniform characteristic of jars in the Late Intermediate Period phases, so much so that one can nearly identify these styles on the basis of the one feature of jar wares with black cores.

The archaizing tendency referred to can be seen in vessel form, in vessel decoration, and perhaps even in vessel ware. Beveled rim bowls (Fig. 138, Forms 32,33) make a reappearance after having been missing from the inventory for 200-300 years; large, heavy rectangular and round rimmed bowls suddenly regain popularity; in short, the open bowl shapes of Huacrapuquio (Fig. 95), after having been missing from

the inventory for two or three centuries, suddenly reappear in slightly varied form in Quinsahuanca (Fig. 138). Particularly in phase B (Fig. 147), there is an emphasis on the same sort of cross-hatched triangles, cross-hatched bands, and other rectilinear geometric motifs that were popular in Huacrapuquio. To carry the argument still further, in phase B the ware is more tan-buff than phase A, and this basic tan-buff ware with designs in brown pigment is then fairly close in appearance to the cream-buff slipped, brown-black pigment designs of Huacrapuquio. The resemblance is so great that to the casual observer they may appear the same; however, it can be shown that the pigments are different, that the design application, though similar, is conceptualized in a different manner, that the shapes are similar but distinct. The two styles in composite can be shown to be quite distinct though obviously similar. Carrying this point further, it is possible to segregate the two on the basis of vessel shape alone or on the basis of design alone; Huacrapuquio has features in common with Usupuquio that Quinsahuanca lacks, and Quinsahuanca has features in common with Matapuquio and Calpish which Huacrapuquio lacks. While it is thus clear that the two style are distinct, the implications of the basic similarity between the two should not be underestimated. Widely throughout the southern half of Peru there is an archaizing tendency following the collapse of the Huari empire, at approximately the same time as the tendency seen in the Jauja-Huancayo basin. This tendency is apparently true for the core area of the Huari empire itself, for Lumbreras (various sources) has difficulty in clearly distinguishing pre-Middle Horizon Huarpa from post-Middle Horizon styles, and ends up with a Huarpa I unit for pre-

empire periods and a Huarpa II unit for post-empire periods. In the vicinity of Cuzco, Ned Dwyer (personal communication) has shown the same sort of relationship between a style alternately called Huaru or Huaro and the Killke style. The most precisely documented example is in the Ica valley (Lyon 1966), though the innovation through archaism detailed for the coastal Ica valley seems to be of a slightly different sort than we are apparently seeing in the highlands at Cuzco, Ayacucho and Huancayo.

Quinsahuanca A continues some of the bowl decorations from the Huacawato ware of Calpish C (compare Figs. 136, 144, 145), but there are a number of new geometric elements (Fig. 144:a,c,f; Fig. 145:d,f,g). The jars take on a new sort of decoration, a bichrome decoration of brown-black and cream-white on a red-brown wash or plain ware (Fig. 145:f; Fig. 146:a) and a new rim decoration style (Fig. 146:a,c-e) of alternating bands of pigment. The parallel straight and curved lines on jar necks (Fig. 146:b-e) also are distinctly different from the 'spaghetti motif' style of Calpish. Quinsahuanca large jar lugs (Fig. 141) are very similar to those of Calpish C in phase A, but the jar neck appliques are different, both in cross-section and in the addition of cane-stamping to the parallel vertical and diagonal slash incisions and punctate rows (Fig. 143).

Quinsahuanca B bowls continue the development and the archaism first seen in phase A; by phase B (Fig. 147) it is difficult to see any direct similarity between the Quinsahuanca design style and the Huacawato design style of Calpish C. Quinsahuanca B jars continue the rectilinear design motifs of phase A, but begin to add some of the

motifs and other motifs (Fig. 148) found in the succeeding Matapuquio assemblages. Quinsahuanca jar neck appliques are the same as those seen in phase A (Fig. 143), but large jar lugs are different (compare Figs. 141, 142); some of the face lugs continue, but basically the jar lugs become simplified and finally disappear completely.

Quinsahuanca vessel forms:

Olla 14 one example, phase A: 32 cm
Olla 15 two examples, phase A: 21, 22 cm
Enclosed Bowl 15 Range: 9-21 cm Mode-dual: 11 ± 2; 19 ± 2
Enclosed Bowl 17 four examples: 21, 25, 26, 36 cm
Open Bowl 24 Range: 18-34 cm Mode: 26 ± 2
Open Bowl 25 Range: 11-30 cm Mode: 21 ± 5
Open Bowl 27 Range: 10-27 cm Mode: 20 ± 4
Open Bowl 28 Range: 8-24 cm Mode: 18 ± 4
Open Bowl 30 Range: 17-50 cm Mode: 26 ± 4
Open Bowl 31 Range: 10-33 cm Mode: 20 ± 7
Open Bowl 32 Range: 16-26 cm Mode: 19 ± 3
Open Bowl 33 Range: 10-17 cm Mode: 15 ± 2
Jar 5 Range: 6-36 cm Mode-dual: 11 ± 3; 19 ± 4
Jar 7 Range: 10-29 cm Mode-dual: 12 ± 2; 20 ± 4
Jar 21 Range: 11-26 cm Mode: 18 ± 4
Jar 24 Range: 6-19 cm Mode: 11 ± 3
Jar 27 Range: 16-30 cm Mode: 20 ± 3
Jar 28 Range: 10-29 cm Mode-dual: 12 ± 2; 20 ± 4
Jar 30 Range: 5-23 cm Mode-dual: 11 ± 3; 18 ± 4
Jar 34 Range: 11-25 cm Mode: 20 ± 3
Jar 35 Range: 13-26 cm Mode: 19 ± 5
Jar 37 Range: 14-24 cm Mode: 19 ± 4
Jar 38 Range: 10-24 cm Mode: 19 ± 4
Jar 39 Range: 14-24 cm Mode: 19 ± 2
Jar 40 Range: 15-25 cm Mode: 18 ± 3
Jar 41 Range: 17-32 cm Mode: 26 ± 6
Jar 42 Range: 13-23 cm Mode: 18 ± 4

H. Matapuquio (A.D. 1050-1250)

Most Matapuquio occupation sites were also occupied during the Arhuaturo phases. Though this relatively continuous occupation is important as it shows some degree of stability in the area where

before we had varying amounts of settlement instability, it has made it very difficult to define chronological units from our surface collections. It was necessary to excavate at two sites (PJuM 502 and PJuM 525) to support the seriational evidence that the distinctions made between Matapuquio and Arhuaturo styles were temporal as well as typological. Matapuquio ware is clearly a gradual evolution of the Quinsahuanca ware. The bowl ware is orange-buff to orange-tan to light tan to tan-buff, the sand temper constitutes about 5-10% of the srface visible, and the typical whitish and colored particle temper variants are present. The jar ware is slightly more variable in coloration, varying from red-orange to orange buff to orange-brown to tan-brown. There is a tendency toward a polarization of two colors--one light tan with a slight orange cast and the other more orange-brown to red-orange. This latter division becomes clearly conceptualized in the ceramic inventory of the Arhuaturo assemblages. The jar ware has medium sand temper, about 10-15%, and has the dark center cores so characteristic of the Late Intermediate Period jars; in contrast to Arhuaturo wares, the core has a browner coloration while the Arhuaturo core has a blacker coloration. Both the white variant (white, grey, black particles) and the colored variant (red, grey-green, white, black sands) are found in roughly equal proportions.

Matapuquio has a number of new vessel shapes; in addition such features as jar neck appliques which continue on have a different constitution. The jar neck applique does not change much in cross-section; what is more noticeable is the increasing numbers of

circumferential neck decorations which are executed without appliques (Fig. 154). The punctate circumferential decoration is very rare; the diagonal parallel incision slashes have disappeared. The vertical parallel incision slashes are still found fairly commonly, but of greater importance is the increasing number of circumferential cane-stamped circle rows. Usually only single rows of cane-stamped circles occur, but double rows and a type of 'bulls eye' motif (a smaller cane-stamped circle inside a larger one) also occur (Fig. 154). Both bowl (Fig. 155) and jar (Fig. 156) have more limited geometric design vocabularies than in previous units.

Burial 1 from Patankato (PJuM 502-16-2) contains a miniature jar having a number of typical Matapuquio features (Fig. 153). Contrasting the open bowl and the necked jar from this burial with the vessels from the Usupuquio burial at Jauja (PJuM 677-2, Tomb 7, Figs. 84,85), one is sharply struck by the difference in conceptualization of what forms and what surfaces should be decorated; for in Usupuquio the open bowl is decorated and the jar is undecorated, while in Matapuquio the open bowl is undecorated and the jar decorated. For the various Early Horizon and Early Intermediate Period phases, the bowls were elaborately decorated, but the jars were undecorated or decorated in a relatively minor way. In the Middle Horizon, presumably through Huari influence, jar decoration became important; during the Middle Horizon phases the decoration of bowls and jars has approximately the same importance. By the Late Intermediate Period phases, jars were the most important decorated vessels; though bowls still were decorated, they were

decorated in a minor way in comparison to the more elaborate and diagnostic jar motifs. Tied in with this change is a concurrent change in the numbers of bowls and jars. In the Early Horizon and Early Intermediate Period, bowls constituted the majority of the assemblages, but by the Late Intermediate Period jars numerically constituted the majority of the collections. Thus we can see at one level of analysis quantitative (absolute number of specimens) and qualitative (decoration) attributes indicate the popularity of the bowl at one point in time and the jar at another point in time. These observations are somewhat sterile in themselves, outside of chronological purposes; more useful sorts of information are generated when we attempt to explain these differences in terms of their cultural implications. Presuming the early people to be semi-nomadic pastoral horticulturalists, it is easy to explain the relative popularity of bowls through their smallness, compactness, efficiency (in the sense that they could be nested in one another), easy portability, and other such factors, while the jar would tend to be less desirable as its attributes in the main are exactly opposite to the desirable qualities of the bowl. During the Matapuquio and Arhuaturo phases, when storage buildings were developed as an important cultural complex, large jars for storage purposes would be required in great quantity to store the annual harvest and surpluses in these rows of storage buildings as well as in the small storage structures attached to some of the dwellings. By this time the entire cultural orientation was built around the stored agricultural surplus (e.g. such as redistributive processes, ranked or stratified society,

non-productive specialists and so on); therefore it is evident that large quantities of storage jars are basic to the functioning and perpetuation of this system. (Parenthetically, for earlier pastoralists, a village's herds served also as a method of storage--that is, storage-on-the-hoof--though these resources were much more susceptible to yearly weather variations, were much more severely strained during lean years, and depletion of the storage (e.g. reduction of the number of animals) took several years to recuperate, rather than one season as was possible with agriculture.)

Matapuquio vessel forms:

Olla 14 two examples: 20,21 cm
Olla 15 four examples: 20,22,22,28 cm
Enclosed Bowl 15 Range: 17-34 cm Mode: 21 ± 4
Enclosed Bowl 17 Range: 12-22 cm Mode: 18 ± 4
Open Bowl 24 Range: 18-46 cm Mode: 26 ± 4
Open Bowl 25 Range: 16-30 cm Mode: 23 ± 5
Open Bowl 27 Range: 15-24 cm Mode: 20 ± 2
Open Bowl 28 Range: 7-28 cm Mode: 16 ± 4
Open Bowl 30 Range: 20-44 cm Mode: 28 ± 4
Open Bowl 31 Range: 9-23 cm Mode: 16 ± 4
Open Bowl 32 Range: 15-19 cm Mode: 17 ± 2
Open Bowl 34 Range: 10-26 cm Mode: 19 ± 4
Open Bowl 35 four examples: 19,20,20,22 cm
Jar 5 Range: 12-38 cm Mode-dual: 20 ± 5; 30 ± 6
Jar 7 Range: 9-36 cm Mode-dual: 19 ± 4; 30 ± 6
Jar 24 Range: 10-24 cm Mode: 20 ± 4
Jar 28 Range: 8-16 cm Mode: 11 ± 3
Jar 30 Range: 5-26 cm Mode-dual: 11 ± 3; 22 ± 4
Jar 39 Range: 16-24 cm Mode: 20 ± 4
Jar 42 one example: 20 cm
Jar 43 Range: 22-40 cm Mode: 27 ± 5
Jar 44 Range: 13-24 cm Mode: 17 ± 4
Jar 45 Range: 13-28 cm Mode: 20 ± 3
Jar 46 Range: 12-46 cm Mode: 30 ± 6 [other minor modes]
Jar 47 Range: 15-27 cm Mode: 20 ± 5
Jar 48 Range: 3-13 cm Mode: 10 ± 2
Jar 49 four examples: [illegible], 13, 13, 15 cm

I. Arhuaturo (A.D. 1250-1470) and Arhuaturo-Inca (A.D. 1470-1533)

It is useful to deal with Arhuaturo and Arhuaturo-Inca at the same time, in part because there is an obvious unbroken continuity of many features in spite of the Inca conquest, in part because the modifications of certain features of the Arhuaturo style are much clearer when the two complexes are contrasted to one another, and in part because we have a much more complete Arhuaturo-Inca assemblage so that it may be possible to supplement the Arhuaturo assemblage with information deduced from the Arhuaturo-Inca materials. Though we actually have numerically more Arhuaturo materials, much of it could not be utilized as many sites were occupied continuously from Matapuquio through Arhuaturo and on into Arhuaturo-Inca, making it impossible to use the material in our initial seriation.

There are two main wares--an oxidized ware and a reduced ware, each in the two temper variants, the whitish variant (white, grey, black) and the colored variant (red, grey-green, white, black). The reduced ware is relatively minor, being used only for one cooking vessel (Figs. 158, 159: Jars 47, 50); it is greyish black and frequently is quite heavily soot encrusted; the only decoration is an occasional abstract appliques (Figs. 168, 172). Both the jars and bowls of the oxidized ware are of essentially the same firing color, with the temper varying between 5-15%, and the color orange-buff to orange-brown to red-orange to tan-buff; bowls tend to be slightly more tan-orange while the jars are more orange-brown to red-orange. The cores of nearly all the jars are grey-black.

In contrast to the Matapuquio style, bowls are quite commonly painted red on the interior--designated as M.R. or Mantaro Red in the illustrations to distinguish it from I.R. or Inca Red and L.R. or V.R. or Viques Light Red. All these reds coexist and are clearly distinct from one another; V.R. is a light red while I.R. is a bright red to scarlet and M.R. is a cross between dark red and dark red with an orange cast. In Arhuaturo-Inca a great number of bowls are painted red on the interior, while in Arhuaturo the designs on unpigmented natural base, nearly identical to those found in Matapuquio, are still found in large numbers (Fig. 161:a-e). In Arhuaturo, large concentric half-circles and undulating lines are quite common bowl decorations, white dots present but rare, and black on red is as frequent as black and white designs on Mantaro Red (Fig. 161, 162) bowls. In Arhuaturo-Inca, the majority of designs are done in black and white on red, white dots are applied in a variety of new ways, undulating lines are rare, and large concentric half-circles are replaced by small single half-circles (Fig. 180).

Arhuaturo and Arhuaturo-Inca both have large storage jars of unslipped natural ware decorated with undulating black lines (Fig. 163, Fig. 182:e). The Arhuaturo red slipped jars generally are decorated with black geometric backgrounds painted on the red slips with white dots placed in various red rectangles (Fig. 162:i, j; Fig. 164:a, e) or by single pairs of white and black lines or widely separated white and black lines (Fig. 164:d). These both continue on into Arhuaturo-Inca, but in Arhuaturo-Inca the rectilinear geometric backgrounds in some

examples give way to rather amorphous black patches with white dots (Fig. 181), in other examples the white dots become proliferous and appear in new locations (Fig. 182:a,b), while in other examples a new rectilinear black background with extremely carefully executed white dots in the open rectangles appears (Fig. 182:d; Fig. 183). The single pairs or widely spaced alternating black and white circumferential lines are replaced by closely and evenly spaced alternating red-white-red-black lines (Fig. 182:c,g).

As a continuing category, jar neck appliques exist, though in a strict sense it is difficult to label them as such. There are a few jar neck appliques with cane-stamped circles, but by far the greater number of vessels, both in Arhuaturo and Arhuaturo-Inca, simply have the cane-stamped circles, the incisions or the punctates executed circumferentially in the same location of the neck they would have been had there been an applique band (Fig. 183). In addition there is a new neck decoration feature, a simple incised groove executed around the neck in the same location as there would have been cane-stamped circles, punctates, or parallel vertical incisions. In Arhuaturo, this occurs rarely and occurs only by itself (Fig. 164:d), but in Arhuaturo-Inca it occurs frequently and sometimes occurs in conjunction with other neck applique design elements (Fig. 183). This incised groove and the cane-stamped circles, either alone or nested, make up more than 90% of the jar neck applique decorations; punctates and parallel incisions are not common.

An important decorative feature on jar neckes, in addition to the

jar neck applique bands, is the modeled face. They occur with sufficient frequency to define types--types 1-3 are Arhuaturo (Fig. 162:i, j; Fig. 165-167), and types 4-10 are Arhuaturo-Inca (Fig. 169-170). The Arhuaturo types also occur rarely in Arhuaturo-Inca phases, but in the main they are replaced by face types 4-10. The Arhuaturo faces are decorated by alternating black and white vertical lines or vertical black lines alone (Fig. 162:j), or by painting half the face black and half the face white (Fig. 162:i), a feature rarely found on Quinsahuanca face jar lugs. Sometimese these faces occur in pairs (Fig. 167), but this is a more common feature in Arhuaturo-Inca. On lateral sides of the jars with these faces are small applique lugs in the form of ears.(Fig. 167). In contrast to the Arhuaturo-Inca ears (Fig. 172), the Arhuaturo ears (Fig. 167) are a rather consistent and little varied feature. Arhuaturo faces almost always are associated with the background patterns illustrated in Fig. 162:i, j. The type 1 faces appear to have some sort of cap or other headpiece indicated (Fig. 165). Comparing the entire complex of Arhuaturo types (Figs. 165-167) with the Arhuaturo-Inca types (Fig. 169-170), we can see a clear tendency toward simplification in the design. There may be some external influence also present here for the type 5 face, which is abundant at local Inca sites, has not clear antecedents in the previous Arhuaturo style faces, while most of the others do. Ears associated with the Arhuaturo-Inca faces are more variable, and a minor portion are drilled, apparently for earrings--perhaps as symbolic orejones. Most of the Arhuaturo-Inca faces are not decorated (outside of the red

vessel wash), although we do have some of the previous line decorations, and more frequently the half white-half black decoration. There is an interesting face style (Fig. 171) which cannot be definitely placed as no examples come from sites of secure associations. It is most likely they are Late Horizon faces; note that there is actually closer correspondence between the facial features on these examples (Fig. 171) and the Viques face type 11 (Fig. 199) than there is between either of the Arhuaturo units.

In addition to the anthropomorphic faces for jar necks, in Arhuaturo-Inca there appear to be a number of zoomorphic and mythical modeled heads which, on the examples such as there is evidence, were attached to the bodies of small jars. Some of these modeled heads seem rather clearly to be llamas (Fig. 173-1,2); these both were decorated by having one half the head white and the other half black. The other heads in Fig. 173 are less obvious; the bug-eyed creature in Fig. 173-3 might be a very poor attempt at a llama, but the other two examples clearly represent some creature other than a llamoid. Fig. 173-4 is drawn from a photography of a whole vessel we purchased and donated to the museum of Universidad Nacional del Centro. This pot was a double chambered vessel; on the front of each chamber were two such heads, four in all, each with the gaping mouth, protruding tongue and precise dentition. The heads have a dragon-like quality; perhaps they represent lizards or some other actual animal, but they may equally well be merely the products of a fertile imagination. On the necks of both globular chambers was a human face representation of the Arhuaturo-Inca type 5.

Joining the two chamber necks had been a bridge, but this was missing so we do not know if it also was decorated with modeled incision. The entire configuration of the vessel suggests to me that the potter likely had a Chimu pot as a model, as some of the features are unqiue in our collections, but seem common on the north coast at this time. The zoomorphic feline in Fig. 173-5 has some definite leonoid qualities; not enough of the head is left to make an accurate assessment.

The last category of appliques to consider is the group of rather abstract appliques (Fig. 168, 172). There seems to be some clustering of these appliques, but our sample was not large enough to verify this. Inspection of Arhuaturo abstract appliques (Fig. 168) suggests two macro-groupings which are quite different from the third macro-grouping seen for Arhuaturo-Inca (Fig. 172). The abstract appliques found with Viques mitmaqkuna (Fig. 199) form still a fourth grouping. These appliques appear both on the oxidized and the reduced wares. In all cases they were on plain ware fragments, without any painted decoration in addition to the modeling.

Arhuaturo vessel forms:

Enclosed Bowl 15 Range: 12-24 cm Mode: 16 ± 4
Enclosed Bowl 18 Range: 12-23 cm Mode: 17 ± 4
Open Bowl 24 Range: 13-26 cm Mode: 18 ± 4
Open Bowl 27 Range: 15-22 cm Mode: 18 ± 3
Open Bowl 28 Range: 6-21 cm Mode: 17 ± 3
Open Bowl 30 two examples: 23, 24 cm
Open Bowl 31 Range: 11-27 cm Mode: 17 ± 5
Open Bowl 32 Range: 13-20 cm Mode: 16 ± 3
Open Bowl 34 Range: 13-23 cm Mode: 17 ± 3
Open Bowl 36 Range: 10-25 cm Mode: 17 ± 3
Open Bowl 37 Range: 11-22 cm Mode: 17 ± 4
Open Bowl 38 Range: 11-25 cm Mode: 16 ± 3
Open Bowl 39 Range: 8-26 cm Mode: 17 ± 5

Jar 5 Range: 13-28 cm Mode: 20 ± 4
Jar 7 Range: 11-34 cm Mode-dual: 19 ± 3; 29 ± 3
Jar 24 Range: 8-12 cm Mode: 10 ± 2
Jar 27 three examples: 14, 30, 30 cm
Jar 30 Range: 5-16 cm Mode: 9 ± 3
Jar 39 Range: 13-35 cm Mode-dual: 20 ± 3; 30 ± 3
Jar 43 Range: 14-34 cm Mode-dual: 19 ± 3; 29 ± 4
Jar 44 Range: 13-36 cm Mode-dual: 22 ± 4; 32 ± 4
Jar 47 Range: 12-32 cm Mode: 20 ± 4
Jar 48 two examples: 6, 8 cm
Jar 49 Range: 13-28 cm Mode: 20 ± 4
Jar 50 Range: 11-28 cm Mode: 19 ± 4
Jar 51 Range: 13-36 cm Mode-dual: 22 ± 4; 32 ± 4
Jar 52 Range: 5-12 cm Mode: 9 ± 3
Jar 53 Range: 16-40 cm Mode-dual: 22 ± 5; 33 ± 4

Arhuaturo-Inca vessel forms:

Olla 15 Range: 10-34 cm Mode-dual: 13 ± 3; 30 ± 4
Enclosed Bowl 15 Range: 6-24 cm Mode: 17 ± 5
Enclosed Bowl 18 Range: 14-19 cm Mode: 17 ± 2
Enclosed Bowl 20 Range: 4-14 cm Mode: 9 ± 4
Enclosed Bowl 21 Range: 10-22 cm Mode: 17 ± 5
Enclosed Bowl 22 Range: 4-8 cm Mode: 6 ± 2
Enclosed Bowl 23 Range: 8-12 cm Mode: 10 ± 2
Open Bowl 24 Range: 14-26 cm Mode: 19 ± 4
Open Bowl 27 Range: 10-23 cm Mode: 17 ± 5
Open Bowl 28 Range: 11-24 cm Mode: 17 ± 4
Open Bowl 30 Range: 18-34 cm Mode: 29 ± 4
Open Bowl 31 two examples: 11, 12 cm
Open Bowl 34 Range: 13-30 cm Mode-dual: 17 ± 4; 27 ± 3
Open Bowl 36 Range: 11-24 cm Mode: 17 ± 3
Open Bowl 37 Range: 7-18 cm Mode: 16 ± 2
Open Bowl 38 Range: 11-25 cm Mode: 16 ± 3
Open Bowl 40 Range: 21-28 cm Mode: 25 ± 2
Open Bowl 41 Range: 10-21 cm Mode: 16 ± 5
Open Bowl 42 Range: 13-26 cm Mode: 17 ± 4
Jar 5 Range: 13-32 cm Mode: 19 ± 3
Jar 7 Range: 9-38 cm Mode-dual: 18 ± 4; 28 ± 4
Jar 24 Range: 7-13 cm Mode: 10 ± 3
Jar 30 Range: 6-16 cm Mode: 9 ± 3
Jar 39 Range: 13-35 cm Mode-dual: 20 ± 3; 30 ± 3
Jar 43 Range: 13-28 cm Mode: 19 ± 5
Jar 47 Range: 14-32 cm Mode: 20 ± 3
Jar 48 Range: 4-9 cm Mode: 6 ± 2
Jar 49 Range: 7-28 cm Mode-dual: 10 ± 2; 20 ± 4
Jar 50 Range: 13-22 cm Mode: 18 ± 2
Jar 51 Range: 13-34 cm Mode-dual: 18 ± 4; 30 ± 3
Jar 52 Range: 7-11 cm Mode: 9 ± 2

Jar 53 Range: 16-40 cm Mode-dual: 22 ± 3; 33 ± 4
Jar 54 Range: 7-21 cm Mode-dual: 9 ± 2; 18 ± 3
Jar 55 Range: 12-38 cm Mode-dual: 21 ± 4; 31 ± 3
Jar 56 five examples: 20, 20, 21, 22, 24 cm
Jar 57 Range: 20-38 cm Mode-dual: 22 ± 2; 31 ± 3
Jar 58 Range: 11-24 cm Mode: 18 ± 3
Jar 59 Range: 6-10 cm Mode: 8 ± 2
Jar 60 Range: 23-40 cm Mode: 30 ± 6
Jar 61 Range: 6-13 cm Mode: 10 ± 3
Jar 62 Range: 7-23 cm Mode: 17 ± 5
Jar 63 Range: 17-34 cm Mode: 20 ± 3
Jar 64 six examples: 10, 14, 18, 21, 22, 30 cm

J. Inca (A.D. 1470-1533)

There are four directly Inca-related Late Horizon wares in addition to the local Arhuaturo-Inca ware and the Viques mitmaqkuna ware--two different Cuzco Inca polychrome wares, a local Inca miniature ware, and a coastal black ware. The local Inca miniature ware is found at a number of Inca sites, but its association with a later Llaqsa period huaca on a hilltop and its association with offeratory caches at Wariwilka (Matos Mendieta 1967; Shea 1969) suggest that one of the major functions of this ware was the production of vessels used in offeratory caches. This ware was found in Inca vessels of all shapes, but the four most common in the surface collections are illustrated in Fig. 184 (MIN-1 to MIN-4). The ware itself was a light tan-beige, very compact, with a semi-lustrous surface finish, and little or no temper, and was decorated with a pigment which varied from purple-brown to brown to purple-black, usually carelessly applied only as a band around the rim. The black-ware is distinctly different from the reduced grey-ware found in Arhuaturo and Arhuaturo-Inca cooking pots. The Inca-related black ware, which is misleadingly designated 'Chimu-

Pachacamac' Blackware in Fig. 184, is a dark grey-brown to black throughout, and the surface is generally polished to a low luster. With one exception, the examples of this ware are of only one vessel shape, and have come from sites which have mainly Inca sherds with relatively little local Arhuaturo-Inca. It seems probable that the blackware was produced somewhere close to Pachacamac, and most likely is a variant of Menzel's (1966:112) "Pachacamac Inca" blackware.

There are two different Inca wares, which in general can be separated on the basis of paste color and temper constitutents. The first of these, Inca Ware 1 (Fig. 185-187, 191, 194), is a buff-colored ware; it varies from cream-buff to tan-buff to pink-buff to light orange-buff to buff. The tempering material is a colored sand of red, white, grey and black particles, but the reddish sand particles appear to make up more than half of the tempering sand; the temper varies between 10-20% of the visible surface area. The second ware, Inca Ware 2 (Fig. 188-190, 192, 195), is a red-orange to orange-tan ware; it varies from red-orange to red-brown to orange-brown to orange-tan. The tempering sand is composed of white, grey and black particles mainly and gnerally lacks the red sand particles so characteristic of the temper of Ware 1; the temper appears quantitatively less than Ware 1, varying from 5-10%, perhaps 5-15%, incomparison to the 10-20% temper for Ware 1. These two wares have been seriated separately since it appears that at least in part the two appear in chronologically different situations.

The two wares are found in various associations with each other;

some sites have nearly wholly one ware, some nearly wholly the other, while many have the two fairly evenly mixed. If these differences are indeed temporally significant, then it would appear that Ware 1 is earlier and Ware 2 later. There are a number of reasons for suggesting this, among which are the facts that the Inca ware associated with the Viques mitmaqkuna is nearly wholly Ware 2, the Inca ware associated with the sites mentioned by the conquistadores is primarily Ware 2, the Inca ware found in subsequent Llaqsa sites is Ware 2, Inca Ware 1 has a smaller vessel repertoire than Ware 2, carelessly executed design patterns are most frequently found on Ware 2, the design vocabulary appears to differ significantly (Figs. 194, 195), the aryballoid lugs differ (Figs. 191, 192), and so forth. Tentatively one could suggest that Ware 1 might be Cuzco Polychrome from the environs of Cuzco itself; its relative scarcity in contrast to Ware 2 might seem reasonable if we assume for the first few decades of the Inca occupation in the Jauja-Huancayo basin that Cuzco Polychrome was a 'prestige' ware, limited by a number of factors to the Inca themselves and those of political importance amongst the local inhabitants, while later the Jauja-Huancayo valley had become integrated into the Inca system to a sufficient extent that Inca Ware 2 was nearly ubiquitous, and in fact could no longer be considered a prestige ware as it appeared to hve been widely enough distributed in the Inca sites to be supposed to have been utilized by the hatunruna or commoners. Ware 2 proably was manufactured at a locale considerably closer to the Jauja-Huancayo basin; the similarity of the ware to one of the temper variants of the

local Arhuaturo-Inca style means that local copies cannot be ruled out.

There are some features found in both wares and at nearly all sites. The pedestal base plain ware bowl (Fig. 193) is found so widely that it is one of the most important diagnostics for defining an Inca occupation. The black diamonds and black triangles in rows on aryballoid necks that are either slipped Inca Red or left unslipped, are also widespread, as are the aryballoid necks with alternating bands of purple-black and cream-white in horizontal bands (Fig. 196) of varying widths, and variations of the so-called fern pattern (Fig. 196). In comparing Fig. 194 and 195, it seems that Ware 1 has more circle decorations, alone and as element parts (Fig. 194:a,b,d,f,j); more zig-zags and undulating lines (Fig. 194:c,g,k); and that the designs in general tend to be outlined only by a single line on each side. Ware 2 has more parallel line designs (Fig. 195:b,d,g,h,o), the nested rectangle designs of red-white-black (Fig. 195:f,i) and more designs outlined by two lines on each side. The only zoomorphic design (Fig. 194:i) appears on Ware 1, but whether this is significant cannot be argued from only one specimen. The aryballoid lugs of Ware 1 (Fig. 191) are of four types--an ovoid variety, an undecorated rectangular to trapezoidal variety, a geometrically decorated rectangular to trapezoidal variety, and a simple mouth and eye face on the rectangular to trapezoidal variety. The Ware 2 aryballoid lugs (Fig. 192) seem to contain two significant varieites--the undecorated rectangular to trapezoidal variety, and a larger, more three-dimensionally modeled face. In comparing these two different ware-groupings of lugs, it can be seen that the lug variety in common is the undecorated rectangular

to trapezoidal lug, but that Ware 1 has three types not found with Ware 2 lugs, that Ware 2 has one dominant form essentially lacking from the Ware 1 inventory, that Ware 1 lugs are generally smaller than Ware 2 lugs, and that in the main Ware 2 lugs are much more variable than Ware 1 lugs. Handles of both Ware 1 and 2 are rectangular in cross-section, in contrast to the oblong or flattened ovoid cross-section of the Arhuaturo and Arhuaturo-Inca handles.

Inca vessel forms:

local Inca miniature ware

MIN-1 Range: 9-21 cm Mode: 15 ± 4
MIN-2 Range: 14-21 cm Mode: 17 ± 3
MIN-3 Range: 4-20 cm Mode-dual: 6 ± 2; 15 ± 3
MIN-4 Range: 4-10 cm Mode: 7 ± 2

Pachacamac Inca blackware

Vessel 1-B five examples: 7, 13, 15, 17, 19 cm
Vessel 2-B one example: 28 cm

Inca bottle necks and lids, both wares

Lids Range: 9-34 cm Mode-multiple: 11 ± 3; 19 ± 3; 31 ± 3
Bottle 1 Range: 5-8 cm Mode: 7 ± 1
Bottle 2 two examples: 5, 6 cm
Bottle 3 Range: 4-9 cm Mode: 6 ± 2
Bottle 4 two examples: 8, 10 cm

Inca Ware 1

Enclosed Bowl 24 Range: 13-19 cm Mode: 16 ± 3
Enclosed Bowl 25 Range: 11-20 cm Mode: 14 ± 2
Enclosed Bowl 26 Range: 11-15 cm Mode: 13 ± 2
Enclosed Bowl 27 Range: 11-17 cm Mode: 14 ± 2
Enclosed Bowl 28 Range: 12-20 cm Mode: 14 ± 2
Open Bowl 27 four examples: 9, 16, 18, 19 cm
Open Bowl 28 Range: 11-23 cm Mode: 15 ± 4
Open Bowl 34 Range: 12-32 cm Mode-dual: 16 ± 4; 30 ± 2
Jar 7 Range: 14-28 cm Mode: 20 ± 6
Jar 60 Range: 12-42 cm Mode-dual: 19 ± 4; 30 ± 4
Jar 66 Range: 8-34 cm Mode-multiple: 10 ± 2; 18 ± 4; 30 ± 4
Jar 67 Range: 13-44 cm Mode-dual: 19 ± 4; 34 ± 4
Jar 65 Range: 15-30 cm Mode-dual: 18 ± 3; 28 ± 2

Inca Ware 2

Olla 15 Range: 5-23 cm Mode: 14 ± 2
Enclosed Bowl 25 Range: 12-26 cm Mode: 15 ± 3
Enclosed Bowl 27 Range: 6-17 cm Mode: 12 ± 3
Enclosed Bowl 28 Range: 6-19 cm Mode: 15 ± 2
Enclosed Bowl 29 Range: 11-22 cm Mode: 14 ± 3
Open Bowl 24 Range: 14-30 cm Mode-dual: 17 ± 3; 28 ± 2
Open Bowl 27 Range: 12-23 cm Mode: 15 ± 3
Open Bowl 28 Range: 11-19 cm Mode: 17 ± 2
Open Bowl 30 four examples: 15, 25, 30, 34 cm
Open Bowl 34 Range: 14-34 cm Mode-dual: 18 ± 4; 29 ± 4
Open Bowl 41 Range: 20-21 cm Mode: 15 ± 3
Open Bowl 42 Range: 13-24 cm Mode: 17 ± 4
Jar 7 Range: 13-34 cm Mode-dual: 20 ± 4; 30 ± 4
Jar 60 Range: 12-52 cm Mode-dual: 20 ± 4; 32 ± 6
Jar 65 Range: 14-32 cm Mode-dual: 19 ± 5; 29 ± 3
Jar 66 Range: 7-32 cm Mode-multiple: 9 ± 2; 20 ± 5; 29 ± 3
Jar 67 Range: 16-52 cm Mode-dual: 20 ± 4; 38 ± 6

K. Viques mitmaqkuna (A.D. 1500-1533)

The Viques mitmaqkuna ware is clearly distinct from both the local Arhuaturo-Inca ware and the Inca wares 1 and 2 on the basis of color pigments, surface finish, vessel shape, design vocabulary, jar neck face, jar neck appliques, and other features. The ware is a tan-orange to red-orange to brown-orange, frequently not completely fired so that it has a dark core. The temper is fine, mainly whitish or white and black, about 5%. Bowls are polished to a high luster. Quite a large number of Viques sherds (Figs. 197-205) have been illustrated in order to facilitate the location of the mitmaqkuna homeland. As indicated in Ch. 6, the northern part of Huancavelica seems the most likely homeland, but this remains to be verified. We have here, rather than the all too frequent case of having mitmaqkuna mentioned in the chronicles but not identifiable in the archaeological record, a clear

case of mitmaqkuna abundantly evident in the archaeological record but apparently unremarked upon by the chroniclers (see Chs. 6-8). In this case the archaeological record is clearly vital to the establishment of any sort of meaningful ethnohistory, and for any attempted reconstruction of the thnography of the Huanca people from the various conquest period documents.

The open bowls are decorated in three pigments--black, pure white or white-white (in contrast to the off-white or cream-white of the Inca and Arhuaturo) and a light red or Viques Red. The white is rarely used as a design color; most often it is a background color upon which red or black designs are painted. Most characteristic is a red design on white, the design commonly being various cross-hatched patterns (Fig. 200:a-g), wavy lines (Fig. 201:e,l,m), various circle patterns (Fig. 201:g,h,i,j). Black on white is relatively rare, but black on a natural base is the second most common variety; in many cases black on natural exhibits the same designs as the red on white (Figs. 200,201). A characteristic feature of the open bowls is the decoration of the bowl rim with one of the design pigments (Fig. 200:b,d,f,i-k; Fig. 201:b,f-h).

The jars are decorated with the same pigments as the bowls, and many of the same motifs, but the jars also contain a number of different motifs not found on bowls, and show a slightly different emphasis. Polychrome (black and red on white) was rare in the open bowls (Fig. 200:h), but is more common on jars (Fig. 202:e; Fig. 204:e). While bowls generally exhibited only one design pigment (i.e., the white

of the red on white bichrome in the bowls was only a background pigment), the jars exhibited two or three different pigments used as design elements simultaneously (Fig. 204:e,f,b; Fig. 205). The lustrous natural base is in effect used as a third or fourth pigment in itself, so in a sense we can speak of the decorations such as in Fig. 205:a,b,e as being polychrome variants.

The Viques mitmaqkuna jars also have jar neck appliques and jar neck faces similar to those of Arhuaturo-Inca. The faces and various abstract Viques appliques are illustrated in Fig. 199, and the jar neck appliques are illustrated in Fig. 205. For the differences between the face styles and abstract appliques, contrast Fig. 199 with Figs. 165-171. The jar neck appliques in Fig. 205 seem similar to those of Arhuaturo-Inca, but there are two important differences--first most of the Arhuaturo-Inca cane-stamp circles are placed around the jar neck in the same location as an applique would have been, but not on an applique since circumferential appliques are rare in Arhuaturo-Inca, while most of the cane-stamped circles in Viques are on appliques and it is only rarely that we find the design executed circumferentially around the neck and not on an applique; and second that the Viques appliques are only decorated with cane-stamping, while the Arhuaturo-Inca applique decoration inventory also includes parallel vertical incised slashes, punctates, and circumferential grooves. Nevertheless the fact that the Viques mitmaqkuna exhibits so many features similar to the Arhuaturo locals seems to suggest even more strongly that these mitmaqkuna must have originally come from an area not too distant from the Jauja-Huancayo basin so that they both

partook in a number of the same general ceramic traditions, and would seemingly add support to the argument that the mitmaqkuna were moved in from the puna of the northern part of Huancavelica.

Ceramic disc spindle whorls are rare to non-existent in our collections for pre-Inca periods, but for some reason they are quite abundant in Inca sites and Viques sites. Though it is not the case for other areas of Peru, this almost exclusive occurrence in Late Horizon occupation sites allows us to utilize the disc spindle whorl as a sort of time indicator in the Jauja-Huancayo basin. Our samples are sufficiently large to say that there exists a significant difference between the Viques mitmaqkuna and the Inca spindle whorls in size. Inca disc spindle whorls vary in diameter from 2.0-4.0 cm., with a mode of 3.0 ± 0.5 cm., while the Viques spindle whorls vary in diameter from 3.5-5.0 cm., with a mode of 4.0 ± 0.5 cm. Viques spindle whorls, then, are about 25% larger on the average than Inca disc spindle whorls.

Viques vessel forms:

Open Bowl V-1 Range: 10-26 cm Mode: 19 ± 5
Open Bowl V-2 Range: 10-26 cm Mode: 18 ± 4
Open Bowl V-3 Range: 10-25 cm Mode: 19 ± 3
Open Bowl V-4 Range: 10-26 cm Mode: 19 ± 3
Jar V-5 Range: 8-34 cm Mode-dual: 10 ± 2; 19 ± 3
Jar V-6 Range: 10-32 cm Mode: 22 ± 4
Jar V-7 Range: 14-27 cm Mode: 20 ± 4

L. Llaqsa (A.D. 1533-1580)

Llaqsa, as the first component of the Spanish colonial phases, naturally has a number of carryovers from Arhuaturo-Inca and Inca styles of the previous phases. There are some pieces in the Llaqsa

sites which may be heirlooms; that is, they cannot be distinguished from pre-conquest Arhuaturo-Inca and Inca vessels and they may be survivals from late pre-conquest phases. The ware itself is very similar to the local wares of the Late Horizon, but there is a change in coloration--rather than an orange-tan the general tendency is for the ware to be more grey-buff. Llaqsa wares for ollas, jars and bowls varies from orange-buff to tan-buff to grey-buff, with the core usually incompletely fired and of a greyish color. The ware is not well-compacted; temper seems to be predominantly whitish-greyish-blackish sand, from 5-10% of the surface area.

There is a change in pigments during this time as well as a general degeneration and disappearance of many of the previous vessel designs. The former Mantaro Red is now replaced by a red that is a rust-red. Pigments (Fig. 209) are applied thickly and carelessly in some cases, and thinly and streakily in other cases. The Inca miniature ware is still rarely found, particularly surround huacas on hilltops near the repartimiento capitals, probably indicating homage paid to the huaca in secret to escape the eyes of Spanish friars. Some few applique faces of the late Arhuaturo-Inca type still survive (Fig. 208). The jar neck appliques also survive in reduced quantity, including cane-stamped circles, punctates, and circumferential grooves (Fig. 209). Inca pedestal base bowls still rarely occur. Perhaps some of the most diagnostic features, in addition to the pigment changes and the various features mentioned above, are a number of new jar rim forms (Fig. 207: Jars 68,69,70,71,72); these new forms have clear

antecedents in the Late Horizon, and fortunately have a short life-span so they can usefully be used to delimit a period of time probably no more than half a century in duration.

Llaqsa vessel forms:

Olla 15 six examples: 8, 14, 14, 20, 24, 27 cm
Olla 18 Range: 21-43 cm Mode: 36 ± 6
Olla 19 three examples: 21, 22, 30 cm
Enclosed Bowl 15 Range: 8-19 cm Mode: 16 ± 3
Open Bowl 25 two examples: 15, 16 cm
Open Bowl 27 Range: 15-20 cm Mode: 18 ± 2
Open Bowl 28 Range: 11-18 cm Mode: 16 ± 2
Open Bowl 29 one example: 19 cm
Open Bowl 34 Range: 13-20 cm Mode: 18 ± 2
Open Bowl 38 four examples: 13, 13, 15, 16 cm
Jar 5 Range: 13-27 cm Mode: 23 ± 3
Jar 7 Range: 11-28 cm Mode-dual: 15 ± 3; 24 ± 4
Jar 30 one example: 20 cm
Jar 43 Range: 12-19 cm Mode: 17 ± 2
Jar 47 Range: 10-27 cm Mode-dual: 17 ± 2; 23 ± 3
Jar 48 one example: 13 cm
Jar 49 one example: 15 cm
Jar 50 Range: 12-24 cm Mode-dual: 15 ± 3; 22 ± 2
Jar 51 two examples: 12, 13 cm
Jar 53 two examples: 28, ? cm
Jar 54 one example: 12 cm
Jar 57 one example: 24 cm
Jar 59 Range: 6-12 cm Mode: 10 ± 2
Jar 63 Range: 11-18 cm Mode: 15 ± 3
Jar 66 Range: 11-28 cm Mode-dual: 15 ± 3; 24 ± 3
Jar 68 Range: 12-24 cm Mode-dual: 15 ± 3; 22 ± 2
Jar 69 Range: 11-24 cm Mode-dual: 16 ± 2; 22 ± 2
Jar 70 Range: 14-25 cm Mode: 22 ± 3
Jar 71 Range: 13-19 cm Mode: 16 ± 3
Jar 72 Range: 7-21 cm Mode: 16 ± 3

M. Ocopa (A.D. 1580-1750)

The first occurrence of glaze, and the first occurrence of wheel-made ceramics mark this style. The ware is buff to tan; the incompletely fired cores a grey-buff. Temper is a colored particle sand, of red, grey-green, white and black particles, but also some

pieces have a reasonable quantity of gold-colored mica, the first time we have micaceous ware in the valley since the earliest units of Pirwapuquio. Cups and bowls were glazed on the interior with a glaze varying in color from brown to green-brown to green to yellow-green. Ollas and jars often were washed with a careless application of a rust-orange, rust-brown, rust-red-brown pigment. The population decline of the area must have ceased and the population must have been more or less stabilized in reducciones, as we can now see the cessation of the degeneration of ceramic technique, and the addition of new features which are kept in the ceramic inventory for the next few centuries to undergo the natural sorts of changes and attritions time brings. Ocopa sees the first appearance of a number of low-rimmed olla forms (Fig. 210) which continue on into modern times. In contrast to Llaqsa where the jars were the important diagnostic forms, the ollas and the open bowls are the important forms in Ocopa. The glazed, ring-based, wheel-made, low-relief decorated open bowl form 43 (Fig. 213) has great popularity during this period, and then essentially disappears. The large shallow open bowls (Forms 24,44,45) which are decorated with various designs in rust-brown and white (Fig. 214) instead of being glazed, also are popular only during the Ocopa phase and then die out. The small glazed 'coffee-cup' handled bowl (Form 46) also experiences this same popularity and decline. Jar neck appliques, which have been a continuing ceramic tradition since the Cochachongos phases of the Early Horizon, continue; now the only mode of decoration of this applique band is scalloping(Fig. 214).

Ocopa vessel forms:

Olla 15 Range: 30-40 cm Mode: 35 ± 5
Olla 20 Range: 16-24 cm Mode: 20 ± 4
Olla 21 four examples: 18,21,25,26 cm
Olla 22 four examples: 17,22,26,31 cm
Olla 23 Range: 13-23 cm Mode: 19 ± 4
Open Bowl 24 Range: 13-23 cm Mode-dual: 19 ± 5; 30 ± 2
Open Bowl 38 two examples: 15,16 cm
Open Bowl 43 Range: 7-22 cm Mode: 19 ± 3
Open Bowl 44 Range: 14-34 cm Mode-dual: 19 ± 5; 30 ± 2
Open Bowl 45 Range: 14-21 cm Mode: 19 ± 2
Open Bowl 46 Range: 9-13 cm Mode: 11 ± 2
Jar 5 Range: 12-26 cm Mode: 20 ± 4
Jar 7 Range: 16-20 cm Mode: 18 ± 2
Jar 52? one example: 10 cm
Jar 53 one example: 34 cm
Jar 58 two examples: 18,23 cm
Jar 64 one example: 26 cm
Jar 73 Range: 26-48 cm Mode: 36 ± 10
Jar 74 Range: 7-24 cm Mode-dual: 10 ± 2; 20 ± 4

N. Retama (A.D. 1750-1890)

During this colonial (and early republican) phase, there was an increasingly heavy emphasis on ollas with a corresponding decrease in popularity of open bowl forms. The number of jar forms was reduced with an emphasis on two forms, one of which has emerged as the single form of jar for the succeeding Modern phase. Painted decoration in our small sample has become increasingly simplified and of less importance to the finished vessel. The important forms are Jar 74 and Ollas 20-25. Jar neck appliques continue on in a minor way, still exhibiting scallops (Fig. 217) as in the Ocopa phase, but apparently die out in this phase after a tradition of some 2,000 years; the jar neck applique concept has had a remarkable durableness as a concept of jar decoration, surviving at least three total invasions and conquests with their consequent cultural reorganization, and enduring at least

two millenia. The ware is not discernibly different than Ocopa; ollas tend to be red-brown to brown while jars tend to be buff to tan; the paste is tempered with sand of red-green-grey-black-white particles, about 10-20%. This sand contains gold-colored mica which is particularly visible on all olla forms, but very little on the jars. Jar cores and olla cores tend to be incompletely fired, of a greyish cast. Many of the vessels continue to be wheel-made, but wheel-made shapes appear to be greatly reduced in overall quantity. Glaze, which was quite popular in Ocopa, becomes rare as a vessel treatment.

Retama vessel forms:

Olla 15 Range: 17-30 cm Mode: 20 ± 3
Olla 20 two examples: 16, 17 cm
Olla 21 four examples: 12, 17, 18, 18 cm
Olla 22 three examples: 17, 17, 18 cm
Olla 23 Range: 16-26 cm Mode: 20 ± 4
Olla 24 four examples: 13, 18, 18, 19 cm
Olla 25 four examples: 14, 18, 18, 20 cm
Enclosed Bowl 30 one example: 31 cm
Open Bowl 43 two examples: 17, 20 cm
Open Bowl 44 one example: 19 cm
Jar 5 Range: 19-27 cm Mode: 21 ± 2
Jar 7 Range: 11-21 cm Mode: 18 ± 3
Jar 58 two examples: 14, 17 cm
Jar 73 Range: 22-34 cm Mode: 30 ± 4
Jar 74 Range: 10-24 cm Mode-dual: 11 ± 1; 20 ± 4

O. Modern (A.D. 1890-1970/present)

Modern ware, as did Retama, has two main firing variations--an olla ware and a jar ware. The olla ware is a dark red-brown, with the core usually incompletely fired of a grey-black. Fire clouding is a frequent phenomenon. The surfaces are frequently washed with a rust-brown-red pigment. The temper is medium to coarse, with

particles up to 0.15 cm in size, of red, white, grey-green and black sand with a heavy gold-colored (iron pyrites?) mica inclusion, the temper constituting about 10-15% of the visible surface area. The jar ware appears to be only a firing variant; it is a lighter buff-orange to orange-tan generally and seems to have less micaceous inclusions, but the sand temper is the same. The same potter may be observed to make both ollas and chche jars seemingly from the same stock of clay. The enclosed bowl has a pouring spout on one side, and locally is known as a 'popcorn popper', although popcorn is rarely cooked or consumed, and the vessel is used in general cooking for a number of purposes. The ollas are generally undecorated, although one family of potters decorated their ollas with little groups of three to six punctates placed around the rims and also with little applique lumps with incision or punctates also placed around the cricumference of the mouth. Jar decoration of a typical sort is illustrated in Fig. 221; most chiche jars were slipped or washed with the red-orange-rust pigment. Some of these were deocrated with rapidly and carelessly applied circumferential and vertical straight lines, undulating lines, and zig-zags, and others were left only rust-colored.

Danielle Lavallee has described the contemporary potters of San Isidro de Aco, on of the two major current ceramic producing centers in the Jauja-Huancayo basin (the other being Quichuay on the other side of the valley from Aco). Her study (1967a) should be used to supplement these notes, particularly since she reports the production of some vessel forms which we did not recover from our

limited survey of contemporary refuse.

Modern vessel forms:

Olla 15 two examples: 20, 26 cm
Olla 20 two examples: 17, 19 cm
Olla 21 two examples: 14, 29 cm
Olla 22 two examples: 17, 24 cm
Olla 23 Range: 18-24 cm Mode: 21 ± 3
Olla 26 Range: 26-31 cm Mode: 28 ± 2
Olla 27 two examples: 17, 19 cm
Enclosed Bowl 30 four examples: 18, 21, 22, 22 cm
Jar 74 Range: 6-24 cm Mode-dual: 8 ± 2; 20 ± 4

Chapter 6

Comparative Material and External Relationships for the Ceramic Assemblages

A. Pirwapuquio

The Pirwapuquio materials seem rather clearly related to highland traditons; the best interrrelationships are between materials both to the north and to the south of the Jauja-Huancayo basin, though some of the coastal material directly west has some important similarities also. The fact that the Pirwapuquio materials are so clearly differentiated from any other known assemblage plus the fact that both to the north and to the south of the valley there is evidence for Initial Period highland ceramics indicates that there probably is an older, pre-Pirwapuquio unit that was not recovered.

One of the best published Southern highlands units which has some resemblance with Pirwapuquio is the Chanapata series (Rowe 1944; Yabar Moreno 1959; Patterson 1967a; Peterson 1968; Mohr-Chavez 1969). Since the Cuzco area is a considerable distance from the Jauja-Huancayo area, the ceramic assemblages differ but there are some significant relationships. Our own understanding of the sequence is based in large part upon the surface collections made by Rowe and Patterson (Rowe 1944; Patterson 1967a; Peterson 1968); clearly the excation by Edward Dwyer at Minas Pata and by Karen Mohr-Chavez at Marcavalle, Pikicallepata and other sites, when completed, may significantly alter the picture and the nature of the relationships seen between Huancayo

and Cuzco. The Marcavalle unit, viewed in terms of vessel shapes found in the Jauja-Huancayo basin, seems to be a mixed assemblage. The closest resemblances in terms of vessel shape seem to be with Pirwapuquio A and with Cochachongos E--one at the early end of the Early Horizon and one terminal Early Horizon. The decorative techniques have resemblances primarily with Pirwapuquio so that the apparent vessel similarities with Cochachongos E may be an artifact of the distance and consequent difference in ceramic history. The closest resemblances come between Pirwapuquio DEF and a unit defined as Chanapata pre-wall by Peterson (1968), which is apparently more or less equivalent with Chanapata as used by Patterson and Rowe (Patterson 1967a). This unit can be extracted from the illustrations of the original Chanapata report (Rowe 1944); the argument that Peterson makes, and with which I concur, is that one can usefully distinguish two major units in the excavations, even though all the material was lumped in one unit by Rowe. The Chanapata Pre-wall assemblage consists of the sherds from the strata laid down before the consturction of the structure in section E (Rowe 1944:12, Fig. 3), and consists of the sherds from strata C, D, E and certain portions of the mixed strata designated G. It is difficult to get at the strata provenience since the sherds were excavated in 30 cm. arbitrary levels, but this break between earlier and later units come between 60-90 cm in sections A, B and C. The ceramics in this Chanapata Pre-wall unit have both decorative and vessel correlations with Pirwapuquio DEF; the ceramics in the second unit, or Chanapata Structure unit, have certain

relationships not with Pirwapuquio but with the Cochachongos style which follows our Pirwapuquio style.

The Ayacucho area has a number of excavated sites, none of which has been reported fully enough to detail the exact relationship. MacNeish (1969:44) reports Initial Period ceramic assemblages from the area which would be extremely informative in determining the origins of ceramics in the Jauja-Huancayo sector. The best correspondences can be seen between Wichqana and Pirwapuquio. Wichqana has been described in a cursory fashion in several sources (Lumbreras 1959a, 1959b, 1960a; Flores Espinoza 1960; Lanning 1960); the most useful of these is the report of Flores Espinoza. From this report, it appears that we can divide Wichqana into two units--an early and a late--the early unit comprising the ceramics from levels DEF and the later unit comprising the ceramics from levels ABC (Flores Espinoza 1960:342). The ceramics illustrated (1960, facing p. 335) have relationships with a number of Pirwapuquio features; from the text it appears that most of the ceramics illustrated belong to the late Wichqana unit, so that Pirwapuquio can be said to be equivalent at least to late Wichqana then. There also seem to be materials from the site of Quichka Pata (Casafranca 1960) which are similar to Pirwapuquio. The site of Quichka Pata is composed of three distinct promontories--a north promontory delineated as Osno Pampa, a central one called Adoratorio Osna Era, and a south one which is Quichka Pata proper. From the text and from the illustrations, there appear to be several different units represented, but the scalloped rims illustrated from Quichka Pata Cut 6 are very similar to those from Pirwapuquio A.

Julio Espejo Nuñez and Ramiro Matos Mendieta have both worked with Early Horizon ceramics from Huancavelica, but illustrations are not available and the verbal descriptions (Lanning 1960:549; Matos Mendieta 1960:314-318; Lumbreras 1959a:71-72, 1960a:139-140) do not supply enough information so that one can indicate more than the fact that they sound similar. One of the problems has been the rather loose use of the term 'Chavinoid'; for example, to many 'Chavinoid' means ollas with comma-shaped rims and cane-stamped and punctate decoration. Clearly the term 'Chavinoid' used in this sense encompasses any ceramic assemblage thought to belong to the Initial Period or Early Horizon. We have followed the school of thought restricting the use of the term to refer to the ceramic style which contains designs associated with the stone sculpture at the site of Chavin de Huantar. We were able to observe the 'Chavinoid' collection from the site of Atalla in Huancavelica made by Julio Espejo Nuñez; the vessel shapes and the decoration and the ware were strikingly similar to Pirwapuquio DEF. Two features of the Atalla style are different--many of the circles are not cane-stamped but are incised, and are of much larger diameter than Pirwapuquio DEF (up to 2.5 cm. in diameter) and there is rare rocker stamping in Atalla (as also in Wichqana) while this type of decoration is lacking in our Pirwapuquio collections.

The confusion of exactly what Chavin is also extends to the Jauja-Huancayo basin. Espejo Nuñez is quoted by both Lumbreras (1960a) and Lavallee (1967b) as saying that the site of Tunanmarca has Chavinoid ceramics. However Espejo Nuñez kindly allowed us to look at his

collections, which proved identical to the collections we made at the site, and which were clearly Llaqsa (e.g. post-conquest, dating roughly A.D. 1533-1580). Ramiro Matos reports that the puna above the basin is full of 'Chavinoid' sites; he had no collections available from these sites, but described the material as being similar to the ceramics from San Blas and Atalla.

Since the Central Coast area is fairly close, and a relatively large amount of research has been done in the area, it was hoped that there would be some fairly clear and distinct trade or diffusion relationships between the central highlands and the central coast. Particularly since Ancon has been excavated by so many different expeditions, we hoped to find some evidence at least at this site, but Harry Scheele (Ph.D. dissertation in preparation, Harvard 1970) has made a quite detailed sequence for the site and the Central Coast area, and it would seem that there are only the most general sorts of similarities, such as the use of zoned punctate decoration, cane-stamped decoration, zoned bichrome decoration, and so on--though these decorative techniques are also common in Pirwapuquio, the vessels on which they are applied, the location of the design on the vessel, and the types of designs utilized varies quite considerably, so that we can only say that they are both taking part in the same decorative traditions of zoned punctation, cane-stamping, and zoned bichrome. Patterson (1968a) has suggested that the place of origin of these decorative techniques may be the North Highlands, during the late Initial Period. There seems to be the same order of correlation between

Curayacu and Pirwapuquio, though we can see a few more specific correlations. On the basis of the units defined by Lanning (1960, 1961), there is not much correlation between Curayacu AB and Pirwapuquio, but there is a reasonable mount of correlation between Curayacu CD or 3-4 and Pirwapuquio BC and DEF in vessel form, and to a somewhat lesser degree, in decorative technique. In addition, the fragments of seated figurines we have from Pirwapuquio appear nearly identical with the figurine illustrated by Engel (1956:102, Fig. 9:f) from the 'Chavinoid' level at Curayacu, which presumably should correspond with Lanning's phases CD or San Bartolo unit. In the materials from mid-valley in the Lurin valley survey conducted by Patterson and others, the site of PV48-349 (Browman 1968), tentatively identified as late Initial Period or early Early Horizon, shares both vessel forms and decorative features with phase A materials of Pirwapuquio. In collections from site PV50-16 near Huarochiri, collected by Thatcher and Hellmuth, there was one example of the scalloped rim found in Pirwapuquio and Quichka Pata units among some sherds identified as possibly Early Horizon.

In the North Highlands, the site of Kotosh near Huanuco still marks the southern limit of the secure identification of Chavin style objects in the sierra. There are some important similarities between Kotosh and the Jauja-Huancayo basin, primarily in vessel shape; but on the basis of the sequence given in the Japanese Kotosh report (Izumi and Sono 1963), many of these correlations could not be precisely placed. Fortunately the report is filled with so much tabular data that one can re-order the data on the basis of several seriational criteria.

Franquemont (1967) suggested a preliminary reorientation of the Kotosh material on the basis of design and decorative technique, and arrived at an alternative sequence which could be supported seriationally; another re-ordering can be made based primarily on vessel seriation that is very close to the seriation based primarily on decorative technique. These two alternative orderings of the Kotosh materials suggested that levels DEF of Area U and level 4 of Area L could usefully be considered as roughly contemporaneous units of the early half of the Early Horizon. Pushing the evidence rather hard, one can successfully argue that there are some important congruences between Pirwapuquio and Kotosh DEF/4 in vessel inventory, which are lacking in either earlier or later Kotosh phases.

B. Cochachongos

There is not much that we can indicate in the Chanapata series that relates to Cochachongos. The vessel categories of Chanapata Structure phase of Chanapata are most similar to those of Cochachongos CD. There is a figurine with punctate neckband from unit B, level 90-120 cm. (Rowe 1944, Fig. 14-14), which is quite similar to the Pirwapuquio and Cochachongos figurines. It also has the dual holes drilled for hanging as do the Pirwapuquio and Cochachongos examples. In Rowe's collections in the Peabody Museum in Cambridge, there is a clay top much like our Cochachongos examples. Chanapata also has handles with long parallel incisions (Rowe 1944, Fig. 14-8, 10). The modeled ornaments of Chanapata (Rowe 1944, Fig. 11) bear a certain

resemblance to our one example from Cochachongos (Fig. 71). The unit known alternately as Derived Chanapata, Pacallamocco or Wimpilley (Rowe 1944, Patterson 1967a, Peterson 1968) has some red on white sherds which superficially resemble Cochachongos (c.f. Rowe 1944, Fig. 15-11). However when we looked at this sherd in the Peabody Museum collection, it was found that the ware and pigment were completely foreign, but even more distinctive is the fact that this decoration occurs on the inner lip of a large flaring necked jar; this flaring neck approaches an Inca aryballoid in characteristics. Thus the design occurs on a vessel and on a location on the vessel completely unknown in Cochachongos so that the relationship between the two is not much more than the fact that they are both red and white styles.

The only relationships seen with the Ayacucho area at this time are in the few possible trade sherds mentioned in Ch. 5. In Cochachongos CD (Fig. 62:q) there were three foreign sherds of a black ware covered with a glossy red polished slip which sound like Rancha sherds from the descriptions given by Lumbreras and which looked like the Rancha sherds in the Lowie Museum at Berkeley. In Cochachongos DE there were four sherds (Fig. 69:c,e,i) which may be Chupas style, but since Chupas has not yet been well described they may not be. The Jauja-Huancayo Cochachongos examples are on a blackish ware that is fairly heavily micaceous; the incisions are filled with white post-fired pigment, and the designs are in red and white resin pigments. Chupas ware was first described as a post-fired pigment on a black ware at the site of Wanchac Grande by Casafranca

(1960:327). Lumbreras, in a letter to Rowe in 1966, described the style at greater length, based on the excavations of Augusto Cruzat Añaños at the site of Quichka Pata or Chupas. The resemblance between the style as described by Lumbreras and the pieces we have illustrated suggest the possibility of trade wares, but the suggested correlations for Chupas with Ocucaje 6-8 (Patterson 1967b; Menzel, personal communication) are somewhat too early, by a century or so, for this sort of interchange.

There are a large number of trade sherds that have clear and distinct South Coast origins (Figs. 55,60,61,62,69). Menzel, Rowe and Dawson have looked at the drawings of most of these and concluded that for the most part the have Ocucaje 9 and 10 relations (Menzel, personal communication). Rather than the Ica valley, it appears that the trade was with centers somewhere between Cañete and Paracas Necropolis. For example, the type of grater bowl illustrated in Fig. 61:a is found in Cañete at the Los Patos site (Wallace 1963, Pl. 6), at Paracas Cavernas (Tello 1959, Pl. 9b; Kroeber 1944, Pl. 41b), at Chincha in the Pinta phase (Menzel 1960:92-95), in Pisco at the Tambo Colorado site (Engel 1957, Figs. 4,5) and a number of other sites, but the style of grater bowl at Ica and Nasca (Menzel, Rowe and Dawson 1964) lacks this type of gouge incision and rather appears to be done with fine-line incision. The negative ware (Fig. 60) apparently is not as areally distinctive; similar examples can be seen in reports at both the south and the north end of the Paracas influenced area. Perhaps the most telling example, however, is the enclosed bowl illustrated in Tello 1959, Pl. 9a, which

appears to be a late Cochachongos trade piece from the Jauja-Huancayo basin in a Paracas Necropolis grave lot. Lanning identified this vessel tentatively as a Jahuay 2-3 piece (Menzel 1960:113), and there are a number of other similarities between the decorative features of Jahuay 2-3 (Lanning 1960:403-404 and Pl. 14:a-c) and Cochachongos so that a reasonable amount of interchange between the Jahuay style of the Cañete, Chincha and Pisco valleys and the Cochachongos style of the Jauja-Huancayo basin should be expected. This trade vessel (Tello 1959, Pl. 9a) adds to the evidence placing many of the incised and resin-painted sherds found in the Cochachongos phases as Ocucaje 9 and Ocucaje 10, as Menzel, Rowe and Dawson (1964:176) have identified the vessels with which it was associated with at Paracas Cavernas as being mainly Ocucaje 9 pieces. I would argue that the importance of Paracas-Ocucaje has been somewhat underrated owing to the overshadowing influence of Chavin. But in the sierra, south of Kotosh, Chavin seems not to be found; rather Chavin-as-reformed-and-reinterpreted at Paracas-Ocucaje is found at Huancayo in Early Horizon 8-10, at Ayacucho in Early Horizon 6-8, at Pucara in Early Horizon 10 and Nasca 1, at Cuzco somewhere between Early Horizon 8 and 10, at the Kalasasaya of Tiahuanaco also somewhere in the Early Horizon 8 to 10 interval. In a crude sense, during the Early Horizon Chavin influenced the Northern Highlands, the North Coast and the Central Coast, while Paracas influenced the Central Highlands, the Southern Highlands and the South Coast.

There is one further possible relationship between Cochachongos

and the South-Central Coast which should be noted, though it is an extremely tenuous sort of correlate. The polychrome in Cochachongos phases CD (Figs. 56, 59:a, 65:a-d) is sufficiently rare and executed in design patterns sufficiently different from the general Cochachongos pattern that we might reasonably postulate external influence if not origin. There seems to be a genetic relationship between the Cochachongos polychrome and the polychrome Engel calls Lapa Lapa from the site of Lapa Lapa in Chilca (Engel 1966a: Figs. 32,42) and from locality 32 at Tambo Colorado in Pisco (Engel 1957, Fig. 5-21). Any relationship, however, is likely indirect, for a trade sherd of the Cochachongos variety of this polychrome was collected from the site of San Blas by Hermilio Rosas and Julio Espejo Nuñez, and Patterson (personal communication) notes that the Lapa Lapa ware from the site of Lapa Lapa seems to be within the range of variation for the Miramar style of the Central Coast.

On the Central Coast there are two examples of apparent Cochachongos style trade sherds. One of these is found with Miramar pottery at Ancon (Lanning 1963, Pl. 11-15), and the other is from site PV48-338A in the Lurin valley (Browman 1968), a site which also seems to have early Early Intermediate Period occupation. The sherd from the Lurin valley has a design most typical of Cochachongos E and also those pieces of continuing Cochachongos style found associated with the early Early Intermediate Period Uchupas style assemblages in the Jauja-Huancayo basin; the sherd itself has been modified into an abrader and may have been picked up elsewhere and brought to the site

so that it is not necessarily associated temporally with the rest of the ceramics from the site. The sherd from Ancon is not large enough to make an intelligent guess as to its chronological position in the Cochachongos style, but its unmodified fragmentary condition would certainly suggest that Cochachongos trade ware bowls were still in existence as late as the Miramar occupation of Ancon. Perhaps Ancon was one of the coastal traders in Spondylus shell reaching the Cochachongos area; Ecuadorian Spondylus is found in the form of artifacts at the site (Matos Mendieta 1968a). Very little is known about the area in between the Central Coast and the Central Highlands. We have previously remarked that the notched rims (Fig. 69:l,m) found in Cochachongos D are of a ware foreign to the Jauja-Huancayo basin. A rim similar to these was found in the Huarochiri area, nicely between the coast and highlands, at PV50-105 by Thatcher and Hellmuth; the dating of the site is insecure, but is suggested as possibly Early Intermediate Period.

To the north of Jauja in the highlands, rather than considering the sites separately, it seems useful to look at San Blas, Chavin and Kotosh at the same time with respect to two different traditions--one of incised and stamped decoration and the other of painted decoration--for the kinds of relationships we can see between Cochachongos and these sites is of roughly the same order for all of them. A necessary concomitant, in fact rather a prerequisite, is an explanation of the temporal relationships of the two traditions, particularly as exhibited by the collections from the salt mine of San Blas by Lake Junin.

Since Nomland (1939) and Kroeber (1944) first reported and illustrated the materials collected by L. W. Henry at San Blas, there has been a natural tendency to treat the incised component as temporally distinct from the painted component. This is true in a limited sense, for the cane-stamped, punctate and other stamped and incised designs do appear in earlier variants before the painted tradition appears, and the painted tradition does continue after the incised and stamped tradition disappears, but what is obscured in this sort of analysis is the fact that the two traditions are also contemporaneous and viable decorative alternatives during part of the later half of the Early Horizon, and there is no a priori reason to assume that the materials represented in the Henry collections and illustrated by Nomland and Kroeber might not be contemporaneous. In order to fully assess the relationships, one must consider the history of the traditions at better documented sites such as Kotosh and Chavin; in addition we should point out that we were considerably aided in our assessment of San Blas by access to some additional collections from San Blas graciously made available by Espejo and Rosas.

At the site of Chavin, there are three major works that contribute to our understanding of this problem--Bennett 1944, Tello 1960, and Lumbreras and Amat 1969. Turning to Bennett's work first, on the basis of similiary seriation of frequency patterns, development patterns and occurrence patterns we can roughly define three macro-units--the first including the materials from cuts CH-9 to CH-14, the second CH-15, and the third the San Jeronimo style specimens from CH-2,3,4,11,16 and

also the burials in CH-3,4,8,13. It may well be significant that the bulk of the San Jeronimo style specimens come from cuts CH-2,3,16, all of which are in the northwest corner nearest to the modern pueblo of Chavin where there is an Early Intermediate Period occupation (Rowe, personal communication). The argument based on Bennett's report alone is difficult to follow; a much more satisfying argument can be made based on Tello's (1960) stratigraphic Cut 1 and Edifice E sub-soil to surface contrasts. A careful and meticulous reading of Tello indicates that the material from Cut 1, Stratum C consists of the following illustrations (Fig. 146:g; 149:a-e; 154:l; 155:a,b,d,f; 156:e,f; 159:a,c-e; 160:a,d,f-h; 161:a,d-g; 162:a-c; 163:a,b; 166:h); that the material from Cut 1, Stratum B or C consists of (Fig. 154:b,c,f; 158:a,d,j-l,n-p; 161:f,k-n); and that the material from Cut 1, Stratum B consists of (Fig. 145; Fig. 146:c-f,h-i; 184:c,e,g,i; 151:b,d,h; 152:b-d,f,h; 156:h-j; 164; 167:a-d; 169:a,b; 173:f). Thus it becomes clearly evident that the material commonly thought of as 'Chavin' comes from Stratum C, while Stratum B contains material in the stamped and incised San Blas style. Contrasting the subsoil collections of Edifice E to the collections from the surface of Edifice E, it can be seen that the subsoil collections consist of both the units extracted in Cut 1, while the surface collection contains most of the examples of our third, painted unit (Fig. 173:a-e,g,h). The chronological sequence given by Lumbreras and Amat (1969:171) further substantiates this; the units they define for the Chavin aspect begin with Rocas, going through Ofrendas, Wacheqsa, and Mosna before reaching Chavin V or San Blas.

Clearly then their evidence suggests the painted Mosna style and the San Blas style post-date the Chavin ceramics with relationship to the stone sculpture, the Ofrendas and Wacheqsa styles. The Ofrendas and Wacheqsa units, on the basis of the evidence from Tello and Bennett, appear to be good units, but the Rocas unit, on the basis of evidence from Bennett, Tello, the Kotosh sequence, various works by Espejo Nuñez, and even their own report, seems to be a mixture of two chronologically distinct styles. It is evident from their report that they believed cane-stamped circles, S-stamp decoration and other stamping and incision should all belong to only one chronological unit; hence all ceramics with these features have been placed in the Rocas unit. However, from our perspective there are clearly two types mixed together--the early Rocas style material which does have the Kotosh relationships that Lumbreras and Amat see for this phase, and the late San Blas style material which is a derivative of Rocas, but several centuries later. These two types can clearly be separated, not only on the basis of the evidence already summarized, but on the basis of the information and illustrations in their report also. Rocas Gris Pulido is the most numerous of all four types of Rocas, and has two different ware and temper sub-types--Sub-type A which is decorated with cane-impressed and stamped circles mainly (Lumbreras and Amat 1969, Pl. 2:a-h) and Sub-type B which is decorated with imbrication, some post-fired red pigment and so on (Lumbreras and Amat 1969, Pl. 3:a-c,g-k). Inspection shows that Sub-type A ware and decoration are the same as that usually called 'San Blas' while the Sub-type B ware contains the elements of what they define as Rocas.

In the Kotosh sequence (Izumi and Sono 1963) it is clear that Kotosh Chocolate Brown (which contains the stamped designs like San Blas) and the Higueras Red and Kotosh White on Red are quite late in the Early Horizon sequence. The Kotosh White on Red is quite interesting as it is the same, in part, as the stamped and impressed Kotosh Chocolate Brown, only with the designs executed in paint instead of being stamped or impressed (Izumi and Sono 1963, Pl. 91-c). Some of the Kotosh White on Red designs closely resemble, in a mirror image way, the Cochachongos Red on White designs.

This rather long digression into the problems of the chronological orderings of sites in the highlands north of Jauja has been necessary to indicate where the materials from the San Blas salt mine fit into the Early Horizon sequence and additionally to make the implications of the Cochachongos trade ware in the San Blas assemblage more meaningful. The outlined stamped and incised dots, circles, lazy-S's, backward C's found on the unpainted stamped variety at San Blas can now be compared to the design treatment of Cochachongos ABCD; it seems evident that in many respects the designs on Cochachongos are painted versions of the stamped San Blas style, and it seems possible to derive the intellectual stimulus for Cochachongos from the highlands to the north. The painted red on buff style of San Blas is in part contemporaneous with the stamped style; while it possibly was stimulated by contact with the red on white Cochachongos style, we cannot overlook the impact of the red on white decoration from Chavin de Huantar upon the San Blas area. Whatever its origin, the red on buff variant of San

Blas certainly outlasts the stamped variety, and spreads to the south and east to Tarma (Wells 1940:353) and to the north and west, having influence on styles as far away as the Huaras style of the Early Huaylas unit of the Callejon de Huaylas (Vescelius, in Lanning 1965:140). The trade ware found at the site of San Blas has not been published; it is in collections made by Espejo and Rosas at the site, and which they kindly let us make notes on. There are two definite trade sherds, and a third possible, in these collections. The first sherd is the red and black on cream-white polychrome found in Cochachongos CD, with a design of nested or concentric triangles and zig-zags such as seen in Fig. 56-bottom and Fig. 65:a, b, d. The second trade sherd is a Cochachongos specimen identical to the red on white whole bowl illustrated in Fig. 64. The third trade sherd is not so clear; it is clearly foreign to the San Blas assemblage, but the ware is not a Jauja-Huancayo ware, though the decorative technique might be related. This specimen is black on an orange paste; the decoration is pendant lines running from the rim such as the sherd illustrated in Fig. 65:f, but without the horizontal line running across the bottom joining them; such designs are found on Cochachongos DE sherds. Direct interrelationships then as indicated by all three sherds is during Cochachongos D, the same time that we have seen the greatest influence from the Paracas Peninsula area into the Jauja-Huancayo basin, and the time we see the possible Chupas sherds from Ayacucho turning up in Huancayo. During Early Horizon Epochs 9 and 10, then, there is considerable evidence of wide spread contact and interchange of ideas and material goods--between

Lake Junin and Huancayo, between Huancayo and Paracas, between Huancayo and Ayacucho, between Huancayo and the Lurin and Ancon, between Ayacucho and Paracas/Ica, between Cuzco and Ica, between Pucara and the South Coast, and between Tiahuanaco and the Ica area. The interrelation between Lake Junin and the Jauja-Huancayo sector is further substantiated by the occurrence of a probable San Blas red on buff trade sherd in Uchupas phase A (Fig. 74:p).

C. Uchupas

When we look to the south of the Jauja-Huancayo basin in the sierra and on the coast, the question of the relationship between the basin, the Topara tradition of the Cañete-Chincha-Pisco area, and the Caja series of Huancavelica become important. The Carmenca ware from Chanapata (Rowe 1944, Fig. 16:3-8), Cuts A and B, 60-90 cm. depth, and from Wimpilley, seems to have motifs similar to the Caja style from Huancavelica and the Uchupas style of Jauja-Huancayo. Rowe (1944:20) originally suggested a Late Intermediate Period date for this material, but since has changed his mind; according to Ned Dwyer who is writing up a new sequence for the Cuzco region from the site of Minas Pata, the Carmenca material definitely looks like Early Intermediate Period ceramics (Dwyer, personal communication).

The Caja ware of Huancavelica covers a long period of time; it has similarities with both the Uchupas style and the succeeding Usupuquio style in the Jauja-Huancayo basin. For example, the sherds illustrated as being Caja by Lumbreras (1959a, Pl. 6:k-m) are very different from the Cajamaterial collected by Matos Mendieta and Espejo Nuñez at the

site of Orjon Concha which Espejo kindly let me take notes on, but both of these different ceramic styles are included in what Matos Mendieta (1958) has defined as Caja. In the Orjon Concha collection there are some jars like the Cochachongos Jar 15, which is a particularly significant diagnostic trait in Cochachongos which carries over in rare examples in Uchupas A. A portion of the Orjon Concha Caja has designs and vessel shapes which are nearly identical to the Uchupas designs (e.g. Fig. 74:h-j; Fig. 75:e,f; Fig. 76:f,g,i,m,n); the remainder were similar to designs of Usupuquio phases ABC. As noted previously, however, the design pigment and the ware, though quite similar to Uchupas, is distinct enough so we can eliminate the possibility of one or the other assemblage being composed of trade wares.

The Topara style is characterized by a very fine, thin, nicely finished ware; "on the whole the style derives it decorative effect from its graceful forms and the fineness and delicacy of the wares." (Lanning 1969:397). Lanning (1960:585) has speculated that the Caja ware of Huancavelica represented an eastward diffusion of the Topara tradition into the highlands at the same time it was diffusing northward and southward along the coast. I would concur with this suggestion, since we now have good evidence for contact between the coastal area where Topara developed and the Jauja-Huancayo area as early as Ocucaje 8 Or 9, since deliberate purplish firing discoloration of the surface in limited areas leaving defined orange bands near the rims is a Topara trait (Menzel 1960:109-112) which occurs in Uchupas rarely but commonly

in the succeeding Usupuquio AB phase, and since the Uchupas ware itself suddenly appears fully developed as a very fine, thin, carefully shaped and carefully fired ware. Explicitly, I think there is good evidence for positing the primary impetus for both Caja and Uchupas as originating from the Topara tradition influence. This influence is by no means one way, for I think that the new red on white bichrome of Jahuay phase 2 of the Topara tradition (Menzel 1960:103-109; Lanning 1960:397-404) can be directly attributed to Cochachongos influence; we already have pointed out the whole vessel in the Cochachongos style which appears in the grave lots of Paracas Cavernas (Tello 1959, Pl. 9a). The fish-head motif of Uchupas C is no doubt derived from coastal vessels similar to the on illustrated by Engel (1966b:195, Fig. 55d) from Cabezas Largas.

North of the Jauja-Huancayo basin, relationships are not quite so explicit. We have already referred to the possible San Blas trade sherd in Uchupas A in the discussion above on Cochachongos; other relationships can be seen in a general way with some materials further to the north. Except in the most general sense, there is little relationship seen between the Jauja-Huancayo area and the Central Coast area. Of these, the Lumbra and Baños de Bozo style materials (Patterson 1966a; Willey 1943) have some rather general and non-specific similarities. The San Jeronimo style, as found at Chavin (Bennett 1944, Fig. 31:a-c,g,h,k) has more similarities in motif to the Uchupas style; one should clearly not that the San Jeronimo style defined by Bennett for Chavin is quite different than the San Jeronimo style from the type

site San Jeronimo (Bennett 1944, Fig. 31:f,i,j,l-o) which Bennett (1944:90) thought was a local Incaic style. The San Jeronimo style as illustrated for the site of Chavin is also found at Ticipampa in the Callejon de Huaylas (Muelle 1957:55-56), probably equivalent to Vescelius's Huaylas 2 or 3.

D. Usupuquio

The Usupuquio phases seem to be ones of internecine hostilities and isolation in the Jauja-Huancayo basin; even pushing the data hard it is difficult to come up with similarities of even the most general sorts with contemporaneous units in other parts of Peru. As described above, the Caja unit has a number of correlations with Usupuquio. Patterson (1966b:774) has seen a collection of late Caja ceramics from the site of Atalla and believes there exist possible resemblances with the Lima style as well. Nothing in the vessels at Chanapata resembles the Usupuquio ceramics very closely, but the two llama figurines (Rowe 1944, Fig. 14:12,15) are like those illustrated in Fig. 88 from Usupuquio; the llama figurine from Chanapata in Fig. 14:15 has an applique udder with three teats. According to Lumbreras (1959b: 224), Caja ceramics are found at several sites near Ayacucho, including the site of Huarpa.

Some comment should be directed toward previously defined Early Intermediate Period units in the Jauja-Huancayo basin. Kroeber (1944: 98) defined a 'Huancayo' ware, which he called Black-on-Red ware, from the collections made by Lila O'Neale in 1931. His definition is misleading for the reason that the material he includes in this

definition encompasses both Early Intermediate Period Usupuquio ware and late Middle Horizon Quinsahuanca ware (Kroeber 1944, Pl. 38:a = Quinsahuanca; Pl. 38:b-n = Usupuquio). The ceramic assemblage which Fung Pineda (1959) found at Ledig-Tschopik Shelter 1 was for the most part Usupuquio style ware, though apparently some Cochachongos style ware was included. Her 'Callavallauri' decorated ware appears to be Usupuquio ware; Matos Mendieta (Fung Pineda 1959:268) identified the ware as Caja-like. In Stratum 4, which was thought to be preceramic, three Cochachongos sherds were found--one undecorated (Callavallauri Plain) and two red on cream-white decorated (Callavallauri de Base Clara). As a ceramic series, Callavallauri contains both Early Horizon (Cochachongos) and Early Intermediate Period (Usupuquio) wares. Shea (1969:74) suggested that his 'Well-Fired' class of ceramics might well be Early Intermediate Period ware, that is Usupuquio style ware, but the rim profiles as well as his limited description makes it appear most likely that this ware is late Middle Horizon Quinsahuanca ware.

E. Huacrapuquio

There is only one clear external influence on Huacrapuquio; this is the Huarpa ceramics from Ayacucho. Comparing the Huacrapuquio ware in Figs. 98, 100, 102-105 with the Huarpa sherds illustrated in Bennett (1953, Pl. 12), Lumbreras (1959a, Fig. 5; 1960b, Pl. 16) and Rowe, Collier and Willey (1950, Fig. 46), it is clear that the two are very similar though by no means identical. Nevertheless one must stress that during the Huacrapuquio phases there is a sudden, prolonged

influence which has resulted in a pronounced modification and parallelism in the ceramic style. This influence was terminated, in a sense, only with the actual conquest of the valley by the Huari empire.

F. Calpish

The earliest Middle Horizon ceramics that we can identify in Calpish seem to be from Epoch 1B, thus suggesting that the Jauja-Huancayo basin was not conquered until Epoch 1B. Since there are Epoch 1B trade pieces in the Callejon de Huaylas and nearby sites such as Wilkawain, it appears that there was an extensive northern campaign carried on in Epoch 1B.

The fancy trade ware associated with Calpish AB (Figs. 114, 115) is mainly Middle Horizon Epoch 2, though there may be a few Epoch 1B pieces. The decorative style of four sherds (Fig. 114:a-c, g) is different than the others; it appears most similar to the Ocros B style described by Menzel (1964)--compare with Lumbreras 1960b, Pl. 14; Bennett 1953, Fig. 21:i,l-o. There are two different incised styles represented--one a fine line incision (Fig. 114:e), the piece illustrated done on a blackware, probably representing the tail of a feline executed on a kero; and the other a crudeincision (Fig. 115:i). Similar crude, postfired incision is illustrated in Lumbreras (1960b, Pl. 8); there is a similar sort of pre-fired fine-line incision on a piece from Wilkawain which Menzel (1964, note 126) has dated as Middle Horizon Epoch 1B. The sherd illustrated in Fig. 114:i is what Bennett (1953) and Menzel

(1964) have called Geometric-on-Light, and which apparently originates somewhere north of the Jauja-Huancayo basin, perhaps in the Huamachuco-Cajamarca area (Menzel 1964:72). The sherds illustrated in Fig. 114:h, j and Fig. 115:a-f are clearly (on the basis of Menzel 1964, 1969) Viñaque or Viñaque-related sherds, and hence are all Middle Horizon Epoch 2 Huari trade pieces. The two sherds in Fig. 117:a, b are of a kaolinite ware and are almost certainly Cajamarca trade sherds from somewhere in the Huamachuco-Cajamarca area (compare McCown 1945:397, Pl. 22:ee); the bowl in Fig. 117:c is a typical local ware, with a design influenced by Huari but a vessel shape derived from the Cajamarca-Huamachuco area. All the trade sherds in Fig. 116 from Calpish B and BC appear to be Middle Horizon Epoch 2 sherds, Viñaque or Viñaque-related.

The matte decorated ware in Calpish A (Figs. 123, 124) has features which are not exactly replicated in any source, but which have a number of features in common with Ocros B as described by Menzel (1964) so that Calpish A most likely is an Epoch 1B occupation unit. The matte decorated ware in Calpish AB (Figs. 125, 126) has features which Menzel (1964) describes as conservative Middle Horizon Epoch 2A Chakipampa-derived and also Middle Horizon Epoch 2A Ocros-derived, so the Calpish AB unit most likely correlates with Middle Horizon Epoch 2A. The Calpish BC units are natural evolutionary variants of Calpish AB and so can be roughly dated as Middle Horizon Epoch 2B.

There are some comments to be made on some of the published illustrations and references to the Middle Horizon aspects of the Jauja-Huancayo basin. Menzel (1964:39) treats the whole pots illustrated by Flores Espinoza (1959) from Wariwilka as a single grave

lot, but close reading of the text indicates that these vessels came from more than one tomb. In discussing this problem, Menzel (personal communication) agreed that on the basis of the published report the Flores Espinoza material was not a single grave lot, but she indicated that in 1958 when she had made notes on the collection that Flores Espinoza had thought they were one grave lot. The problem is mainly academic, though, since Menzel states they are all Middle Horizon Epoch 2B pieces. Vessel 4 of the Flores Espinoza collection is described but not illustrated in her report; the piece is illustrated instead by Lumbreras (1959a) among some other pieces from the Galvez Durand collection of Huancayo. Because of the Pachacamac-related vessels (Flores Espinoza 1959, Foto 2; Lumbreras 1959a, Pl. 9a), Menzel (1964:38) concluded that "in the highlands, Pachacamac influences evidently rival Viñaque ones at Huancayo." On the basis of the evidence available in 1964, this was a reasonable conclusion, but on the basis of the additional evidence available today, it appears that Huari influences were dominant, that the second most important influence came from the Cajamarca-Huamachuco area, and that the Pachacamac-related pieces at Wariwilka are unqiue and likely only represent offerings to the oracle there and not any important coastal influence.

The Federico Galvez Durand collection of G.U.E. Santa Isatel of Huancayo presents us with a problem. Espejo Nuñez and Lumbreras, who looked at the collection during the 1940's and 1950's, both reported that the pieces in the collection were almost totally without provenience. From notes in the history of the school, it is apparent

that Galvez Durand collected as far away as Nasca and that he visited and purchased some vessels in Ayacucho from the site of Huari. Most of the Middle Horizon vessels were presumably excavated from a series of tombs near the oracle temple of Wariwilka. Hence, aothough there are some very interesting Middle Horizon pieces in the collections, some of which have been published (Lumbreras 1959a; Suarez Osorio 1967), one has to use the collection exceedingly cautiously, and uncertainty will always remain as to whether the particular piece in question was excavated from the Jauja-Huancayo basin or purchased elsewhere.

There seems to have been considerably more traffic with the northern sierra than previously realized. Shea (1969) speculated that there should be some interrelation between the oracle at Wariwilka and the oracle of Catequilla near Huamachuco. It is now possible to offer some evidence in support of this hypothesis or for some nature of relationship with an important religious and political center in the Huamachuco-Cajamarca area. We have already pointed out the Cajamarca style and the Geometric on Light style trade sherds in our collections which originated somewhere in that area. In addition we may add five feline heads [two from the Ñahuinpuquio temple, one from the Calpish temple, one from the Wariwilka temple (Shea 1969:189, Fig. 4), and one from an occupation site] and a whole vessel with a feline headdress on a human head (Matos Mendieta 1967:14, upper right) from Wariwilka. The whole vessel can nearly be identically duplicated in collections from Huamachuco (Seler 1893, Pl. 26:16,22); the various feline heads appear to be fragments of similar vessels or of the vessel type from the

northern highlands illustrated in Muelle and Blas (1938, Lam. 39b) and Tello (1923b, Fig. 94).

G. Quinsahuanca, Matapuquio, Arhuaturo and Arhuaturo-Inca

During Quinsahuanca, Matapuquio and Arhuaturo phases, the closest resemblances to external areas are with regions down river, the Huancavelica and Ayacucho areas. Many of these similarities are so vague and general that I would hypothesize that they are artifacts of somewhat parallel development in ceramic styles after the collapse of the Huari empire, rather than indicating any important continuing contact, particularly since the late Middle Horizon and the major portion of the Late Intermediate Period seem to be one of the periodic epochs of retrenchment, with raiding and feuding leading to isolationism and self-interest.

The types of correlations that possibly might exist have been in large part obscured by the differences in typological analysis between this study and previous studies in the area. Two wares have been defined for the area for the period of time following the collapse of the Huari empire--"Mantaro de Base Clara" and "Mantaro de Base Rojo". Our additional information and different method of analysis suggests that "Mantaro de Base Clara" includes Cochachongos, Usupuquio, Huacrapuquio, Calpish, Quinsahuanca, Matapuquio and Arhuaturo style ceramics, and that "Mantaro de Base Rojo" includes Calpish, Quinsahuanca, Arhuaturo, Arhuaturo-Inca, Viques and some Inca style wares. Hence, when "Mantaro de Base Claro", for example, is compared favorably with

Coras and Huarpa II, it is obviously very difficult to know what aspect of the Jauja-Huancayo basin wares is being compared, and exactly what it is being compared with.

Some of the previously published illustrations of 'Mantaro' style vessels appear to be of our Quinsahuanca style--the open bowl illustrated by Lumbreras (1959a, Pl. 11s) may be a Calpish C piece, the two necked jars and the spouted bowl illustrated by Matos Mendieta (1959, Pl. 5:a,b) and Lumbreras (1959a, Pl. 11:o) are either late Calpish pieces or early Quinsahuanca pieces, and the double-necked jar illustrated by Matos Mendieta (1959, Pl. 5:c), Lumbreras (1959a, Pl. 11:r) and Suarez Osorio (1967:6) is either late Quinsahuanca or more probably Matapuquio. Matos Mendieta and Lumbreras, in various of the publications cited, see relationships between the post-Huari styles of Huancayo and the post-Huari styles of Ayacucho and Huancavelica, particularly Coras in Hunacavelica and Huarpa II in Ayacucho. The closest resemblances, on the basis of verbal descriptions and three sherds illustrated, seem to be between Pillpintuyoq near Ayacucho (Lumbreras 1959:89-90) and Quinsahuanca ware.

The difficulties in positing precise correlates between Matapuquio ware and wares in Huancavelica and Ayacucho have already been pointed out. Coras ware, as described and illustrated by Matos Mendieta (1958, 1959) and Lumbreras (1959a) appears to be quite similar. Lumbreras (1959a, 1959b, 1960a) identifies some of the pieces of the Galvez Durand collection as Huarpa I and II; from his descriptions and from my notes on the collection, it seems that a number of these should be

Matapuquio style vessels, so that there may exist reasonable similarity between the wares of Ayacucho and Huancayo at this time. The sherds illustrated by Matos Mendieta (1959, Pl. 3, Foto 2) and Lumbreras (1959a, Pl. 11:a-c) as typical "Mantaro de Base Claro" do not fit entirely within our definition of typical sherds, and they may or may not be Matapuquio style sherds. A better series of illustrations, partly mixed, is the Type B ware defined by Lavallee (1967b, Pl. 6), and perhaps part of her Type C ware (1967b, Pl. 7).

In a general way, Arhuaturo and Arhuaturo-Inca correspond with the "Mantaro de Base Rojo" defined by Matos and Lumbreras. This ware continues to be compared with Coras in Huancavelica, but in Ayacucho the similarities now seem to be found with Arjalla and Patarjay wares. Lavallee's Type A ware (1967b, Pls. 1-5), including both sub-type A-1 and sub-type A-2, appears to be entirely Arhuaturo and Arhuaturo-Inca; her illustrations and definition are the most informative that have appeared in print. Additional illustrations of this ware can be seen in the Andes I report (Ishida and others 1960) from the sites of Kotokoto (1960:291-292), Wariwilka (1960:291) and Patankoto (1960:293). One of the most thorough analyses of Arhuaturo and Arhuaturo-Inca ware is that of Ravines Sanchez (1966); as yet this study is in manuscript form. Arhuaturo-like ware is found at least as far north as La Oroya (Wells 1940); though it is not illustrated, it appears to be nearly the same from the descriptions given.

H. Inca

In contrast to may areas conquered by the Inca, Inca style pottery

became widespread and apparently utilized by all classes of the Huanca population in the valley. The administrative centers did exhibit a greater proportion of Inca wares, but virtually every site that was inhabited in the Late Horizon (had Arhuaturo-Inca or Huanca ware) also had a large number of Inca pieces. In our survey we located 126 sites with Inca ceramics, so the Inca period occupation density of the valley is evidently fairly substantial. One of the more interesting aspects of the Inca occupation was the offering of matched pairs of miniatures at the oracle-temple of Wariwlka. According to Shea (1969:24), "there is no set of more than two, and each pair is matched in shape, paint, and design in an almost micro-miniature degree." The miniatures found by Shea at Wariwilka include virtually all the Inca shapes found by Bingham (1915, 1930) at Machu Picchu; the only major shape not found in the Wariwilka collection is the brazier (Bingham 1930:120, Fig. 72-16; 1915:269, Fig. 52:16), but we have a complete miniature of this type (though four-legged instead of three-legged) plus some miniature fragments of this brazier vessel shape from Inca burials in the valley.

The blackware open bowls (Fig. 184) seem to be a manifestation of the Pachacamac Inca style described by Menzel (1966:112); though Menzel does not expressly mention this bowl form, all its attributes appear to be the same as the Pachacamac Inca smoked blackware, and in the Sisicaya and Antioquia areas of the Lurin valley above Pachacamac this glossy and matte smoked blackware open bowl shape is very common in Late Horizon sites (Browman 1968), indicating that the shape is a common one in the Pachacamac area.

We have not been able to find enough evidence to either verify or negate the two-fold division of Inca vessel shapes and design motifs outside of the Jauja-Huancayo basin. There is some evidence, however, to indicate that the hypothesis may well be correct--the late Inca and early Colonial site of Machu Picchu only seems to have the designs found on our Inca Ware 2 and only Inca Ware 2 aryballoid lugs (Bingham 1930; Tobriner 1967); the presumably late Late Horizon site of Abiseo or Pajaten (Bonavia 1968) only appears to have the designs of our Inca Ware 2; the Inca designs illustrated from Cajamarca (Reichlen and Reichlen 1949, Fig. 14) seem to be only designs of Inca Ware 2; Thompson (1960:360-362) found only Cuzco Polychrome with designs of our Inca Ware 2 in the curaca's house at Ichu which is dated to A.D. 1542-1560; while the site of Pachacamac appears to have both Inca Ware 1 and Ware 2 designs (Strong and Corbett 1943; also Strong's collection in the Peabody Museum, Cambridge). Dorothy Menzel (personal communication) has two distinct Inca decorative varieties from Ica; on the basis of verbal descriptions we could not ascertain whether the two divisions seen in the Jauja-Huancayo basin were the same as those seen in Ica. Eugene McDougle (personal communication) has been able to make three divisions in the Late Horizon ceramics at Pachacamac and on the Central Coast; at this writing these divisions are based primarily upon the blackware and other local styles, and McDougle has not yet ascertained the nature of the Cuzco Polychrome associated with these three phases.

I. Viques

As discussed in Ch. 8, the Viques mitmaqkuna appear not to have been recorded in the ethnographic record; though the four partial visitas that are available for the valley (Loarte and Ruiz 1570; Martinez Rengifo 1584; de Silva 1571; and de Vega 1582) mention various mitmaqkuna, none of these appears to be the people responsible for the Viques ceramic and lithic assemblages. Owing to general similarities of the ceramics to both the Arhuaturo tradition and the Inca tradition, we speculated in the field that the homeland of the mitmaqkuna should be between Huancayo and Cuzco. We therefore were quite delighted to see illustrated in Lavallee (1967b), as her Type D ware, sherds which appeared to be identical to our Viques mitmaqkuna ware from the sites of Chongos Alto, Quintaojo and Moya in extreme southwestern Junin and northwestern Huancavelica. It is possible that these people were southern Yauyos, but it appears more likely they were the Angara (cf. Map 3, Rowe 1946) who were quite warlike and who were widely resettled by the Inca (Rowe 1946:188).

A related problem is the location of Huanca mitmaqkuna outside of the Jauja-Huancayo basin. Though these will be more fully discussed in Ch. 8, it is pertinent to point out here that there appears to be no evidence for a Huanca mitmaqkuna near Chachapoyas from reported ceramic assemblages. The 'Huancas' so frequently reported in this area seem to be most likely the Huancabambas; all references to the ceramic assemblages (Ravines Sanchez 1969d; Reichlen and Reichlen 1950; Langlois 1939, 1940) for the late occupations contain no mention of any style similar to the Arhuaturo style.

J. Colonial and Republican (Llaqsa, Ocopa, Retama and Modern)

Almost no comparative data is available for periods after the Spanish conquest; far too often observers have taken the facile approach that all these ceramics are the same, following Tschopik (1950). In the vicinity of Lima, the second Spanish capital of Peru (Jauja being the first), McDougle (personal communication) has noted the same sort of relationship that exists between Llaqsa and Ocopa; that is, that for the first approximately fifty years of the Spanish occupation, that, contrary to popular archaeological belief, glazed and wheel-made wares are rare or non-existant in the native assemblages, and it is only during the second half century of Spanish occupation that glazed wares and wheel-made wares suddenly appear in relatively great quantities.

Chapter 7

Settlement Patterns: Archaeological Data and Implications

In the Jauja-Huancayo sector of the Rio Mantaro, there are three important areas of occupation which vary significantly from period to period. The valley floor, as we have previously noted, is wide, flat and long--the basin originates and terminates in a river gorge 0.5 km. wide, but broadens out for more than 60 km. to 3-12 km. wide; at its origin the elevation is 3350 m. (11,000 ft.) and at its mouth it is 3125 m. (10,250 ft.), a grade of less than 0.4%. Because the valley floor is so flat, occupations have tended to be on low knolls or isolated ridges rising out of the lake sediments, on the Pleistocene lake terraces, or on present river terraces rather than out in the midst of the flat flood plain proper. Hillside occupations are on the numerous ascending finger ridges and erosion terrace remnants in the main, with hillside flank occupations on gentle slopes being less common. There are a number of long,low ridges protruding or extending out into the flood plain area which have been heavily populated from period to period; these have all been included in 'hillside' rather than 'hilltop' occupation as they function merely as enlarge hillside areas rather than hilltop areas. Hilltop occupations were relatively rare except during periods of stress and conflict (such as part of the Early Intermediate Period, part of the Late Intermediate Period, and the first half century of the Spanish conquest); a large number of the

sites on hilltops consist primarily of one or more rows of storage colca, with rows of more than 100 colca in some instances. The highest occupation site surveyed on the basin rim was 600 m. (2000 ft.) above the valley floor, or 3950 m. (13,000 ft.); most of the hilltop sites were lower than this, commonly being from 200-400 m. above the valley floor.

A. Early Horizon settlements

The typical Early Horizon settlement was a small village, seasonally occupied, and situated near a spring, stream or other major water resource supplying a suitable water source for the herds. Dwellings were subterranean or semi-subterranean pithouses, with perishable superstructures; the pithouses in our sample were both round and rectangular. The round examples were about 1.0 m. deep and 2.0-3.0 m. in diameter; the rectangular example was 2.0 m. deep and at least 4.5 m. on a side. The greater majority (90%) of these occupation sites were valley floor area sites. The larger villages may have had a few score dwellings, but the seasonal quality of the occupation means that it will be difficult to judge how many of these were occupied contemporaneously. During the earliest phases of the Early Horizon, occupation of caves and rockshelters apparently were viable alternatives to pithouses on the valley floor. Two of the sites of our survey apparently represent only single dwelling units, being probably an isolated herdsman hut or perhaps a hunters camp. Associated with the pithouses are small pits, 0.8-1.2 m. in diameter and 0.2-0.5 m. deep, possibly used for some sort

of storage function. Hearth areas in general are situated outside of the dwelling, apparently indicating a flamable superstructure or roofing. Abandoned pithouses were used for refuse disposal, burial of the dead, and large ready-made earth ovens or roasting pits.

We can indicate some sanctification of the dead, but in a rather macabre way to Western eyes. As indicated in Ch. 3, Burial 1 from PJuM 613 consisted of a tightly flexed adult, lying on the left side, in a shallow pit scooped out in the refuse of abandoned Housepit 1, and covered over with a number of large rocks and earth. There were no ceramics in the fill of the interment, except for a square geometric ceramic piece, deliberately placed in the crotch/groin of the burial. The skeleton was complete up to the lower mandible; the cranium was missing. Burial 2 of PJuM 613 consisted of skull, pelvis, femur and radius fragments of apparently only one individual, mixed in with animal bones in a large pile of fire cracked rock associated with the re-use of abandoned Housepit 1 as an earth oven or roasting pit. What was loosely termed 'Burial 3' from PJuM 613 was the collection of several fragments of human crania, representing at least two individuals, from the fill of the housepits. In the nearby subterranean pithouse at PJuM 614, two individuals, a youth and an adult, had been interred in refuse fill of the abandoned pithouse; no cranial fragments were recovered, but the area and burials had been so badly disturbed by the dynamite blasts and bulldozer operation to rule out their possible presence. What emerges is a pattern of rather casual flexed burial of the dead in the refuse of the site, with apparent concomitant ritual

cannibalism, requiring the consumption of at least the brain, to insure the proper rites of passabe. E. M. Moseley (personal communication) indicates that there is some evidence to suggest a similar practice in some of the Initial Period settlements of the Central Coast.

Though the evidence appears to indicate an economy based primarily upon pastoralism and hunting, there is some evidence to suggest a limited amount of horticulture; there are mortars and milling stones, rocker mills, digging stick weights and some limited tooth wear on the human teeth. A reasonable amount of exchange, both on the social and on the material level, took place; we have already indicated some of the ceramic concepts derived from the coast, and artifacts such as the Spondylus shell, the seashell pendant, the whale vertebrae, the various non-local ceramic vessels, the polished stone points, and possibly also the copper and red banded obsidian, indicate a fair amount of trade.

Referring to Map 4, the Pirwapuquio settlements can be seen to cluster in one major area, around the now-drained Lago Cochachongos and the still-running spring of Pirwapuquio. Of the two remaining sites, PJuM 739 is located in the vicinity of the Usupuquio spring, while PJuM 791 must have relied upon the Mantaro River for water, as there is no present water source other than the Mantaro. The Cochachongos occupation sites (Map 5) are more widely scattered than the Pirwapuquio sites, but they all are located within half a kilometer of a spring, stream, lake or river. The valley now has two centers of occupation--a continuing one in the vicinity of Lago Cochachongos and the spring Pirwapuquio, and a new center on the terraces above the

Rio Cunas, close to the modern town of Chupaca (Map 2).

B. Early Intermediate Period settlements

During the Early Intermediate Period, a new dwelling type and a new dwelling pattern appeared. Small hamlets appear on the hillsides and hilltops in potentially defensible positions, seemingly associated with a few valley floor settlements which were recurrently or continually occupied, and which may have served as ceremonial and/or administrative centers. The typical hillside or hilltop hamlet consisted of from three to fifteen house platforms, rather randomly clustered together. These house platforms varied between 2.5-5.0 m. in width and 5-10 m. in length. They consist of earth piled up and levelled off, capped with a hard-packed clay floor, and faced with a few courses of fieldstone. The platforms were oblong to rectangular in shape, with the long axis downhill. Since it would be considerably easier to construct a platform with the axis parallel to the hill rather than perpendicular to the hill, this consistent patterning should tell us something about the concepts and construction of dwellings during the time period. We are unable to come up with a completely satisfactory explanation for this recurrent pattern of constructing house platforms with the long axis perpendicular to the hill; at best, it seems that we can argue that the dwellings were constructed of a perishable material in a sort of abbreviated long-house fashion, with the doors facing uphill. The uphill end of the platform was flush with the hill surface, while the downhill end was between

0.5-1.5 m. above the hill slope, depending on the incline. Most of the platforms were placed on slopes gentle enough so that at their greatest height they were only two courses of stone or about 50-60 cm. above the hill surface on the downhill end, but a few were built on slopes of greater angle, and had up to five courses of stone facing the mound on the downhill slope. The hard-packed and beaten clay floors are extremely durable; it was not an uncommon sight to see a platform mound with the facing stones fallen away for the most part and some of the underlying earth fill eroded away, but with the beaten clay floor still nicely pedestaled. Ceramics indicated that the occupation of these house platforms was short; most of them belonged to only one phase, so the duration of use for these sites must have been 50-100 years or less. Each cluster of these sites seemed to be associated with a larger, valley floor site, which had large quantities of refuse from all phases of the Early Intermediate Period. The semi-subterranean pithouse continued to be built and used during at least the early part of the Early Intermediate Period at these valley floor sites, though it is rare and presumably must have been accompanied by a large number of surface dwellings such as were constructed on the house platforms on the hillsides and hilltops. Nearly our total sample of human and animal figurines came from the valley floor sites; the number of figurines at these sites suggests that their occurrence cannot be explained solely in terms of a difference in occupation intensity, but must correlated with some functional difference between the hillside and hilltop sites on the

one hand and the few valley floor sites on the other; it is for this reason that we have suggested these sites as possible ceremonial or administrative centers.

The burial mode had completely changed by the Usupuquio phases, to the construction of shaft tombs, a feature which gradually became elaborated, resulting in the multi-chambered shaft-tombs of the Middle Horizon. A typical profile of one of these tombs is given in Fig. 5. These shaft tombs were typically punched through the top of the cemented lake gravels to a depth of about two meters, at which point a small chamber about 1.0 x 1.5 m. in size and 1.0 m. in height was excavated. The burial, in those cases where it could be determined, seemed to be consistently oriented either West or South, rather than East or North; for the first time we have simple grave goods accompanying the body, and the practice of ritual consumption of the brain seems to have disappeared. Red ochre was frequently applied, apparently to restore the appearance of life to a corpse. Some tombs, presumably of higher status individuals, were stone lined. If the shaft tomb concept is being diffused from the Colombia-Ecuador-Peru area northward to Mexico at this time, as Meighan (1969:15) suggests, then we could argue that the appearance of the shaft tomb in the Jauja-Huancayo basin at this time is part of this general diffusion.

During the Early Intermediate Period, the artifacts suggest a continued emphasis upon herding and hunting, with little emphasis upon agriculture. A semi-nomadic pattern of herding and hunting, with limited horticulture during the wet season, seems to be the basic pattern of the economy. The first possible permanent settlements

with greater agricultural emphasis occur only late in the Huacrapuquio phases; the first possible permanent structures (e.g. constructed in pirka) do not occur until Huacrapuquio C, when two sites exhibit some remnants of round structures with indeterminant diameters. As we have already pointed out, Huacrapuquio C most likely dates to Middle Horizon Epoch 1A, when the area is already exhibiting extensive contact and pressure from the expanding Huari empire, which sweeps over the Jauja-Huancayo basin in Middle Horizon Epoch 1B.

We can observe Maps 6,7,8) the gradual shift in the early Early Intermediate Period (Uchupas) from the previous valley floor pattern of the Cochachongos to the basically hillside and hilltop pattern of the Usupuquio phases; during the Usupuquio phases about 75-80% of the sites are either on hillside or hilltop locations (Map 7). In the late Early Intermediate Period (Huacrapuquio), sites begin to move lower on the hills and into the valley again (Map 8).

C. Middle Horizon settlements

In the Middle Horizon, the Huari empire completely reshapes the people of the Jauja-Huancayo basin. Towns are set out on grid patterns; agriculture suddenly becomes the primary economic basis of the economy; the first temples appear; the first stone architecture appears; the first storage colca may appear; much mor stratification and ranking is evident in the society, primarily reflected in differences in burial goods; and the first good evidence of permanent full-time specialists can be obtained. Artifacts associated with hunting, such as projectile points, are a significant component of the assemblages from sites

through Huacrapuquio occupations; in the Calpish sites they occur as rare examples in a scattering of phase A and AB sites, and then completely disappear. Stone hoes first appear rarely in the Calpish sites, more frequently in the Quinsahuanca sites, to become thoroughly common in sites from the early Late Intermediate Perioud through the Inca occupation.

Suddenly beginning in the Middle Horizon, stone architecture remains appear and become characteristic of all occupation sites. In a number of cases these buildings appeared to be laid out on a grid plan, with the ruined structures appearing at regularly spaced intervals during the Calpish phases; since other sites laid out by the Huari in conquered areas also often exhibit grid pattern planning, this planning is presumably a Huari feature. Particularly suggestive of this is the fact that the Calpish sites which exhibit this trait seem fairly closely associated with such temple sites as Ñahuinpuquio and Calpish. On some of the Calpish sites there are only three or four structures, while the midden is quite widespread, suggesting that the perishable structures used in the earlier periods were still being utilized. Most of the buildings were too thoroughly destroyed to determine their shape; those that could be determined were round structures, with wall about 0.8 m. thick, constructed of mud mortar and rough fieldstone and rounded river cobbles available in the immediate vicinity of the structure, and were about 6-7 m. in diameter. If all the undetermined structures were also this size, then there is a considerable difference in building size between the Calpish phases and

later phases, where the round structures ranged from 3.5-5.0 m. in diameter. Since these structures are relatively frequent, this larger size cannot be solely attributable to possible status; we must consider other possibilities, such as possible multi-family utilization.

Of the three temples built during the early Middle Horizon, two (Calpish and Wariwilka) were initially constructed during Calpish A or Middle Horizon Epoch 1B; the third (Ñahuinpuquio) does not seem to have been constructed before Calpish B or Middle Horizon Epoch 2. As seen in Fig. 7, the temple precincts of Calpish and Ñahuinpuquio are both fairly extensive; presumably the area around Wariwilka was also fairly extensive, though now destroyed. Both Ñahuinpuquio and Calpish were enclosed by a wall; the wall of Ñahuinpuquio seemed to be composed of large (1.0 m. standing height) flat boulders set on end around one sector of the site, with more common pirka type wall around the rest of the site; the wall of Calpish seems to be entirely composed of fieldstone set in mud. One section, perhaps the entire wall, of the wall around Calpish was tiered or stepped back once. At both Ñahuinpuquio and Calpish there were two general ruin types--long low mounds set off in roughly rectangular courtyards, and a group of large rectangular buildings. In addition, at Calpish, there were at least two examples of stone-faced, tiered, circular structures; the best preserved of which was three-tiered, with a base 1 m. high and 7 m. in diameter, a second tier also 1 m. in height and 5 m. in diameter, and a third tier 1 m. in height and 3m. in diameter. In the Sulla Cruz section of Wari, there is a similar tiered mound 2.5 m. high and 7 m.

in diameter, constructed of four concentric tiers of approximately 7 m., 5 m., 3 m., and 1 m. in diameter (Bennett 1953:24); a fourth tier could once have existed on the Calpish structure. In the Pampas valley south of Wari, a similar tiered structure yielded two possible Tiahuanaco trade vessels (Raymond and Isbell 1969). It is difficult to say much about the nature of the temple of Wariwilka, because the structure was modified during the Quinsahuanca period and was extensively rebuilt and renovated during the Inca period, and perhaps also during the various intervening phases. Still we might be able to speculate to some degree on the appearance of the original Calpish structures if the pueblo of Huari was not so diligent in removing all traces of structures that did not fit in with their concept of how the temple should be reconstructed.

In the Middle Horizon, burial was in single-chambered shaft tombs, double-chambered shaft tombs, and in multi-chambered tombs. Burial offerings apparently varied considerably with status. Near Wariwilka a number of tombs with quite fancy trade pieces from Huari, Pachacamac and other areas have been uncovered by various local inhabitants and the grave lots distributed among a variety of institutions and individuals. In the multi-chambered tomb we excavated (Fig. 6), the individuals were accompanied by a paucity of durable grave goods; one individual had red ochre coloration only, one had only a pair of copper tupu, one had a double-band Ag-Cu alloy headpiece only, and the fourth had three pairs of tupu pins and one rather plain jar. These individuals could well have been buried with

brilliant multi-hued textiles, but not a trace of this sort of richness remains. Orientation of the flexed burials in this tomb and inspection of the various shaft tombs suggest a continued patternof flexed burial and general southerly orientation. Some of the shaft tombs were partially stone-lined. The collapse of the Huari empire for some reason seemed to also result in the termination of shaft-tomb burial; though commonly found at Usupuquio, Huacrapuquio and Calpish sites, the shaft-tombs and multi-chambered tombs have not been observed at post-Calpish sites.

Comparing settlement distribution maps 8-10, it can be seen that in the Calpish phases there was a shift from hillside to valley floor, so that roughly half of the Calpish sites are valley floor sites, while following the collapse of the Huari empire the occupation sites moved back up the hillsides so that roughly three-quarters of the occupation sites are hillside or hilltop in the Quinsahuanca phases. We shall see this cycle repeated once more with the Inca occupation; thus, during periods of stability and widespread interchange and commerce such as we see during the Early Horizon, the Middle Horizon and the Late Horizon, occupation sites tend to be on the valley floor, while during periods of isolation and internecine fractitiousness, settlements tended to be on more isolated and defensible hillside mesas, terrace remnants and hilltops, such as we observe happening during the Early Intermediate Period, the Late Intermediate Period, and the early Colonial period (prior to reducciones).

The late Middle Horizon Quinsahuanca occupation continues the grid pattern of settlement to some extent in Quinsahuanca A, but as the sites moved from the valley floor to the hill slopes, the grid pattern gave way to a series of small terraces with several round (or rectangular) structures placed around the edges, with the buildings often spread 20-30 m. apart. The first storage buildings may appear in Quinsahuanca B--four round structures in a row tail off the end of one site in the smae manner seen in some of the Late Intermediate Period sites; these structures are 4 m. inner diameter, with walls 0.5 m. thick, and are non-uniformly spaced.

D. Late Intermediate Period settlements

The pattern developed in Quinsahuanca times of a scattering of buildings around a series of large courtyards continues on in the Matapuquio phase and becomes the typical pattern for small villages. In smaller villages these buildings are widely scattered around the edge of an area varying in size from 15 x 20 m on a side to some 30 x 60 m., although smaller courtyards were more common. In small villages there were only three or four such areas abutting each other, but in large villages and towns there could be scores. The larger villages often tended to have irregular clusters of buildings around the courtyard where before in the smaller villages we had had only single houses scattered around.

This sort of development leads in the end to the large towns. A typical town would have a row of storage buildings around the approachable flanks, usually between 20 and 50 buildings. These were

usually about 2 m. apart, and in the occupation sites were usually joined one to another by a low (0.5-1.0 m. height) retaining wall. On the uphill side of this encircling row of storage colca were clustered the houses of the lower or poor barrio; typically these were smaller and more closely grouped than the upper or rich barrio. At PJuM 525 the houses in the lower barrio were about 3.5-4.0 m. inner diameter while the houses in the upper barrio were 4.0-5.0 m. inner diameter. In the lower barrio, dwellings were tightly clustered around fairly small courtyards, about 5-10 m. on a side, while in the upper barrio the buildings were spaced further apart and were set more regularly around courtyards 15-20 m. on a side. On the upper edge of the site, the occupation area of the upper barrio usually went around three sides of a large plaza-like area. Not infrequently the town outgrew its bounds, and one or more clusters of outliers are attached; these are usually no more than 50-100 m. away, and consist of clusters of buildings gathered around vaguely shaped courtyards, generally not more than 20-30 buildings in the outlier while the enclosed town areas had sometimes as many as 500-700 buildings.

One can't go directly from a building count to estimating population size because in the upper barrio a large number of the buildings had associated small circular or rectangular buildings, presumably for storage. The small rectangle buildings seem to have a fairly standard size, about 2 x 3 m., and were fairly common; small round buildings of about 1.5-2.0 m. were also found but were relatively rare. A common feature was the direct attachment of a

small hemispherical structure to a larger building, apparently as an attached storage shed.

Buildings in the lower barrios were often made with more mud and large rock, while the best buildings in the upper barrios were made with small rock, clay instead of mud, and only a reasonable amount of clay. Hence over the years the lower barrios tend to be reduced to little more than rubble piles while it is not a rare sight to see a large section of a building in an upper barrio standing to more than 3 m. height. There was no apparent preference for any one of the possible building types; in the upper barrio large round dwellings existed side-by-side with large square building with rounded corners and, less commonly, large rectangular buildings. The square buildings with round corners were sometimes exaggerated to the point of resembling an octagon. In the upper barrio, the dimensions of the square buildings with rounded corners and the round buildings usually were about 4-5 m. internal dimension, while the rectangular buildings were a bit larger, in the neighborhood of 4 x 6 m. Courtyards were arranged somewhat randomly with respect to each other, though they did more or less follow the contours of the hill; in the lower barrio they depended to a great deal upon the number of buildings in the clusters, but in the upper barrio there appeared to be a definite attempt to make more or less rectangular courtyards. At three different sites we found evidence for a white clay plaster used on the interior of the dwellings in the upper barrio, which was then painted red. The storage buildings around the base of the site were most frequently round, about

5 m. inner diameter, but rectangular buildings (4 x 8 m.) were also found). We had hopedto find rectangular buildings isolated from round buildings, either temporally or spatially, but it cannot be emphasized too strongly that round, rounded square, octagonal and rectangular buildings all occur directly associated in all units from Matapuquio through Arhuaturo-Inca and are found in all parts of the valley.

A secondpattern emerges for villages associated with long rows of storage buildings. In this case the village consists of the 'head', with its structures clustered around various courtyards; this occupation area is fairly small. The 'tail' consists of 50 or more storage buildings strung out and running just below the rim of the hill.

The problem of storage facilities in the Jauja-Huancayo basin is quite a complex one. Associated with each large site are the various small buildings actually in the occupation area, presumably used for storage, and around the base of the site there were usually a number of other storage buildings. This storage capacity was not enough, and we find isolated rows of up to 100 or more colca in various parts of the valley. Referring to Map 14, it is interesting to note that most of the storage facilities were in the northern half of the valley during the Late Intermediate Period. This is also the area of greatest population density for the Late Intermediate Period; the southern half of the valley was for some reason rather less densely occupied at this time. The set of storage colca on the hills overlooking Ataura, Huamali and Matapuquio at the north end of the valley have little or no occupation area associated with them; they must have been associated

with the densely populated area on the other side of the valley near Huaripampa, Muquiyauyo and Muqui. In other words, at least part of the storage colca seem to be directly associated with fields rather than any occupation site.

Isolated storage building rows run from five buildings to 120 buildings. In Late Intermediate Period times, the rows contain either all round buildings or all rectangular buildings, and there is never more than one row of storage buildings, parallel to the top of the hill, but set below the rim of the hill by some 20-50 m. The round storage buildings were fairly constant in diameter in any given row but they varied from location to location from about 3.5 m. inner diameter to 5.0 m. inner diameter. The walls were constructed of fieldstone and rounded cobbles available on the site and set in mud mortar; wall thickness was between 0.4-0.6 m. thick with both the interior and exterior faced with stone. Any gap between the two faces was filled with earth. From extant walls it appears that most of the storage buildings were between 3.5-4.5 m. in height. Entrance to the colca was a single door (Fig. 9,10) set one to several courses above the surface; the door was rectangular, about 0.5 x 1.0 m. in size, and was capped by a large irregular fieldstone lintel. Doors in any one storage row face uniformly uphill or uniformly downhill, but this varied from site to site. Doorways are not aligned with any cardinal direction either, so door orientation uphill or downhill must relate to some factor of ease of access to the home occupation site or fields. Both the round buildings and the rectangular buildings are constructed with an inward cant (Figs. 9,10,11), and have completely flat wall tops

with no evidence for beams, joists or other roofing supports. Fortunately, as seen in Ch. 8, ethnohistorical sources do give us the basis for reconstructing the roofing method. Both building types were set about 1.5-2.0 m. apart, and when not connected to occupation sites, lacked the low retaining walls joining them to each other, while these low retaining walls are almost always found in rows of storage buildings at occupation sites. The rectangular storage buildings varied between 4 x 6 m. and 4 x 8 m. in size; a row of 50-100 stretching 500-1000 meters along the valley rim, 200-400 meters above the valley floor, is quite a spectacular sight, and has given rise to a lot of fanciful stories in local folklore, particularly since from the valley floor they appear to be a tremendous row of fortifications. For Late Intermediate Period storage colca in isolated rows, we counted 209 round storage buildings, with a total storage capacity of 16,700 cubic meters (ca. 23,400 bushels) and 268 rectangular storage buildings, with a total storage capacity of 34,300 cubic meters (ca. 47,900 bushels).

In addition to the stratified towns, the dispersed villages and the storage colca patterns, there are some other specialized settlement patterns evident. There appear to be some sites that are specialized stockyards for dealing with llamas and alpacas. One such area 400 m. above the valley floor was roughly half a kilometer on a side, and contained roughly 100 corrals or pens about 40 x 60 m. on a side. Associated with each few of these was a lone rectangular or round dwelling. Judging from the large numbers of large prismatic blades

and the paucity of other cultural material it appears that this site served as a stockyard, from butchering to redistribution of the llama products. A large number of the small hillside rockshelters contained scattered Late Intermediate Period ceramics inside them and on the associated talus slopes. Since many of these were in areas totally unsuitable for agriculture, but which even today see the grazing of flocks and herds, these remains must relate to herders following their llamas and alpacas. It is clear that even though the valley was now primarily agriculturally dependent, herds of llamas still played an extremely important part in the economy and culture; this is borne out by such factors as the appearance of specialized sites to handle animals, and also by the quantity of animal bone in the middens. Not to be overlooked here is the apparent development of butcher and herder specialists. Before the Huari conquest, each village had followed its animals on their seasonal migrations, but when the village became mainly agricultural, there developed a specialized group of herders, who spent their entire time keeping the animals while their compatriots farmed and built permanent settlements. The existence of stockyard sites with the concomitant butchering, in addition to the changes in butchering technique noted in Ch. 4, also indicates specialists; it seems probable that the herders were also the butchers. Corresponding implications are, of course, that in the valley there were specialized agriculturalists, stone masons, carpenters, and various politico-religious specialists.

Burial and ceremonial patterns associated with the Late Intermediate Period occupations are not altogether clear, due to

the paucity of our data. Only one burial was recovered in excavation--the bundle burial of an infant two or three years old in a shallow grave scooped out of the side of a small pit; this infant was accompanied by an offering of a small jug of chiche and a bowl of charqui and chuño, assuming the vessels to contain the same comestibles used by Indians of the puna today in similar burials. On the edge of one large town site, two badly disturbed talus slope burials were located. If these burials were contemporaneous with the town, then talus slope burials also were practiced. On top of one hill, in the center of a semi-circle of storage buildings, was a low platform, roughly ovoid or oblong, of 30 m. maximum dimensions and about 1.5 m. high. The mound was honeycombed with treasure-hunters excavations; in these excavations were minimally two different burials with Arhuaturo or Arhuaturo-Inca sherds in association, so these burials may be in direct association with a huaca. Evidence from Wariwilka suggests that the oracle was still functioning there though the temples of Ñahuinpuquio and Calpish ahd been abandoned with the fall of the Huari empire. There may have been some new deities added or emphasized; at the site called locally Waturi or Huaca de la Luna there are two suggestive mounds in the central plaza--a crescent-shaped mound 12 m. in length, 2.5-3.0 m. in width, and about 2 m. in extant height, while about 10 m. away is a circular mound about 6 m. in diameterand also about 2 m. in extant height. Since the site is one of the five main clusters of Late Intermediate Period sites in the valley, it would be a reasonable place to look for ceremonial structures if they exist at

this period. Not having been able to excavate this site, we cannot tell if the appellation 'Huaca de la Luna' derives from local tradition or whether it is after the fact.

E. Late Horizon settlements

In the Late Horizon, many Arhuaturo sites continued to be occupied, so that the typical Late Intermediate Period settlement patterns persist straight through Inca times. But there are also a number of new sites constructed which show considerable Inca influence. Our survey essentially substantiated the statement by Matos Mendeita (1967:12) that "there does not exist a building that is, properly speaking, of Inca style: not one that shows the polygonal or dressed building blocks, or the trapezoidal doors with doublejambs". The early colonial cathedral of Jauja has some dressed polygonal Inca-style stones incorporated into its structure, suggesting that Inca Hatun-Xauxa might have had one building in pure Incaic style. The second locality is the town of Miraflores (PJuM 712); there are the remnants of five structures, all in a row, which have a mixture of local Inca style architecture in addition to some Inca-style worked stone incorporated in them, and all with trapezoidal doors, a non-local feature. The towns of Miraflores and Chupuro are situated on opposite ends of the modern bridge crossing the Mantaro at the south end of the basin; this is one of the few places within the Jauja-Huancayo basin where the river is readily 'bridgeable', and it was the locale of one of the Inca bridges. Sones in pure Inca style are scattered in a number

of the buildings in the area--in Chupuro, Miraflores and Viques--and are all said to have been salvaged from the ruins of the Inca bridge. Thus if we push the evidence hard, we can find only two localities out of the 126 Inca sites with any Inca style architecture, one a bridge and associated bridge tambo, and the other a possible destroyed small temple or palace at the capital of the entire Huanca province, Hatun-Xauxa. This is much different than the picture we see at other provincial capitals such as Huanuco Viejo.

There are some buildings built in imitation-Inca style; these buildings often have trapezoidal doors made of roughly worked stone and some attempts at coursing the rough fieldstone in contrast to the local style of rectangular doors and completely random arrangement of stone in the walls. These local imitation style Inca buildings are only found at a half-dozen of the 126 Inca sites in the valley, and all of these are sites with great quantities of Inca ceramics and relatively little Arhuaturo-Inca ceramics, suggesting that these buildings were made under direct tutelage of Inca personnel rather than any sort of spontaneous copying of the Inca-style. There is on modification in the local building construction that does seem to be, at least in part, adopted at a large number of the Inca-contemporary sites. This is the use of abutted corners on the corners of rectangular structures (see Fig. 11; also Wiener 1880:245), both rectangular dwellings and rectangular storage colca. Unfortunately it turns out to be rather non-adaptive in a structural sense, for it results in a fatal structural weakness. Previously co[illegible]ers may not have been so

esthetically pleasing, being rather amorphously structured but securely tied in to the rest of the structure; the rounded corners of the Matapuquio and Arhuaturo buildings seem particularly directed at giving strength to the structures. The nice abutted corners of the Inca-influence rectangular structures were perhaps more esthetically pleasing, but they were not tied in to the rest of the wall. Consequently they have a tendency to collapse readily, which leaves one with free-standing walls canting inward in the local style, which are obviously a bit unstable. The structure illustrated by Wiener (1880:245) is interesting as it is an important Inca structure (an usnu), but it appears to be executed in this local imitation-Inca style; unfortunately it has since been destroyed.

Even though there are few structures in the 'pure Inca' style, the occupation sites built during Inca times exhibited a number of features typical of Inca occupation elsewhere. In an exceedingly generalized way, the buildings are usually oriented around one or several large plazas in the neighborhood of 30 x 60 m. to 100 x 120 m. in size. In the small villages or hacienda-like sites, there generally is one large plaza, with exclusively rectangular buildings around three sides of the plaza, with the fourth side sometimes enclosed by a wall, sometimes also with rectangular buildings, and sometimes completely open. Generally there is one large rectangular structure in the center of the plaza, approximately 5 m. x 10 m. in size; in the larger plazas there may be as many as three such structures evenly spaced apart. Some of the larger hacienda/villages had auxillary, smaller plazas

with other rectangular structures around them. Sometimes large circular structures are also found at this type of site, but they are relatively rare. It is tempting to correlate these small sites with the haciendas of Inca nobles in certain coastal regions, but the documentary evidence does not seem to give support for such an hypothesis.

The larger towns consisted of both round and rectangular buildings around varying sized plazas and courtyards. In some of these towns there was a definite attempt to courtyard groupings in concentric semi-circles around a central plaza; the inner courtyards being smaller and fewer in number than the outer courtyards. At these sites, there was a large central plaza, with from one to three long rectangular buildings evenly spaced across the plaza. These buildings seemed to be set at a fairly regular interval apart, both in these town plazas and in the small hamlet plazas referred to above; hence if the major dimension of the plaza was 60 m., there usually was only one central rectangular structure; if it was 90 m., there were usually two; and if it was 120 m., there were usually three structures. None of the plazas observed ever had more than three central structures, and the occurrence of one or three structures was more common than two or no structures. As a general rule, Late Horizon settlements seemed to be larger in size and smaller in population than Late Intermediate Period settlements. That is, the concept of structuring the settlement around large central plazas rather than small courtyards increased the physical size of the settlement, but the number of buildings per site decreased. During late Arhuaturo occupation, there seemed to be a tendency

to live in ever increasing size towns, but under the Inca influence there was a greater emphasis on hamlet or village size occupation units. Rowe (1963) has observed a similar tendency in other parts of Peru during the Inca occupation.

In the hills, the specialized stockyard complexes of the Late Intermediate Period continued to be used. In addition, for the first time we have evidence of isolated herders camps, consisting of one or two round structures, at the edge of the juncture between the puna and the valley rim, a pattern which continues today. Though these no doubt occured earlier, the five such sites recorded on our survey all dated to the Inca period.

Other specialized sites include the tambos, temples and administrative centers, all Inca introductions. There are two tambos recorded in the literature, one at the present village of Villa Sausa near Jauja and the other in the suburb of El Tambo in Huancayo; both of these have been destroyed. In addition, the number of Inca buildings at the bridge of Miraflores-Chupuro suggests that there may have been a small tambo associated with the bridge. The Inca provincial capital of Hatun-Xauxa can really only be perceived through the literature; only the associated storage colca have remained more or less untouched by the intentional Spanish destruction of the site. One large usnu platform existed until the late nineteenth century (Wiener 1880:245), but has since disappeared. The other specialized administrative site (PJuM 621) has not been recorded by any of the chroniclers, so it was apparently no longer functioning in A.D. 1533. Since it has a large

quantity of our Inca Ware 1, we would like to see this as partially verifying our hypothesis of temporal difference between the occurrence of Type 1 and Type 2 Inca ware.

The occupation pattern of the Viques mitmaqkuna is somewhat enigmatic. The four sites PJuM 700,701,702,768 between Viques and Retama are large occupation sites with almost wholly Viques ceramics, with occasional Arhuaturo-Inca and Inca Ware 2 sherds found also. Only one of these four sites has any significant architectural remains; this site (PJuM 702) seems to be modeled after the typical Late Horizon small village-hamlet pattern of rectangular buildings around a large plaza. The pattern of Viques mitmaqkuna ware found at other sites in the valley resembles the attenuation of ripples caused by a pebble thrown in a pool. At sites (Map 13) PJuM 711,715,720,771,772,775, all fairly contiguous to the Viques mitmaqkuna occupation area, Viques ware shows up fairly frequently as a minor ware. The next cluster of sites near Chongos Bajo (PJuM 666,683,688,704,709) had perhaps a dozen sherds each out of a large number of Inca and Arhuaturo-Inca sherds. The cluster of sites around Chupaca (PJuM 615,617,619,625) also only have a few sherds, presumably by trade or purchase. Similarly the large Inca sites near Ahuac (PJuM 642), Sicaya (PJuM 789), Orcotuna (PJuM 786), Mito (PJuM 569) and Concepcion (PJuM 577,578) only exhibit one to half a dozen or so Viques sherds. This leaves only two areas outside of the Viques-Retama area where there are any significant concentrations of Viques mitmaqkuna style ware. One of these is the area above Marcatuna (PJuM 629,63)--PJuM 629 only had a few sherds, but

at site PJuM 630, which was a Late Intermediate Period town also occupied during the Late Horizon, we collected a large number (30-40 diagnostic sherds) from one courtyard area on the edge of the site, suggesting that one or more families of the Viques mitmaqkuna had been attached to the town. The other of these areas outside of the Viques core area (PJuM 700,701,702,768) was above Cajas (PJuM 727,732,734). There was a large, purely Late Horizon town on this ridge, of which these three sites with Viques style ceramics were outliers. The interesting feature here was that not one of these three small single family to small hamlet sized localities had nay remnants of architecute; two of the sites were on barren slopes which had no farming potential so that there appeared to be no disturbance at all, yet not even foundation stones were evident. Either we are observing the first evidence of perishable adobe or tapia structures in the valley, or these Viques outliers were settlements wholly of temporary portable shelters. The fact that only one of the four mitmaqkuna pueblos near Viques (PJuM 700,701,702,768) had any architecture gains new signifcance considered in light of the non-occurrence of architecture at the three outlier occupations just mentioned, and in light of the fact that virtually every Inca and Arhuaturo-Inca site we recorded not only had stone architecture, but usually a significant number of structural remnants. It appears, then, that the Viques mitmaqkuna utilized some manner of perishable, portable temporary shelter. For the first few years after they had been uprooted from their homeland and moved to the Viques area, the

mitmaqkuna would not have had the economic ability to construct substantial structures; moreover, since the chroniclers frequently mention the problems they had with mitmaqkuna wishing to return to their homelands, the Viques mitmaqkuna may simply have not felt it worthwhile to construct permanent dwellings as they had hopes of returning to the puna rather quickly.

The Inca essentially tripled the storage capabilities of the basin by constructing a number of new storage colca. In our survey, we counted 600 new circular buildings, with a storage capacity of 67,200 cubic meters (94,100 bushels) and 250 new rectangular colca, with a storage capacity of 32,000 cubic meters (44,800 bushels), or a total addition of 850 storage colca with a capacity of 97,200 cubic meters. Adding this to the number of previously existing colca, most of which continued to be utilized in the Late Horizon, we get a total of 1,317 storage colca with a total storage capacity (full) of 148,200 cubic meters (approximately 210,200 bushels). This impressive total might well be considerably underestimated, due to our sharply defined survey boundaries. For example, Morris (1967) reported 787 storage colca in the Jauja area and estimated another 300 to be present in the rubble of nearby fields, while our count for Jauja proper was only 283 storage colca. In talking with Morris about this divergence, it became apparent that he had counted three sites near Lago Paca and the Yanamarka valley which we had seen but not surveyed as they were outside of what appeared to be a reasonable boundary for our survey. If, as Morris argues, these three sites are associated directly with

Hatun-Xauxa, then we have considerably underestimated the number of storage colca at Jauja. In part, his reasoning seems cogent, particularly when we consider the storage complex he details for Huamuco Viejo, and contrast it with what one would expect to find for a similar sort of capital at Hatun-Xauxa. But one cannot simply add the difference in Morris's count and our count to arrive at a better estimate for the number of colca associated with Hatun-Xauxa, as it appears that Morris has included in his count a number of occupation structures from one or more Late Intermediate Period sites in the area. Pending a more definitive study of the area, and in light of the great number of storage colca spread throughout the basin (Map 14), I would suggest that our count of 283 colca is too low and that Morris's count of 787 is too high; for an accurate count some of the other sites counted by Morris would be necessary, and I would estimate that the corrected number of colca would be approximately 500.

In addition to the ceramic content of the storage colca sites, it is possible to distinguish the Late Horizon from the Late Intermediate Period storage buildings on architectural features. Multiple rows of storage buildings occur for the first time in the Late Horizon, with anywhere from two to twelve parallel rows of colca being present. Rows of mixed building types occur for the first time; before the Inca occupation the storage colca were in rows of one type only, all rectangular or all circular, but no rows of mixed circular and rectangular buildings are found, generally with the round buildings on one end of the row and the rectangular buildings on the other end of

the row. The frequent presence of both types in one set of colca buildings (whether mixed or multiple rows) suggests that in the Jauja-Huancayo basin the Inca brought the same concepts of storage of certain stuffs in one style building only, and other stuffs in another building style, such as Morris (1967) found at Huanuco Viejo. In addition to the traits of mixed rows and multiple rows of colca as determinants of Late Horizon colca sites, the presence of the imitation-Inca abutted corner also allows distinction between Incaic and pre-Incaic rectangular storage buildings.

During the Late Horizon, there is a movement once again down from the hilltops and hillside flank sites preferred by the Huancas into valley floor settlements. A large majority of the sites which were constructed in the Late Horizon are either on low hillside flanks or on the valley floor itself, in contrast to the Late Intermediate Period occupations which tended to be on hilltops or high on hillside flanks.

In one respect, the Inca may be said to be some of the first Andean archaeologists--they fairly consistently located their valley floor occupation sites in the Jauja-Huancayo basin directly contiguous to Calpish and other abandoned valley floor sites with stone architecture, which they proceeded to fairly systematically sack to salvage stone for their own structures. Thus in addition to the ravages of time, climate and the modern farmer, many of the ruins of the valley have been subjected to the depredations of the Inca masons. Calpish phase sites have been most subjected to destruction by the Inca stone mason and the modern farmer, as they tend to be valley floor sites, which

is the preferred area of occupation for both the Inca and the modern peasant, while the Quinsahuanca, Matapuquio and Arhuaturo sites have survived much better since the preferred occupation areas in those times were hillside or hilltop localities, which thus tends to remove them from the sphere of Incaic and modern destruction. This reuse of stone by the Inca also extended to storage colca; at the site PJuM 576 thirty-one circular colca of 3.5 m. inner diameter were completely dismantled and rebuilt into nineteen larger, rectangular (6 x 8 m.) storage colca with the typical Inca abutted corners.

The Late Horizon temples and huacas are best known from the literature. We know that there was a Temple of the Sun and some other important Inca temples at Hatun-Xauxa, but these were destroyed in the sixteenth century. The oracle of Wariwilka was still functioning, and must have been fairly important, since the temple precinct was extensively renovated in the Late Horizon. The Plaza of Huamanmarca in Huancayo is reported by several sources to have had a sacred huaca; perhaps this is the "estatua de piedra de Guayna Capac" that Alonso de Ferrer wrote of in 1533 (Matos Mendieta 1959:194).

The burial pattern appears to ahve been rather casual; nine burials were observed, every one a rather shallow interment in the plaza or courtyard of a site. These burials were so shallow that they had been turned up by plows and the accompanying grave goods scattered and broken. The richest of these shallow graves contained two aryballoid jars, one local jar, two cooking pots, and three miniature vessels. The bodies had been too severely disturbed by

plowing to make any assessment concerning orientation, flexion or extension, and so on.

F. Colonial settlement

The period between the Spanish conquest and the present has not yet been usefully divided from an archaeological or anthropological point of view. The schema used in defining Llaqsa, Ocopa, Retama and Modern units was an amalgam of two different models, one used by R. N. Adams (1959) and the other used by Kubler (1946) and Steward and Faron (1959). Adams's model consists of four different periods of socio-political change: 1. Early Colonial (A.D. 1540-1700); 2. Late Colonial (A.D. 1700-1821); 3. Early Republican (A.D. 1821-1890); and 4. Contemporary (A.D. 1890-present). Kubler's model (also used by Steward and Faron) consists of five periods of acculturation: 1. Conquest or Protocolonial Quechua (A.D. 1532-1572); 2. Early Colonial Quechua (A.D. 1572-1650); 3. Mature Colonial Quechua (A.D. 1650-1750); 4. Late Colonial Quechua (A.D. 1750-1821); and 5. Republican Quechua (A.D. 1821-present). Adams's study primarily deal with nineteenth and twentieth century data, while Kubler was much more interested in sixteenth, seventeenth and eighteenth century manifestations. It therefore seems useful to take the early half of Kubler's sequence and the late half of Adams's sequnce. Because the order of social change we are interested in here is on the level of the common serrano, some of the chronological distinctions made on the basis of major international political incidents are relatively meaningless in the highlands of Peru, either because

they never penetrated, or because they slowly filtered in bit by bit over an extended period of time. The Llaqsa unit of this paper would correspond with the Protocolonial Quechua period; the Ocopa unit would include Early and Mature Quechua; the Retama unit would include Late Colonial Quechua and Early Republican; and the Modern unit is synonymous with Adams's Contemporary unit.

Implicit in this quadri-part division is the assumption that there have been three events of major cultural consequence for the Jauja-Huancayo serrano since the Spanish conquest--the first a widespread resettlement under the reducciones; the second a period of general unrest, rebellion and new nationalism caused in part by increasing corruption and breakdown of many of the institutions which had remained more or less stable for a couple of centuries; and the third the gradual improvement of conditions following the declaration of a Republic in A.D. 1821, culminating in the termination of tribute paid to the government and mandatory public mita duty about A.D. 1890.

Our evidence for occupation patterns, storage buildings, burial patterns, and ceremonial structures comes from the Llaqsa phase; we did not have time to document the other units. Dwellings in Llaqsa were much like those of the previous Inca period--both round structures from 3.5-5.0 m. inner diameter and rectangular buildings 3 x 5 m. to 4 x 6 m. were scattered or clustered around small plazas and courtyards varying from 15 x 20 m. to 30 x 60 m. in size. Construction of the dwellings is somewhat poorer, however, with more mud used and less stone, so that the structures have a tendency to collapse quickly in a heavy rain.

Storage buildings continued to be built, but there is a change in their construction and location. We know from historical documents that the passing Spaniards repeatedly looted the rows of colcas; to combat this, apparently, storage buildings were built in small numbers in rather sequestered locales, or were built contiguous to the dwellings. The small rectangular 2 x 3 m. structures first seen in the Late Intermediate Period become more prevalent, but the major change in storage buildings is the appearance of a new type of circular storage building, completely domed over with earth and rock, of about 2.0-2.5 m. inner diameter, and about the same height. The walls of these small domed storage colca are fairly thick, apparently due to the problem of doming; they vary from 0.5-0.8 m. thick.

An interesting discovery in the survey of Llaqsa material was the apparent covert homage paid to huacas. We know that the Temple of the Sun and other temples at Hatun-Xauxa were destroyed, and that the oracle of Wariwilka was thrown in the river and the temple precinct ravaged, and that there was a concerted effort to Christianize, in name at least, the natives. Hence the discovery of ten probable hilltop huacas associated with Llaqsa style ware gives us an indication of one type of reaction to this sort of religious assault that is not available through the documents in our area. These ten localities were all characterized by low mounds; a low mound of dirt 0.5-1.5 m. high was piled up and faced with one or two tiers of stone; most of the mounds were between 10-14 m. in diameter, but they ranged up to 30 m. in diameter [diameters: 10, 12, 12, 12, 12, 12, 14, 18, 30, 30]. Associated with

three of these were small secondary structures about 2 m. in diameter. Around the perimeter and on these mounds were usually found sherds of the local Inca miniature style ware and sherds which generally could be assigned to Llaqsa ceramic assemblages. At least two of the mounds had human burial associated with them, but the evidence was too deteriorated to say more. It seems significant to us that these hilltop huaca mounds were all close to the three repartiminto heads of the valley--two were near Hatun-Xauxa, five were above the San Jeronimo-Concepcion area, and three were in the hills above Chupaca.

Chapter 8

Settlement Pattern and Lifestyle: Further Discussion, including Ethnohistoric Data

Many of the implications of the data have already been touched upon in previous chapters, but there are points which bear further elaboration, or upon which ethnohistorical data can shed useful light, such as pastoralism, the peripheral market, mitmaqkuna, yanapaqkuna or yanacona, the colca with respect to a possible redistribution system, the various camayoc, and so on.

A. Pastoralism

The general assumption is that during the Initial Period, the older patterns of nomadism associated with hunting and gathering disappeared completely, except possibly on the extreme south coast, and were replaced by sedentary, agricultural villages. Though this is true for several areas of Peru, the evidence suggests that it is not the case for the Jauja-Huancayo basin. Artifacts and settlement pattern data for this period indicate a semi-sedentary, semi-nomadic group of pastoralists, with a certain dependence on hunting and horticulture; this pattern persists with some minor changes until terminated by the Huari conquest.

Settlements for the periods between 1000 B.C. and A.D. 500 appear, in the main, to be seasonally occupied for a number of years and then

abandoned; dwellings for the most part appear to be temporary, portable shelters rather than permanent. Artifacts and faunal remains characteristic of this period indicate a dependence upon the domesticated llamas, as well as the hunting and gathering of wild plant foods and animals of all sizes. Horticulture, though not of primary importance in subsistence, is nonetheless a significant factor; certain related artifacts turn up early--for example, the rocker mill apparently is first recorded during the Early Intermediate Period on the coast (Lanning 1967:162), but turns up in the Early Horizon in the Jauja-Huancayo basin.

The postualted agricultural system is that of planting along stream flood plains, margins of lakes, and alluvial and colluvial fan deposits. The lack of specialized agricultural tools indicates little care was given the crop; fields were left for long periods while the people grazed their animals elsewhere. While plants may have grown well in many years, the extreme variability of local rainfall and thin soil would have led to several years of crop failure or poor yields.

Perhaps more significant is the fact that we have small population units exploiting wide expanses of land that have a high wild food productivity. At the time of the conquest, each Indian was paying tribute to his local pachaca curaca, among other items, one llama a year (Martinez Rengifo 1963/1583:64), meaning minimally 30,000 head of llama were paid in tribute in the Jauja-Huancayo basin each year. In 1534, a royal hunt held at Jauja in honor of Pizarro and Manco Inca resulted in the taking of 11,000 head of guanaco, vicuña, deer, fox,

and various birds (Estete 1872/1534). In 1952, the valley and valley-rim puna, in addition to enormous quantities of wheat and other produce, supported 672,220 head of stock, including 12,200 llamas (Lewis 1954:54).

Additional evidence could be cited, but it should be clear at this point that the Jauja-Huancayo sector has a tremendous carrying ability with respect to herd animals. We see innovation as an essentially conservative process (cf. Sanders and Price 1968:217; Flannery 1968:79), with the initial effect of such innovations as domestication as attempts to preserve former ways of life under the stress of changed conditions. The step from hunting guanaco to the herding of domesticated llama is then seen as that of making the animals more available to be hunted when needed; the rich carrying ability of the Mantaro valley in conjunction with this conservative mechanism led to a population equilibrium low enough not to cause the sorts of stress which may lead to agriculture on a full-time basis or to urbanism.

Flannery's concepts (1968) of seasonality and scheduling in a feedback system are seen as additional support for this status quo equilibrium, for it is seen that a switch from pastoralism to agricultural dependence would require a re-scheduling of procurement activities of such a fundamental nature that it would not occur except under conditions of severe stress such as a population greater than the system would carry, a situation which apparently never happened in the Mantaro, due to the abundant carrying ability of the basin. This population stress may have been in the making in the Huacrapuquio phases; if so it would help explain in part the rapid transition from

semi-sedentary pastoralists with horticulture to permanent agriculture with some pastoralism in the Middle Horizon Calpish phases, and also may explain in part why the Calpish peoples seemed to so whole heartedly adopt such a wide range of introduced Huari features. In ecological terms, the most distinctive positive characteristic of pastoral nomadism is that it is integrated into and maintains the general structure of the pre-existing natural ecosystem of hunting and gathering into which it is projected.

In terms of models of pastoralism discussed elsewhere, this type of semi-nomadic pastoralism with horticulture fits in with the type of semi-sedentary pastoralist utilized by Salzman (1967:116), the diversified pastoral nomads with conservational domestication defined by Beardsley and others (1956:148), or the model of semi-nomadism posited by Raikes (1967:139-141). The potential of the herd animals in these cases is not only in providing a reliable food supply, but in the fact that they constitute an enormous preservable food surplus, a kind of food storage on the hoof which provides an economic surplus which can be mobilized at will. Moreoever, a reasonable amount of wealth can be accumulated, as the animals themselves not only constitute an accumulation of wealth but also serve as pack-animals to transport additional material goods accumulated. This mode of semi-nomadic pastoralism in conjunction with horticulture and hunting leads to stable group parameters and permanent political authority roles, so that we can speak meaningfully of segmentary tribal pastoralists (Sahlins 1968; Salzman 1967) living in the Jauja-Huancayo basin, depending

primarily upon herding, but with hunting and horticulture being important secondary resources.

B. Population Densities

Prior to the Middle Horizon, the population density of the Jauja-Huancayo basin was relatively small and stable, increasing at a relatively low rate throughout time, until the Middle Horizon, which seems to mark, in part, a demographic explosion. Prior to the Middle Horizon, our population centers represent transient hamlets and villages, with the largest sites supporting no more than 250 persons, the upper range of the possible demographic field size seen for nomadic populations according to Doxiadis (1968a). In the Middle Horizon, our largest sites are minimally double this figure, and in the subsequent periods the Middle Horizon figure is doubled and redoubled. During the Calpish phases there are sites with minimally 500 persons, during the Quinsahuanca phases this figure increases to 800-1000 persons, and in Matapuquio and Arhuaturo times there are several towns of 2000-3000 persons; in the Inca occupation we continue to get large towns of this size, but there also is a tendency to return to villages in the range of 200-500 persons. We should perhaps indicate, at this point, our method of arriving at population estimates, and also certain divergences in interpretation of our settlement sizes with some of those previously postulated for the area.

Our population estimates are most secure for the Late Intermediate Period settlements where we have the best preservation and the most

secure information; they are less secure for Middle Horizon and Late Horizon sites, which being in large part on the valley floor, have suffered considerable destruction. Estimates for Early Horizon and Early Intermediate Period sites, though they lack permanent stone architecture, are somewhat more secure because the number of house platforms, and to a lesser extent, the number of housepits, is countable, and a reasonable estimate can be made from these structural indications.

We felt an estimate of 5-6 persons per single family dwelling was a conservative estimate on the basis of modern census information as well as ethnohistorical census data. Census data for current populations cited by Robinson (1964:95) showed a variation of an average of 5.1 persons per family in the sierra to an average of 6.4 persons per family in the selva; sixteenth century data provided by Vasquez de Espinoza (1942:698) recorded a total of 4,825 tribute payers from the Jauja-Huancayo basin out of a total population of 32,419, suggesting an average of 6.7 persons per tribute payer. Since a number of individuals were exempted from paying tribute, the number of persons per family must then be less than the 6.7 person average per tribute payer. It is interesting to note that if one takes the minimum of 20 square feet per person for a family of six or less that Cook and Heizer (1968:114-115) found true for California aboriginal populations, the house dimensions for the Late Intermediate Period dwellings indicate between 4-6 persons per dwelling, which is very close to the approximation of 5.1-6.7 we arrived at by use of census

data, suggesting that the results found true for California Indians might be extended to the Jauja-Huancayo basin. Thus both through census data and through dwelling size we can arrive at a safe estimate of between 5-6 persons per family per single family dwelling. The largest towns of the Late Intermediate Period all have no more than 500-600 dwellings, so that these towns, depending on which limit is used, have no more than somewhere between 2500 and 3600 people.

This leads us to the disagreement in interpretation of evidence between this paper and Rowe (1963) and Lanning (1967) concerning the existence of urban cities in the Jauja-Huancayo basin. We follow Schaedel (1969:10) in seeing a range of 2,500-10,000 as a requisite population level for urban features to begin to emerge; thus the towns of the Late Intermediate Period are just at the lower end of this range, and as we have shown in Ch. 7, are just beginning to show incipient nucleation in the sense defined by Lanning (1967:34).

These towns, then, are semi-nucleated, achoritic, and agglutinated settlements (Rowe 1963:3; Lanning 1967:36). The towns we define would also be towns under Lanning's definitions; Lanning has evidently followed Rowe (1963) in arguing for cities in the Jauja-Huancayo region, so we should direct our attention to Rowe's evidence. There appear to be two reasons for the differences in interpretation: one being our additional information allowing more precise chronological dating and better population estimates, and the other being an apparent disagreement upon the minimal qualifications for defining a city. With respect to this latter point, Rowe (1963:3) apparently feels any

population center greater than 2,000 persons can usefully be termed an urban center or city, while we would argue, as indicated above, that this limit is too low. Whether we accept a lower limit for urbanization at 2,000 or in the 2,500-10,000 range, the two sites in question--Kotkoto and Patankoto--turn out on the basis of our additional data to be almost wholly Late Horizon occupations; that is, the greatest extent of occupation at these sites occurs during the Late Horizon, so that if there are any urban centers or cities in the Jauja-Huancayo valley, they are wholly Late Horizon or Inca manifestations, not Late Intermediate Period as Rowe and Lanning have suggested. Due to the amount of destruction at these two particular sites, we were unable to obtain much better population estimates than Rowe, so it is within the range of possibilities that these two sites are Inca cities. However, since most evidence points to the typical Inca settlement pattern in the south and central highlands as being one of generally rather dispersed or decentralized settlements, the development of Inca 'cities' in the central highlands near Huancayo seems atypical. We appear to be in disagreement with Lathrap (1969:344) who argues that cities are proliferous in the Late Intermediate Period and Late Horizon in the Central Highlands and that it is because the archaeologist has not looked for them in the right areas that cities are seen as being non-existent in general.

In summary, the Early Horizon sees small bands of pastoralists practicing horticulture and hunting in addition, living in pithouses

and temporary shelters in seasonally occupied hamlets or villages of 40-100 persons. During the Early Intermediate Period, this same economic pattern persists, with hamlets and villages with shelters or houses built on house platforms and population sizes of 40-200 persons. In the Middle Horizon, the pattern abruptly changes so that the primary economic dependence is upon agriculture; hunting effectively disappears, and pastoralism/herding seems to be practiced only by certain full-time specialists attached to the agricultural communities; villages first are built on the valley floor, but later move to low hillside flanks; these villages or small towns seem to have no more than 500-800 persons (though the evidence is poorly preserved). In addition to the first permanent stone architecture, first permanent sedentary villages, we see the development of the first ceremonial structures and temple precincts in conjunction with larger population centers. During the Huari empire, most of the people of the valley may be viewed as primitive peasants, but during the late Middle Horizon and the Late Intermediate Period we see the existence of a large number of apparent tribal chiefdoms; settlements of this period are hillside and hilltop towns of 2000-3000 persons, and most have a number of separate specialized storage localities. Both during the Late Intermediate Period and the Late Horizon, the economy appears to be agriculturally based, with the llama herds which are kept both by specialists and by mita labor providing an important secondary resource. In the Late Horizon the towns of 2000-3000 continue to be occupied; in addition there are a number of smaller villages

established of 200-500 persons, plus some important new administrative areas which also include temple complexes, and there are a number of new storage colca sites established. In the Late Horizon, there may be certain Inca-inspired multiple family dwellings as well as single family dwellings, but in the first post-conquest phase, Llaqsa, the pattern reverts to only single family dwellings.

C. Storage Complexes

The construction of storage colca in the Jauja-Huancayo basin seems to be a characteristic of relatively long duration, perhaps dating back to the Calpish occupation. The architectural style of the much modified structure of Wariwilka is similar to that of Capilla Pata at Huari, Pikillaqta near Cuzco, Viracocha Pampa near Huamachuco, Pampa de las Llamas in Casma, and an unnamed site near La Union in Huanuco (Menzel 1964:70; Rowe 1963:14; Shea 1969:80). Menzel (1964) and Rowe (1963) believe that at least four of these are elaborate complexes for government stores and administration. Since there seems to be fairly close correlation between the important Huari administration centers, important oracles, and Huari storage complexes, it does not seem unreasonable to hypothesize that Wariwilka may have served as a small Huari storehouse as well as the locus of an important oracle.

Whether one accepts the hypothesis of Wariwilka as a minor storage center, or the apparent evidence of storage colca in the Quinsahuanca phases, it is certainly clear that by the Matapuquio and Arhuaturo occupations of the Jauja-Huancayo basin that the Huanca had built a

number of fairly extensive rows of storage colca. The root crops grown in the sierra are particularly suited to the storage economy that developed. A surplus is readily obtainable; for example, a typical current yield per hectare of potatoes is 7000-9000 kilos, while a typical yield for corn is only about 15-20% of this, 1200-1600 kilos per hectare (Lewis 1954:27). The average peasant in the valley today, considered impoverished by our standards, still is able to produce enough so that he needs only half his crop for subsistence and thus is able to sell the other half of his yield as surplus (Matos Mar and others 1964:191). Moreoever the root crops of the valley keep in their natural state twelve months or more at this altitude, and if converted to chuño, could be kept considerably longer.

Though we did not recover evidence of the perishable aspects of storage colca, such as the products stored with in them, the method of roofing, and so forth, we can get at this information through various documents, particularly the various visitas. It is evident from the drawing of Guaman Poma that the circular colca had domed roofs (Baumann 1963:87; Baudizzone 1943:68), while the rectangular colca had gabled roofs (Baudizzone 1943:76). For the area of Huancayo, it was recorded (Martinez Rengifo 1963:63) that each pachaca of each guaranga gave to the Inca each year the following: 5 large baskets of coca, 26 pieces of cotton cloth, 2 pieces of cumbi cloth, 3 fanegas of maize, 4 large baskets of aji, 20 pairs of women's sandals, 10 pouches of little dried birds made into charqui, 5 small bundles of the essence of coca, 2 small bundles of dried crawfish, 3 small bundles of dried

guava, 10 pairs of round wooden earspools, and 1 cotton hammock. In addition to this tribute given to the Inca, each pachaca gave the following to the Temple of the Sun and the Mamakuna (Martinez Rengifo 1963:63-64): a field of green coca for burnt offerings to the Sun, 5 fanegas of maize, 5 fanegas of frijoles, 10 large and small ollas, and five weights of cotton for spinning. Each guaranga (made up of from two to thirteen pachacas in the Huancayo area) kept 300 head of llama for meat for the mamakuna, and brought maize, squash, yuca, aji and other items as needed by the mamakuna. Not only did each pachaca and the guaranga as a whole have obligations of tribute to the Inca and the Temple of the Sun and associated mamakuna, but each pachaca in the valley provided the following tribute for the principal curaca of the guaranga (Martinez Rengifo 1963:64): 40 fanegas of maize, 1.5 fanegas of frijoles, fields of aji, sweet potato, yuca, coca (a field large enough to yield 20 baskets annually), cotton, plus an additional levy of one llama from each Indian in the pachaca each year. No doubt this list could be expanded, but it certainly is indicative of the types and quantities of materials being stored in the colca.

Murra (various references) and a great number of others have emphasized the redistributive aspects of the storage colca system, but in doing so one aspect of the economic system has been overlooked--that of the peripheral market exchange such as defined by Dalton (1962). The existence of markets at Jauja has been documented by Estete (1872) and other chroniclers; these markets (catukuna) were operated by market

place specialists or vendors called catucamayoc. The case for the peripheral market has been rather well put by Hartmann (1968) for the Inca empire; what we want to emphasize here is that a significant amount of material was acquired through the market place that was not available through redistribution or reciprocity in the colca system.

D. Identification of mitmaqkuna and Inca administrative centers.

From the ddocuments, we know that the province of Guamanhuanca was divided into three sections--Hatun-Xauxa, Lurinhuanca and Hananhuanca. The capital of Hatun-Xauxa remained at Jauja from our earliest recorded data throughout the sixteenth century; the capial of Lurinhuanca was at Marcavilca before the Spanish conquest, at San Geronimo during the first decade or so of the conquest, and later moved to Concepcion. The capital of Hananhuanca was at Sapallanga prior to the conquest, at Sicaya for a time after the conquest, and was moved to Chupaca in the last third of the sixteenth century (Andres de Vega 1968/1582). It is clear that the capital of Lurinhuanca and Hananhuanca were not fixed geographical locations, but rather changed as the principal curaca of the section changed.

The location for all these capitals is known precisely, or at most within a kilometer, except for Marcavilca. A number of authors (Varallanos, Matos Mendieta, Rivera Martinez, Espinoza Bravo, etc) have copied the same source in saying that Marcavilca is the present day pueblo Marcavalle. Inasmuch as Marcavalle is in Hananhuanca instead of Lurinhuanca, and as it is very close to Sapallanga, it does not seem

reasonable to designate any of the Late Horizon ruins in its vicinity as Marcavilca. If one is to find Marcavilca, it seems only reasonable to look within the boundaries of Lurinhuanca itself rather than elsewhere. If we go along with the highly debatable assumption that the site should be near a pueblo with a name derived from Marcavilca, there are two modern day pueblos close to important Late Horizon sites which might be possible candidates for Marcavilca--the pueblos of Marcatuna and Maravilca. The pueblo of Marcatuna is close to several Late Horizon sites, one of which, PJuM 621, is obviously an Inca administrative center of importance second only to Jauja in the early half of the Late Horizon; as such it would be an ideal candidate for Marcavilca. In addition, it sits in an ideal location to control one of the important branches of the Yauyos-Cañete lateral of the Royal Highway. However, PJuM 621 is disturbingly close to later Hananhuanca capitals, and may well represent a capital of Hananhuanca prior to that of Sapallanga. On the basis of the ethnohistorical data, Maravilca is more logical. It is close both to the later Lurinhuanca capital of Concepcion as well as some very large Inca sites, and it is quite near one of the important reducciones of the later part of the sixteenth century. On the basis of our knowledge to date, we cannot clearly identify Marcavilca, but we can point to some highly probable locations; moreover we can definitely say that Marcavalle could not have been the locale of Marcavilca.

One of the important questions raised by our survey was the identification of the mitmackuna we defined archaeologically. We

have already argued from an archaeological basis that it most likely was a group of Angara from northern Huancavelica, but we sought to verify this through the ethnohistorical documents. On the basis of the published documents available to us, we cannot identify the mitmaqkuna for the reason that none of these documents mention a mitmaqkuna in this area. We have here a situation diametrically opposed to the problem in Huanuco, for in Huanuco there are at least eleven pueblos of mitmaqkuna referred to in the documents (Ortiz de Zuniga 1961:45-47), but Thompson (1968:111) was only able to locate one certain occupation site, whereas we can locate a number of sites with mitmaqkuna occupation, but we cannot find reference to them ethnohistorically.

We do find, however, reference to various Huanca mitmaqkuna in several places throughout Peru and references to some mitmaqkuna in the Jauja area of the Jauja-Huancayo basin. Our problem is complicated by the fact that the Spanish used the terms mitmaqkuna and yanacona rather interchangeably, although they refer to two different groups of people. A number of the peoples referred to as mitmaqkuna in the Jauja area are not mitmaqkuna but yanacona, and, moreover, not yanacona in the pre-conquest sense of the term, but yanacona as the term became modified in the latter half of the sixteenth century. Individual Huanca Indians who are described as mitmaqkuna in the documents are found in the pueblos of Pomahuasi and Marac in Huanaco (Helmer 1957:36; Ortiz de Zuniga 1967:251); in several areas of Huamanga (Rivera Serna 1966); around Cuzco (Brundage 1963:142); and in Yauyos (Matos Mendieta

1959:194). Though it is extremely important to establish whether these Huancas are in fact mitmaqkuna or not, that argument is beyond the limits of this paper; it is clear, however, the Huanca Indians were dispersed through some mechanism quite widely in the highlands.

For the Jauja-Huancayo basin, mitmaqkuna from the Lupaca (Diez de San Miguel 1964:81), from the Cañari and Chachapoyas (Loarte and Ruiz 1940:22; Espinosa Bravo 1964:222), from Huamachuco (de Silva 1969:54), and from Yauyos and Huarochiri (Vasquez de Espinosa 1942:698; Vega 1968:262-265) have been reported. It is difficult to separate those groups which were pre-conquest from those which were strictly post-conquest. It is fairly clear that the Yauyos Indians (from Mancos, Laraos, Hatun-Yauyos, Chaclla, Mama or Omas, and Huarochiri) were brought in only after the conquest. It also appears extremely likely that the Cañari and Chachapoyas Indians, who were engaged in the construction of the Spanish capital of Jauja between 1533-1535, and who are later found on encomiendas in the valley, were remnants of the army of Chalcuchima, who were retained in the valley after the demise of Chalcuchima. The 'mitmaq' from Huamachuco is represented by only one individual; hence his status is unclear. For the Lupaca, we have their statement that they sent men as mitmaqkuna to the Huancas, but none of the chroniclers or visitas mentions their presence, so they may never have reached the basin. Perhaps more important than the fact that we can identify some people and not others is the fact that there is a sufficient demographic admixture in the valley to give it a more or less cosmopolitan community.

While the mitmaqkuna were colonists for military, economic and political reasons, the yanacona or yanpaqkuna were individuals who servedin a number of different categories. They were, in some cases, high class specialists, exempt from tribute, who served as major domos and overseers in the absence of the curacas, while in other cases they were low status individuals who were porters, servant, etc. For example, the three curacas sons appointed to serve in the administration of the Inca at Cuzco, the three men to serve the mamakuna, the five retainers for the curaca, and the two old men to be gate-keepers from the guaranga of Huancayo (Martinez Rengifo 1963) were all called yanacona, although they obviously performed quite divergent tasks, were chosen for different durations of time, and had different statuses.

Our understanding of the term has still further been obscured by the Spanish practice of also classifying tindaruna ('rented' Indians) as yanacona, and by the use of yanacona both for individuals and for large corporate groups. For example, due to the depopulation of the Jauja-Huancayo area, Don Martin Guzman moved Yauyos Indians from his encomiendas in Hananyauyos to his encomiendas in Lurinhuanca and Hatun-Xauxa, and to one of the coca growing settlements out in the selva, while additional Yauyos Indians and other Indians carried his baggage when he came from Lima to check on his encomiendas (Andres de Vega 1968; Vaca de Castro 1909); all of these individuals and groups were called yanacona by the Spanish.

Close reading of the visitas and chronicles allows ethnographic reconstructions to be made for the highlands. Dual organization

apparently existed on several political and religious levels, though we cannot yet extend it to kinship and marriage. Perhaps one of the more interesting exercises would be the comparison of Old Kingdom Egypt with Incaic Peru, in the same manner as Adams(1965) has done for Mesopotamia and Mesoamerica. For example, the Egyptian spat, like the Peruvian ayllu, was formerly a kin unit, but through time the spat, like the ayllu, was transformed from an economically and politically independent unity to a dependency of a politically centralized power. The spat and ayllu ceased to be independent settlement groups but became sections or provinces of the empire; their chiefs became local officials of the state. There were large state granaries in both areas which functioned by redistribution, and served to feed the peoples in times of drought or famine. Both Old Kingdom Egypt and Incaic Peru existed without true cities in the main, but had their temples one place, their palaces in another and so forth. Craftsmen and artisans lived in scattered towns, villages and haciendas, and exchanged their products through state-operated redistribution networks and perhaps peripheral market exchange. This listing is but a beginning of the comparisons that can be made between the two societies. Peru is a tremendously important laboratory for studying the process of urbanization, not only because of the benefit of such studies as the comparison of similar processes in Egypt and Peru, the benefit of studying yet another independent locus or urbanization, but also since the peoples of Southern Peru seemingly rejected the more efficient urban-city organization such as characterized periods such as the

Huari empire in favor of the more dispersed, decentralized town arrangement of the Inca.

Appendix A

Equivalence of PJuM series and other site designations

Considering the number of site names given by various authors such as Tello Devotto, Mejia Xesspe, Matos Mendieta, Suarez Osorio and others, one would assume that a considerable listing of equivalences could be drawn up between the sites numbered in this report and these other listings. When examined, however, most of these lists consist of enumerations of a number of site names with no reference either to site location or to material content. Not much more information is available now than two decades, when Bennett (1953:16) observed that "Mejia (1950), reporting on the survey work of Dr. Julio C. Tello, lists over 100 site names for the Mantaro Basin, of which the majority, 74, were in the Jauja Valley. No information about any of these is available except Tello's (1942) statement that the site of Wari-Willka pertains to the Wari period."

Three of the several published reports give us practically all the information available. By far the most valuable is the report of Ricardo Tello Devotto (1959), who lists twelve sites for the area, nine of which were included in my survey area. Tello Devotto's report included enough architectural detail and enough information of relationships with principal modern settlements that I can identify all but one of his sites with certainty. It is obvious from Tello Devotto's report that he personally had surveyed the sites he describes,

which unfortunately is not the case with most of the other sources. With the exception of the Inca temples suggested for the ruins at so many sites by Tello Devotto, his description of these sites is roughly equivalent to the ones of our survey. The second report, that of HansHorkheimer (1951), includes a reasonably accurate sketch map along with eye-witness accounts of the ruins of about half a dozen sites included in the survey area, and is useful to complement the information given by Tello Devotto. The third source is a stylized sketch map of sites in the Jauja-Huancayo basin, perhaps originally made by Federico Galvez Durand; this map is exhibited at the Galvez Durand Museum at G. U. E. Santa Isabel in Huancayo and the Wariwilka Museum at Huari, is utilized by Matos Mendieta, Guzman Ladron, Suarez Osorio and others, and is published in part in Suarez Osorio (1967). The usefulness of this map is extremely limited, as there are a multitude of errors, with some sites misplaced by at least 20 kilometers by the original artist, since once again the map is merely a listing of names without reference to the material content or architectural remains of the sites, and since most of the secondary sources using it have not visited the sites it lists.

Approximately 150 different site names can be found in the published literature, but we see that we can extract vague information about the architectural remains for only 10-15, and we can find information about the lithic and ceramic materials found at only about five of these. Since all but one of these five are multi-phase occupation sites, very little can be said utilizing this material in

the way of reconstructing culture history.

An attempt was made during the initial survey of the valley area to locate a number of these floating site names. It quickly became evident that this task was impossible in the time available. Names of major physiographic features may be fairly widely agreed upon, but for local streams and hills, names seem to vary considerably from hamlet to hamlet, resident group to resident group. This last statement perhaps needs some explanation, as all too frequently we take the name of a site as given by a local informant to be somehow universal and immutable. In the abstract, this is very simplistically seen when we consider the obvious likelihood of one hamlet calling a hill "Ruin Hill" referring to the ruined structures on the hill, while people of a hamlet on the other side of the hill may call it "Cactus Hill" referring to the large number of cacti growing in amongst the ruined buildings, while referring to another nearby hill as "Ruin Hill". Hence it is readily seen that when utilizing only a list of site names with no idea as even to approximate location, we came up with quite a number of sites called "Ruin Hill" and "The Ruins", and we were simply unable to determine which one was the site originally referred to, and even further, whether the "Ruin Hill" referred to by Matos Mendieta was the same as "Ruin Hill" for Espejo Nuñez and so on. Furthermore names of given sites change over time. A case in point is the area where our sites PJuM 613-619 were located. Thirty years ago O'Neale and Tschopik found local informants who referred to the area as Pachaspata or Pampa Paccha. Today residents

look bewildered when you ask them where Pachsapata or Pampa Paccha are, but they can tell you at once where Acllahuasi (PJuM 613-615) and Calpish (PJuM 616-619) are located. Comparison with the published and unpublished materials of Tschopik and O'Neale shows that what was known generally in the 1930's as Pampa Paccha or Paksapata has been today subdivided into two distinct localities--one known as Acllahuasi and the other as Calpish. Three decades hence these present designations may very well have been replaced again by new ones.

The following list enumerates the equivalence between the site numbers of our survey and names used by various sources which could be determined with a fair degree of confidence:

PJuM site	
501	Huaribilca, Wariwilka, Waripaccha
502	Patankoto, Pampa Coto
505	Tunanmarca
508	Ledig-Tschopik Rockshelter 1, Callavallauri, Cunas
509-513	Los Huancas
512-513	Susuña
520	Hatun Xauxa, Jauja Tambo, Tambo Huari-Colcca
576	Unishkoto
579	Uña y Ulo
602	Kotokoto
606-607	Pichkakoto, Quilcas
613-619	Pachapata, Paksapata, Pampa Paccha, Calpish, Acllahuasi
621	(Marcavilca?)
625	Willkaurco, Willkaulo, Willkaruo
627-630	Auqui and Hualas Waturi, Huatura, Huaca de la Luna
639-645	Arwaturo, Arhuaturo, Arhuantuc, Ahuac
656, 610	Llaqsa
657	Walwaskoto, Hualhuas
677	Pucupata
711	Wammarmarka, Huamanmarca
712	Incacorral, Inti-Corral
717-719	Sityakoto, Ullakoto
728-730	Casa Avanzada, Ñauparhuasi (note confusion with 798)
747	San Agustin de Cajas
750-753	Waqaswato, Huacawato, Wakaspata, Wariwata
760	Ruinas de la Rinconado o Ocopilla

770-774	Huacrapuquio, Huayrana
778-792	Omakoto, Umakoto
797	Plaza de Huamanmarca, Huaca de Huancayo
798	Sholca-tambo, Huancayo-tambo, Naupachuasi, Casa Avanzada
799	Anya, Anja, Iyakoto

There are also two different sets of numbered sites in the area with which it would be useful to establish correlations--one set by Ramiro Matos Mendieta for his work with the Smithsonian Institution Andean Project, and the other set by John Rowe and Dorothy Menzel for site collections in the museum at Berkeley. Matos has listed some 200-300 sites on a map that covers the entire area from Lake Junin to Ayacucho. Of these, 17 sites are located in my survey area: sites 22, 50, 51, 52, 53, 54, 55, 56, 57, 60, 61, 62, 63, 65, 92, 95, and 96. His map has been so simplified, however, that I am only able to locate ten of these 17 sites with any degree of confidence:

22 = PJuM 510-513, 520
23 = PJuM 505
50 = PJuM 504
52 = PJuM 503
54 = PJuM 502
61 = PJuM 602
62 = PJuM 501
65 = PJuM 507, 508
95 = PJuM 539-545
96 = PJuM 527-530

The collections at Berkeley actually contain two numbered series--one series by site number and the second series by museum accession number. The first series comprises the materials collected by Rowe and Menzel during a limited survey of the immediate Huancayo vicinity about a decade ago, and their sites can be identified with fair confidence:

no number = Jauja-Tambo, PJuM 520
Ju 1-1 = Iya-qotu, PJuM 799
Ju 1-2 = Llaqsa, PJuM 656,610
Ju 1-3 = Wariwilka, PJuM 501
Ju 1-4 = Kotokoto, PJuM 602
Ju 1-5 = Patankoto, PJuM 502
Ju 1-6 = no name, PJuM 747
Ju 1-7 = insufficient information

The second series encompasses materials collected by Lila O'Neale in the 1930's, and is identified on the basis of museum accession remarks plus the ceramic content of her collections, so that identification is not completely certain in some cases:

4107-4114 = Wariwilka, PJuM 501
4115-4119 = Waq'as Wato, PJuM 753
4120-4121 = Kotokoto, PJuM 602
4122-4126 = Patankoto, PJuM 502-1A, 1B
= Pampakoto, PJuM 502-1C, 1D
4127-4214 = Pampa Paccha, PJuM 616-618
4215-4228 = insufficient information
4229-4231 = possibly PJuM 762
4232-4233 = unknown provenience, Quinsahuanca style

Appendix B

Chronology and Radiocarbon Determinations

Although there is fairly good agreement on the relative chronology of Peruvian prehistory, there exists considerable divergence between Peruvianists when it comes to absolute chronology. For the periods dealt with in this study, these divergences become particularly apparent when considering the Initial Period-Early Horizon break and the Early Horizon-Early Intermediate Period transition point. For example, if we compare the date used for the beginning of the Early Horizon used in this paper with those of two recent summaries--Lanning (1967:25) and Rowe and Menzel (1967:vi-vii)--we note a difference of 500 years; Rowe and Menzel suggest a beginning date of 1400 B.C., I utilize a date of 1000 B.C., and Lanning uses a date of 900 B.C. Similarly, for the beginning of the Early Intermediate Period, Rowe and Menzel give 400 B.C., Lanning uses 200 B.C., and I have suggested a date of about A.D. 0/50. Fortunately for later periods there is much better agreement, so that Rowe and Menzel date the beginning of the Middle Horizon at A.D. 550, while Lanning and I both utilize A.D. 600.

Since the ceramic phases we all attempt to define are sometimes as little as 30-50 years in duration, some explanation for the difference in estimates of A.D./B.C. chronology of as much as 500 years is needed. This difference is based on a multitude of factors--

including the accumulation of new data, the number of radiocarbon dates used, which radiocarbon dates are rejected, various modifications of reported determinations, basic philosophical differences on the uses of radiocarbon determinations, and so on. I would assume that Lanning's approach to radiocarbon chronology is basically the same as the one utilized here--Lanning suggests that his ceramic period dates "may err by 50 or 100 years or perhaps a little more"(1967:29), which is roughly the magnitude of the difference between our two chronologies for most phases.

However, the chronology given by Rowe and Menzel(1967:vi-vii), slightly modified from an earlier version (Rowe 1966:194), differs in two basic assumptions from those utilized here, which bear further examination. The first of these assumptions is that there exists two patterns in Peruvian radiocarbon measurements--a long scale pattern and a short scale pattern--and that "the only reasonable solution appears to be to accept only those measurements which are consistent with the long scale pattern" (Rowe 1966:192). Certainly the data as presented by Rowe suggest quite a divergence in radiocarbon determinations made by different laboratories in different years for presumably the same ceramic phases, but whether these differences fall neatly into a short scale pattern versus a long scale pattern, and further whether we can justifiably exclude dates that do not fit the long scale pattern is not at all clear.

In the tables in this section I have ordered radiocarbon determinations for Peruvian ceramic periods in two ways to examine

these problems. The phase determinations generally are based on published data; where my understanding of these data differs from others, there may be differences in a phase or two in placement. All dates are from previously published materials, except for some of the Geochron dates, which are either reported here in Table 7 for the first time, or which will be discussed by Scheele and Patterson in their reports on Ancon ceramics. The two different orderings, one with laboratory method the primary ordering criteria, and the other with phase placement the primary ordering principal, appear to suggest that in part the long scale versus short scale pattern may be real as there is some difference in chronologies suggested by using different methods, but that in large part the long scale versus short scale pattern was just an unfortunate statistical anomaly.

The arrangement of determinations by laboratory method (Table 8) was suggested to me by Gary Vescelius, who has considered this problem in great detail and who has a large corpus of unpublished material concerning this problem. For ceramic period determinations in Peru, most determinations have been made by one of six different methods:

Solid carbon method: C, L
Methane method: GX, ANU
Benzene method: IVIC, ANU
Carbon disulfide method: M
Acetylene method: TK, HV, GAK, LJ, W
Carbon dioxide method: N, P, I, L, Y, UCLA, GRN, O, NZ

The advantages of the various gaseous methods over the solid carbon method are generally well agreed upon; what Vescelius has pointed out to me is that the differences in method between the various different gaseous determinations may lead to an explanation in the divergences

in dates. In looking at the ceramic period dates for Peru, two vague trends (which very well may disappear as our sample sizes increase) can be extracted--on the one hand some of the methane method determinations appear to be somewhat older than might be expected, while on the other hand some of the carbon dioxide method determinations appear to be considerably more recent than we might expect. In examining a longer, earlier, unpublished version of Rowe's long scale-short scale hypothesis, I observed that the long scale consisted of dates made generally by methane, acetylene and carbon dioxide methods, while the short scale consisted exclusively of determinations made by the carbon dioxide method. It thus seems reasonable to argue that in part the long scale-short scale problem may be a function of different laboratory methods. At the same time we must note that in general the long scale-short scale differences disappear as we add new data available since Rowe's first description of this problem and thus increase our statistical sample, so that in large part it must also be argued that most of the long scale-short scale problem was just an unfortunate statistical anomaly.

That small portion of difference in dating which is due to differences in methodology reflects directly on the basic assumption made by Rowe that we should accept determinations only if they are consistent with the long scale. Basically all the gaseious methods begin by converting the samples into carbon dioxide; they owing to some of the difficulties in handling carbon dioxide, such as the detection

of contamination by modern gaseous carbon dioxide, many laboratories convert to other carbon-based gases. One assumption here is that all processes are 100% efficient in conversion of the original carbon from one form to another. If the conversion is not 100% efficient, however, the end result will be less Carbon-14 in the final analysis and hence a determination slightly older than it should be. Similarly, if there is undetected contamination of modern carbon dioxide in the carbon dioxide method, the determination will be more recent than it should be. Hence it is not surprising to find that most of the dates we consider to be too old are from laboratories where the problem of 100% conversion is more critical, and that most of the dates we consider to be too recent are from laboratories where the problem of modern contamination is more critical. In general, most laboratories feel that they have the problem of contamination under control so that the critical problem remaining is that of 100% conversion. This would suggest that in accepting only those measurements which are consistent with the long scale pattern, as Rowe argues, we would likely be skewing the actual chronology toward a chronology which gives phase dates that are too old. Hence the chronology we present in Tables 10-12 is derived by looking for statistical clusterings of determinations, and thus treating dates that seem too recent or too old as extremes of a statistical distribution. These clusterings may be observed fairly readily in referring to Tables 10-12 where the radiocarbon determinations are arranged primarily by phase rather than by laboratory method.

The second major difference between the chronologies suggested by

Rowe and Menzel and other chronologies (including the one suggested here) is the conversion of all published dates from determinations based on a 5568 year half-life to dates based on a 5730 year half-life. Certainly the present best estimate for the half-life of Carbon-14 is 5730 ± 30 years (Suess 1965), and with this in mind, Rowe and Menzel are certainly justified in their conversion of dates based on the 5568 year half-life to the 5730 year half-life to obtain an absolute chronology which is more nearly correct. In this limited sense, the chronology suggested by Rowe and Menzel is a closer approximation to reality than the chronology utilized here. There are, however, some very good reasons for continuing to utilize the 5568 year half-life. One obvious one is the resulting confusion when some dates will be converted and some not by various writers--indeed this confusion is already present in the chronological table of Rowe and Menzel (1967), where it is not evident to the casual reader that the table has been constructed utilizing only those dates which agree with the long scale and which further have been converted from their original 5568 year citation to a 5730 half-life estimation. It was just to avoid this sort of problem that the Sixth International Conference on Radiocarbon and Tritium Dating (of which Rowe was a participant) voted unanimously to maintain the previously established procedure of reporting dates with reference to the 5568 year half-life rather than converting to the 5730 year half-life (Damon, Vogel, Willis and Johnson 1966:xvi).

A more important problem is that the production rate of radiocarbon

by cosmic rays and that the size of radiocarbon reservoirs and the exchange rate of such reservoirs are not constant, as previously had been assumed. The production of radiocarbon by cosmic rays undergoes large variations because of modulation of the galatic cosmic ray flux by fluctuations of solar activity and fluctuations of the magnetic dipole moment of the earth (Stuiver and Suess 1966). Moreover, the exchange rate of Carbon-14 reservoirs (in large part the oceans) turns out to be a partially temperature-dependent function, so that effects of the last glaciation are still being seen in radiocarbon perturbations as recently as 4000-6000 years ago (Stuiver and Suess 1966; Suess 1965). Damon, Long and Grey (1966a, 1966b) calculated that there was an atmospheric radiocarbon fluctuation of 2.5% during the Christian era, leading to an inherent uncertainty in radiocarbon dating of as much as 250 years for A.D. times, with a relatively steady increase of atmospheric radiocarbon at the rate of 0.4% per 100 years during B.C. times, leading to still greater uncertainty for B.C. period radiocarbon determinations. At that time they recognized four different perturbation maxima--one at 400 B.P., with a peak about 2.5% too recent; one at 1500 B.P., with a peak about 1.5% too recent; a third at 2200 B.P. about 2.0% too old; and a fourth at 5700 B.P., about 14% too young. Ralph and Michael (1967, 1969) found that application of regression analysis tended to reduce the extreme perturbations around the time of Christ, which allowed them to suggest a closeness of fit table of arbitrary correction factors for the last 6500 years. Hence for radiocarbon determinations converted to the

5730 year half-life (such as Rowe and Menzel have done), one adds or subtracts as follows (Ralph and Michael 1969:472):

C-14 date	Correction factor
A.D. 1525-2000	- 50
A.D. 975-1524	0
A.D. 1-974	+ 50
924-1 B.C.	- 50
1324-925 B.C.	- 100
1699-1325 B.C.	- 250
2099-1700 B.C.	- 350
2499-2100 B.C.	- 450
2949-2500 B.C.	- 550
3999-2950 B.C.	- 600
4499-4000 B.C.	- 750

When the perturbation correction factor is considered in conjunction with the 5568-5730 year half-life correction, we find that for A. D. dates, the two correction factors essentially cancel each other out so that after the time of Christ we can essentially regard the 5568 date as the closest approximation to true calendrical dates (on the basis of present information). For the first millenia B.C., the 5730 correction is not a bad approximation, but for succeedingly older dates, the 5730 correction becomes an increasingly poor fit, so that it is essentially not much closer an approximation to true calendrical dates than the 5568 year half-life calculations.

Therefore, considering the confusion generated by trying to switch from a 5568 year half-life chronology to a 5730 year half-life chronology and considering the fact that present evidence suggests that the 5730 year half-life does not approach reality in a significantly more meaningful fashion than the 5568 year half-life due to perturbations, I would argue that it is more useful to continue

to construct chronologies using the present 5568 year half-life until such time as explicit and well-defined correction factors can be generally agreed upon.

Consideration of the perturbation model of radiocarbon supply leads to an explanation of one of the major problems in Peruvian ceramic chronology, a problem I see in large part as causing the long scale-short scale pattern assessment. There are a large number of determinations for assemblages dating between EH 8-10 and EIP 1-3 which have led to quite divergent interpretations by various scholars. This period covers roughly 300 B.C.-A.D. 300, which we see by referring to Ralph and Michael (1967, 1969) and Damon, Long and Grey (1966a, 1966b) is precisely the time we get a significant variation both qualitatively and quantitatively in the regression deviation of radiocarbon determinations. This in part explains why Lanning begins the Early Intermediate Period at 200 B.C., while I argue that it begins about A.D. 0/50.

All dates, with the exception of clearly fixed historical dates, and all periods defined here therefore are based upon the idea of a statistical clustering of determinations done by a variety of methods, without conversion by the 5568-5730 year half-life correction factor, without correction owing to variations in cosmic-ray flux and carbon exchange rates, and without application of the Rowe long scale-short scale criteria. Therefore, any date prior to A.D. 1533, though stated in the customary calendrical A.D./B.C. notation, in actuality represents a 5568 year half-life chronology rather than a true calendrical chronology.

Table 7

PJuM Radiocarbon Sample Series

PJuM Sample 1: Wariwilka, PJuM 501-2

Date: GX-1713 1400 ± 100 B.P. (A.D. 550)

Description: Sample taken from the midden next to a wall pre-dating the Late Horizon version of the temple of Wariwilka. Wariwilka is an oracle site, with its first occupation dating to the Middle Horizon. The temple, being restored for purposes of tourism, is located on a terrace bank 30 m. above the Rio Chanchas, about 5 km. South of Huancayo, in the NE 1/4 NE 1/4 of Grid 661 N 478 E or 12°07' S, 75°18' W mercator. This sample comes from the wall remnant of an earlier Middle Horizon structure approximately 10 m. northeast of the restored Late Horizon structure and appears to date a Middle Horizon Epoch 2A occupation or Calpish AB. The sample is charcoal, and was collected in August 1968 by D. L. Browman, M. J. Browman and D. A. Peterson.

PJuM Sample 2: Acllahuasi, PJuM 613-12-7

Date: GX-1646 2400 ± 110 B.P. (450 B.C.)

Description: Sample taken from a hearth on the floor of Housepit 1, dating Cochachongos BC style wares, and immediately pre-dating or being contemporaneous with the first appearance of Ocucaje-related and Chupas-related wares in the Cochachongos deposits. The site is an Early Horizon pithouse occupation site on the left bank of the Rio Cunas, on the second Mantaro terrace, located in the SW 1/4 NE 1/4 Grid 669N 467E or 12°02'S, 75°18'W Mercator. Sample consists of charcoal, collected in November 1968 by D. L. Browman

PJuM Sample 3: Acllahuasi, PJuM 613-12-6

Date: GX-1680 2095 ± 110 B.P. (145 B.C.)

Description: Sample taken from the charcoal of the earth oven reutilization of abandoned Housepit 1, dating Cochachongos D style ceramics, and dating certain late Ocucaje-related trade pieces, Chupas-related styles, and coastal Chongos influence. Site PJuM 613 is an Early Horizon pithouse occupation site on the second Mantaro terrace above the Rio Cunas near Chupaca, in the SW 1/4 NE 1/4 of Grid 669N 467E or 12°02'S, 75°18'W Mercator. Sample of charcoal collected in November 1968 by D. L. Browman.

Table 8-1: Ceramic period determinations by laboratory method

Solid carbon method				
EH 9-10	C-271	2257 ± 200 B.P.	307 B.C.	(same mummy:L-311)
EIP 1-3	C-268	1879 ± 300 B.P.	A.D. 71	
	L-115-solid	1700 ± 250 B.P.	A.D. 250	
	C-460	1314 ± 250 B.P.	A.D. 636	
EIP 7-8	C-619	1833 ± 119 B.P.	A.D. 117	
Methane method				
Late IP	GX-1356	3265 ± 105 B.P.	1315 B.C.	
	GX-1351	3060 ± 100 B.P.	1100 B.C.	
	GX-1355	2490 ± 95 B.P.	540 B.C.	
EH 1-4	GX-1349	2990 ± 100 B.P.	1040 B.C.	
	GX-1348	2835 ± 120 B.P.	885 B.C.	
	GX-1357	2805 ± 115 B.P.	855 B.C.	
	GX-1128	2700 ± 85 B.P.	750 B.C.	
	GX-1358	2695 ± 110 B.P.	745 B.C.	
	GX-1345	2685 ± 140 B.P.	735 B.C.	
EH 5-8	GX-1646	2400 ± 110 B.P.	450 B.C.	
EH 9-10	GX-1680	2095 ± 110 B.P.	145 B.C.	
EIP 1-3	GX-1211	1900 ± 110 B.P.	A.D. 50	
	GX-1354	2345 ± 95 B.P.	395 B.C.	
EIP 4-6	GX-455	1485 ± 100 B.P.	A.D. 465	
MH 1-2	GX-1713	1400 ± 100 B.P.	A.D. 550	
Acetylene method				
Late IP	GAK-263	3150 ± 150 B.P.	1200 B.C.	
	GAK-261	3070 ± 120 B.P.	1120 B.C.	
	TK-18	3050 ± 120 B.P.	1100 B.C.	
EH 1-4	N-66-a	2870 ± 230 B.P.	920 B.C.	
	N-67-2	2840 ± 170 B.P.	890 B.C.	
	N-65-2	2820 ± 120 B.P.	870 B.C.	
EH 5-8	GAK-?	2600 ± 150 B.P.	650 B.C.	(Patterson 1967a:143)
	N-89	2520 ± 150 B.P.	570 B.C.	
	N-90	2360 ± 760 B.P.	410 B.C.	
EH 9-10	LJ-1350	2100 ± 200 B.P.	150 B.C.	
	W-422	2080 ± 160 B.P.	130 B.C.	
EIP 1-3	N-62	1880 ± 200 B.P.	A.D. 70	
	TK-19	1820 ± 80 B.P.	A.D. 130	
	TK-20	1780 ± 110 B.P.	A.D. 170	
	N-63-2	1690 ± 130 B.P.	A.D. 260	
	N-111	1350 ± 140 B.P.	A.D. 600	
EIP 4-6	LJ-1348	1630 ± 150 B.P.	A.D. 320	
MH 1-2	LJ-1349	1200 ± 100 B.P.	A.D. 750	
	HV-351	990 ± 40 B.P.	A.D. 960	
MH 3-4	HV-1076	1040 ± 65 B.P.	A.D. 910	
	HV-1078	995 ± 90 B.P.	A.D. 955	
	HV-1079	960 ± 60 B.P.	A.D. 990	
	HV-1077	930 ± 65 B.P.	A.D. 1020	

Table 8-2: Ceramic period determinations by laboratory method

Benzene method				
MH 1-2	IVIC-182-B	1280 ± 85 B.P.	A.D. 670	
Carbon dioxide method				
EH 1-4	L-1351	2715 ± 130 B.P.	765 B.C.	
	P-516	2408 ± 140 B.P.	458 B.C.	
EH 5-8	P-517	2302 ± 125 B.P.	352 B.C.	
	NZ-473	2267 ± 91 B.P.	317 B.C.	
	P-518	2195 ± 64 B.P.	245 B.C.	
EH 9-10	O-1692	2400 ± 110 B.P.	450 B.C.	
	I-1352	2100 ± 225 B.P.	150 B.C.	
	L-311	2050 ± 100 B.P.	100 B.C.	(same mummy: C-271)
	I-1347	2040 ± 135 B.P.	90 B.C.	
	NZ-583	2020 ± 70 B.P.	70 B.C.	
	L-335d	1940 ± 100 B.P.	A.D. 10	
	I-1350	1865 ± 135 B.P.	A.D. 85	
	L-335c	1840 ± 100 B.P.	A.D. 110	
	L-268b	1840 ± 80 B.P.	A.D. 110	
	UCLA-970	1590 ± 80 B.P.	A.D. 360	
EIP 1-3	O-1689	2125 ± 110 B.P.	175 B.C.	(same mummy: P-515)
	P-515	2014 ± 62 B.P.	64 B.C.	(same mummy: O-1689)
	I-1397	1830 ± 120 B.P.	A.D. 120	
	L-268d	1830 ± 80 B.P.	A.D. 120	
	UCLA-971	1790 ± 80 B.P.	A.D. 160	
	GRN-618	1765 ± 155 B.P.	A.D. 185	
	L-115-CO^2	1750 ± 90 B.P.	A.D. 200	(same sample: L-115-solid)
	L-268a	1710 ± 240 B.P.	A.D. 240	
	L-268c	1660 ± 90 B.P.	A.D. 290	
	L-335g	1620 ± 100 B.P.	A.D. 330	
EIP 4-6	P-513	1968 ± 62 B.P.	18 B.C.	
	L-335e	1430 ± 90 B.P.	A.D. 520	
	L-384a	1381 ± 160 B.P.	A.D. 569	
EIP 7-8	Y-126	1314 ± 60 B.P.	A.D. 636	
	L-335a	1300 ± 80 B.P.	A.D. 650	
	L-335b	1300 ± 80 B.P.	A.D. 650	
MH 1-2	P-511	1345 ± 118 B.P.	A.D. 605	
	I-1041	1305 ± 120 B.P.	A.D. 645	
	I-1043	1212 ± 120 B.P.	A.D. 738	
	L-335f	1200 ± 90 B.P.	A.D. 750	
	L-268f	1200 ± 80 B.P.	A.D. 750	
	I-1042	1165 ± 120 B.P.	A.D. 785	
	L-268e	970 ± 70 B.P.	A.D. 980	
	L-268g	900 ± 70 B.P.	A.D. 1050	
	UCLA-972	880 ± 80 B.P.	A.D. 1070	(same unit: LJ-1349)
MH 3-4	O-1664	1150 ± 105 B.P.	A.D. 800	
	P-512	1058 ± 52 B.P.	A.D. 892	

Table 9

Lithic Dating

Immediately pre-Jurpac assemblages			
Jaywa	I-4503	8250 ± 135 B.P.	6300 B.C.
Luz	Y-1303	7380 ± 120 B.P.	5430 B.C.
	UCLA-201	7250 ± 100 B.P.	5350 B.C.
	UCLA-202	7140 ± 100 B.P.	5190 B.C.
	Y-1304	6520 ± 120 B.P.	4570 B.C.
Jurpac-related (4700-2800 B.C.)			
Canario	UCLA-203	6700 ± 100 B.P.	4750 B.C.
Piki	I-4502	6360 ± 110 B.P.	4410 B.C.
Lauricocha II	GRN-5518	5170 ± 140 B.P.	3220 B.C.
(Cave L-2)	GRN-5589	4660 ± 90 B.P.	2710 B.C.
	GRN-5519	4650 ± 130 B.P.	2700 B.C.
Tinyari-related (2800-1500/1000 B.C.)			
Encanto	UCLA-664	5370 ± 120 B.P.	3420 B.C.
	UCLA-967	4720 ± 80 B.P.	2770 B.C.
Lauricocha III	GRN-5559	4620 ± 350 B.P.	2670 B.C.
(Cave L-2)	GRN-5493	4260 ± 250 B.P.	2310 B.C.
Cachi	I-4154	3850 ± 120 B.P.	1900 B.C.

(All samples run by carbon dioxide method laboratories.)

Table 10

Early Horizon units

Late Initial Period (?-1000 B.C.)		
	GX-1356	1315 B.C.
	GAK-263	1200 B.C.
	GAK-261	1120 B.C.
	TK-18	1100 B.C.
	GX-1351	1100 B.C.
	GX-1355	540 B.C.
Early Horizon 1-4: Pirwapuquio (1000-650 B.C.)		
	GX-1349	1040 B.C.
	N-66-a	920 B.C.
	N-67-2	890 B.C.
	GX-1348	885 B.C.
	N-65-2	870 B.C.
	GX-1357	855 B.C.
	I-1351	765 B.C.
	GX-1128	750 B.C.
	GX-1358	745 B.C.
	GX-1345	735 B.C.
	P-516	458 B.C.
Early Horizon 5-8: Cochachongos ABC (650-200 B.C.)		
	GAK-?	650 B.C.
	N-89	570 B.C.
	GX-1646	450 B.C.
	N-90	410 B.C.
	P-517	352 B.C.
	NZ-473	317 B.C.
	P-518	245 B.C.
Early Horizon 9-10: Cochachongos DE (200 B.C.-A.D. 0/50)		
	O-1692	450 B.C.
	C-271	387 B.C.
	I-1352	150 B.C.
	LJ-1350	150 B.C.
	GX-1680	145 B.C.
	W-422	130 B.C.
	L-311	100 B.C.
	I-1347	90 B.C.
	NZ-583	65 B.C.
	L-335d	A.D. 10
	I-1350	A.D. 85
	L-335e	A.D. 110
	L-268b	A.D. 110
	UCLA-970	A.D. 360

Table 11

Early Intermediate Period units

Early Intermediate Period 1-3: Uchubas	**(A.D. 0/50-300)**
GX-1354	395 B.C.
O-1689	175 B.C.
P-515	64 B.C.
GX-1211	A.D. 50
N-62	A.D. 70
C-658	A.D. 71
TK-19	A.D. 120
L-1397	A.D. 120
L-268d	A.D. 120
UCLA-971	A.D. 160
TK-20	A.D. 170
GRN-618	A.D. 185
$L-115-CO^2$	A.D. 200
L-115-solid carbon	A.D. 250
L-268a	A.D. 240
N-63-2	A.D. 260
L-268c	A.D. 290
L-268h	A.D. 320
L-335g	A.D. 330
C-460	A.D. 636
Early Intermediate Period 4-6: Usupuquio	**(A.D. 300-500)**
P-513	18 B.C.
LJ-1348	A.D. 320
GX-455	A.D. 465
L-335e	A.D. 520
L-384a	A.D. 569
Early Intermediate Period 7-8: Huacrapuquio	**(A.D. 500-600)**
C-619	A.D. 117
Y-126	A.D. 636
L-335a	A.D. 650
L-335b	A.D. 650

(Note: Huacrapuquio likely extends through Middle Horizon Epoch 1A so would then date A.D. 500-650)

Table 12

Middle Horizon units

Middle Horizon 1-2: Calpish (A.D. 600-800)	
GX-1713	A.D. 550
P-511	A.D. 605
I-1041	A.D. 645
IVIC-182-B	A.D. 670
I-1043	A.D. 738
LJ-1349	A.D. 750
L-335f	A.D. 750
L-268f	A.D. 750
I-1042	A.D. 785
HV-351	A.D. 960
L-268e	A.D. 980
L-268g	A.D. 1050
UCLA-972	A.D. 1070
Middle Horizon 3-4: Quinsahuanca (A.D. 800-1050)	
O-1664	A.D. 800
P-512	A.D. 892
HV-1076	A.D. 910
HV-1078	A.D. 955
HV-1079	A.D. 990
HV-1077	A.D. 1020

Appendix C

Location of Sites PJuM 501-800

The map used in the survey was published by the Instituto Geografico Militar (IGM) for the Servicio de Investigacion y Promocion Agraria (SIPAO and was made from airphotos taken by the United States Air Force for the now defunct Servicio Cooperativo de Produccion de Alimentos (SCIPA) under U.S. Point Four aid.

The map scale was 1:10,000, allowing considerable accuracy in the location of sites. It was gridded out in 1 km. by 1 km. squares, with reference numbers running from 650N to 706N and 441E to 485E. The basin runs essentially NW-SE across this 45 x 55 km. area. Grid N and grid E are cardinal directions, with grid N being true N. No indication was given as to the location of the base datum for the numbering system, and figuring backward from the numbers does not provide a satisfactory answer. Therefore I have worked out the following indices of close fit (error less than 50-75 m.) between the kilometer grid system and the mercator grid system. Here one minute of latitude or longitude equals 1.84 km., so there are obvious difficulties in trying to arrive at good indices of fit.

North end of survey area (Jauja-Molinas area)

11°45'S, 75°27'W corresponds to 701N 451E
11°51'S, 75°27'W corresponds to 690N 451E

Central part of survey area (San Jeronimo-Chupaca area)

11°57'S, 75°16'W corresponds to 679N 471E
12°04'S, 75°16'W corresponds to 666N 471E

South end of survey area (Huacrapuquio-Congos Bajo area)

12°10'S, 75°16'W corresponds to 655N 471E
12°10'S, 75°11'W corresponds to 655N 480E

Site locations are given by the standard quarter-quarter section notation, with the sections here being the 1 km. by 1 km. grid units, and with the NE corner being used as the reference base. For example, the location of site PJuM 612 is: NE1/4 NE1/4 680N 470E, which indicates that it is in the northeast quarter of the northeast quarter section of grid unit 679-680N, 469-470E.

The site numbering system proposed by Rowe and associates for highland Peru has not proved useful in our area. Under Rowe's system, we would number sites PJu1-1 where P = Peru, Ju = Junin department, 1 = province within Junin by alphabetical order, and -1 = the site by number. In our section of the Jauja-Huancayo basin there are three provinces--Concepcion, Huancayo and Jauja--but there is no map readily available delimiting the exact province boundaries. Indeed, as we pointed out in Ch. 3, Rowe experienced difficulty in trying to apply this numbering system to our area. Instead a modified version of the Peruvian coastal river system numbering system seems more suitable to this survey area. Accordingly, sites are designated PJuM 501 to PJuM 800, where P = Peru, Ju = Junin, M = Mantaro River drainage, and 501-800 = the three hundred sites by number, starting with 501 to avoid confusion with other numerical designations used in the area.

Though it would be useful to include the scores of pages of single spaced site descriptions, along with suitable drawings of the architecture and settlement plans, practical considerations preclude this. As a less satisfying substitute, a mechanical listing of all three hundred sites is given in the kilometer coordinate grid system explained above, so that it will be possible to precisely relocate our sites with the minimum of effort, utilizing these coordinates and the site locations given in Maps 3-14.

PJuM sites and coordinates

501 NE1/4 NE1/4 661N 478E
502 NE1/4 674N 472E; S1/2 675N 472E; SE1/4 676N 472E
503 SE1/4 679N 474E
504 NE1/4 688N 466E; SE1/4 689N 466E
505 Tunanmarca, 10 km. NW of Jauja, in Yanamarca valley
506 Preceramic rockshelter, SE slope of Tunanmarca
507 NE1/4 SW1/4 669N 467E
508 SE1/4 NE1/4 669N 466E
509 NE1/4 SE1/4 698N 445E; NW1/4 SW1/4 698N 446E
510 NW1/4 SW1/4 698N 446E
511 SE1/4 SW1/4 698N 446E
512 W1/2 697N 447E
513 NW1/4 696N 447E
514 SE1/4 SE1/4 696N 447E; SW1/4 SW1/4 696N 448E
515 E1/2 NE1/4 695N 447E
516 SW1/4 SW1/4 695N 448E
517 SE1/4 NW1/4 694N 448E
518 SE1/4 NE1/4 694N 448E
519 NE1/4 SE1/4 695N 448E
520 W1/2 697N 448E
521 NW1/4 NE1/4 697N 447E
522 NE1/4 NW1/4 694N 449E
523 NW1/4 NW1/4 694N 449E
524 NE1/4 NE1/4 694N 449E
525 SW1/4 693N 452E; SE1/4 693N 451E
526 SE1/4 SE1/4 693N 451E
527 SW1/4 SE1/4 693N 451E
528 NW1/4 NW1/4 693N 451E
529 NE1/4 SE1/4 693N 452E
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