

THE PRE-COLUMBIAN ECONOMY

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Introduction

Latin America constitutes a large and geographically diverse region of the New World. Physiographically it is characterized by a high precipitous mountain range, the Sierra Madres in Central America and the Andes in South America with a narrow Pacific coastal plain. Broad well- drained low-lying basins are found on the eastern slopes of these mountains that run into the Atlantic and Gulf of Mexico while there are extensive high arid plains such as the *Altiplano* of Mexico and South America and the *punas* of Peru, Bolivia and Chile. There are also a number of tropical islands extending north from South America forming an archipelago in the Caribbean Sea terminating in the Bahamas. These can be humid or desert depending on their situation with respect to prevailing winds and mountains. A number of large islands notably Cuba and Hispaniola, form the northwestern arm of this island chain. One distinctive feature of Latin America is that it has a very long north/south axis, while having little continental area that is east/west and that which exists is broken by the continental divide of the north/south trending mountain ranges. This north south spine crosscuts latitudes, making it difficult for animals and plants to naturally migrate east/west. Typically, similar climates lie along common latitude, but in Latin America the same latitude is dissected by altitudinal gradients that result in incredibly diverse ecosystems. This has important consequences for the development of agriculture and economy. What results is a patchwork of environmental regimes and cultures that have adapted to them. Some more extensive and large-scale political systems have taken advantage of the juxtaposition of different environmental and climatic regimes to integrate them into complex economies. In other situations, this extreme dissection has resulted in the isolation and differentiation of economic systems with political systems unable to expand the boundaries of local economies.

The economies found in Latin America at the time of European contact vary dramatically, with some essentially similar to those found in Europe at the same time. Others, particularly those in the extreme tip of South America, had a foraging economy relying on natural wild plants and animals. Still other groups had simple agricultural

economies supplemented with hunting, fishing, and or raising of domesticated animals. There are however, two economic characteristics that differentiate Latin America from Europe and the Old World: (1) metals were never utilized extensively for tools although knowledge of smelting and alloying was present. Instead it was used for jewelry. (2) Although animals were domesticated none of them were suitable for traction and so wheeled vehicles and plows drawn by animal muscle never developed. This has important economic consequences because it limited the availability of extra energy in the form of animal muscle for use in transportation and agricultural intensification. Particularly lacking are those animals that can digest high cellulose plant fibers; indigestible by humans. Such animals do not compete with humans for food energy and so provide an unearned energy source. This ecological shortcoming resulted in limitations on the economy for moving resources and transportation in general. It is also a reason why well-engineered road systems are. Only a single pack animal, the llama was available and it was restricted to high altitudes of South America. It is not surprising that we see the most elaborate and well-engineered roads systems where llamas were domesticated. However, the Pre-Columbian cultures of Latin America did develop long distance trade, bulking of commodities by water transport, and elaborate agricultural systems of irrigation and terracing to rival any in the Old World.

In Pre-Columbian Latin America there were far more indigenous autonomous cultures and societies than existed in Europe at the time. Most of these societies had economies characterized by a domestic mode of production. Economies of this scale have economic self-sufficiency. Each family clears its own land, plants, and harvests its crops that it uses for subsistence. Each male serves as a warrior for military activities or raids as needed. Families also make all the cloths, utensils, and tools they need as well as collecting fuel and water for, heating, lighting, and cooking. They also collect clay for producing ceramic vessels and stones of various minerals for tools and utensils. Each family builds its own residence and storage facilities, hunts and or raises animals, and processes the meat, bone, sinew, skins and fibers from either wild and or domesticated animals for their domestic maintenance. As such, each family is economically redundant with the next and engages in the same economic activities. Typically, in societies that have a domestic mode of production, there is a sexual division of labor with males engaging hunting, fishing, stone tool production, and warfare. Women typically are involved in weaving, food preparation and cooking, fuel collection, water collection, and ceramic production. Both sexes can be involved in agriculture and house construction although woodworking is typically a male activity.

However, some of these economic tasks require additional labor beyond the work capacity of an individual nuclear family. Tasks such as fishing, field clearing, harvesting crops, obtaining lumber and palm fronds for roofing for construction material and the construction of houses, are not feasible with two adults as a work force. When tasks exceed the labor capacity of individual nuclear families additional labor is typically sought from close relatives such as aunts, uncles, and cousins, who often live in the same community. Usually, this grouping of extended family units holds agricultural land in common and schedules the labor that is beyond that of an individual family. This results in socioeconomic units known as lineages that trace membership through either the father or mother's bloodline. These economies can also be said to be corporate and kin based.

Although many Pre-Columbian Latin American societies have a domestic mode of production, redistribution and/or exchange is characteristic of all of them. Redistribution is the pooling of surplus food for use by high status elites for their use and that of their family. The rationale behind this is that this pooled surplus food, crops grown in excess of individual family need, can be given back in time of shortage. This forms a type of economic security or insurance against agricultural failures that occur in certain geographical regions within the polity. Typically, this occurs in societies that have relatively large areas with redundant agricultural systems. In smaller societies, a formal system of redistribution is not necessary, and informal exchange is all that is necessary to even out agricultural inequities. Reciprocal exchanges and feasts can serve to even out resource availability to families from year to year.

Reciprocal economic exchanges can also serve as alliances among families or among groups. Sometimes it is the case that similar commodities, i.e., two ceramic vessels of identical function, are exchanged. At other times jewelry or clothing is exchanged. In either case, the exchange is not purely an economic one but also serves sociopolitical functions. This takes on a more complex form when elite exchange occurs. Hereditary elites, known as chiefs, use exotic materials from outside their local region to validate their chiefly rule. Resources, such as minerals, shells, feathers, and skins, can take on a sacred context because their origins are beyond the boundaries of local knowledge. As such they are considered to be supernatural and serve to validate the chief as supernatural as well. They can be exchanged in either raw or finished forms and in either case, require craft specialists to produce finished artifacts from the exotic raw materials. Chiefs are eager to exchange exotic items from their own territories with chiefs from

other areas. Chiefly exchange automatically creates a reciprocal valuable resource for validating chiefly authority, political currency.

When polities become so large that they cross-cut the varied environmental and resource zones of Latin America then economic systems develop that can provide all of the dispersed resources necessary to that polity. This invariably involves the development of markets and often tribute relationships with other less integrated and smaller societies. Markets typically occur with complex states that have areas and populations too large to be based on the economic redundancy inherent in the domestic mode of production. Not everyone in the society has to or can perform every economic task because economic resources are more heterogeneously distributed' and so direct access to them by individual families is impossible. Thus, we see the development of economic specialists with individual families no longer completely self sufficient but instead having to rely on exchange of resources to obtain the basic material necessities of life. With the development of large, complex highly integrated polities, we also see the development of tribute systems that result from conflict and warfare. Tribute brings into the political system various types of economic resources and commodities specifically defined and matched to the environment and geology of the conquered polity.

This chapter will compare and contrast the various economic institutions found in Mesoamerica, Central America and South America, focusing on the most developed and highly integrated societies of Pre-Columbian Latin America. These will include the most well known groups such as the Aztec, Inca and Maya but will also include discussion of less well known smaller groups that have distinct economic patterns that vary markedly from these larger well known groups.

Production

Agricultural and Land Use

Originally, land use for subsistence and other resource extraction in Pre-Columbian Latin America started out as a generalized foraging adaptation that incorporated natural plant products as the basis of the calories and

supplemented this vegetative base with animal protein obtained by hunting wild game, most notably deer in Central America and camelids in the highlands of South America. This subsistence strategy lasted into the 20th century, only in the southern tip of South America where the adaptation there focused on the hunting of camelids such as Guanaco and Vicuna. Fishing and hunting of marine mammals also supplemented plant collecting and terrestrial hunting in those areas where coastal waters were productive. Along coastal Chile and Peru fish were actually the basis of subsistence, because the upwelling of currents produced such abundant fish so much they could be stored, thereby allowing sedentary habitation. The first settled communities in Latin America developed based on this resource.

Elsewhere throughout Latin America foraging, was based on a seasonal round with small groups of families organized into localized bands of 25 people. These bands occupied a broad roughly defined territory and made scheduled movements on an annual round timed to the availability of wild plant and animal resources that were local to the group's territory. This led to a seasonal scheduling of land use patterns, with groups moving to areas at times of the year when natural resources, such as nuts, seeds, and fruits, ripened. There is some argument whether the lowland tropical forests of Latin America could have ever supported a generalized foraging economy because there are so much species diversity in these environments and a complementation of flowering and fruiting. This results in a dispersal of individual species members and therefore no clustering of simultaneously ripening plant products as are found in more temperate environments. The few numbers of any productive species ripening at any one time in an area is thought to have created mobility problems of foraging groups to such an extent that humans would be out competed by more mobile species, particularly arboreal species such as monkeys and birds. However, this might be more a reflection of the poor archaeological preservation and visibility in this environment rather than a lack of landscape use by humans.

Eventually, in some areas of Latin America, this process of collecting natural plant led to the selection of certain varieties with desirable traits or characteristics such as larger seeds, tubers, roots, or else other qualities like ability to remain viable while stored. This continued cultural selection for these desirable attributes led to a larger and more reliable food supply and a shift to a much narrower range of plant resources utilized as food. This restricted mobility of foraging bands, and lengthened the period of time that local bands stayed in any one area, particularly those with the desirable plants. This facilitated storage and reduced the number of moves that a local group made in a year. It

seems that these genetically modified foods, the first in Latin America, ultimately led to the domestication of many plant varieties that were then intentionally planted. They gradually became incorporated more and more into the diet until they became staples; at which time permanent residences and village life appeared and fully agricultural economies emerged.

This process happened independently in a number of regions of Latin America involving a wide variety of plant species including those domesticated for their seeds and those domesticated for their roots and tubers. The cultural selection for these various varieties has to do with the natural habitat of the plant itself and also the ability of the plant to adapt to the environment in which human groups have their territories. Interestingly, one of the most important observations about the selection of these plants is that few of them are starchy weeds like in the Old World. However, what is similar in Latin America as in the Old World is that these plant varieties become productive and attractive food crops for humans not necessarily when they have become genetically modified to a degree far beyond their wild counterparts, although this is indeed the case of maize, but more importantly when they are moved from the original habitat and placed in locales in which they could not compete with wild counterparts without human intervention, i.e., agriculture and farming. Agricultural systems emerge in Latin America when domesticated plant species are relocated into habitats and environments where they become extremely productive through additional human cultural input.

The question of the history of the timing of the process of domestication and spread of agriculture is subject to some debate. The most conservative estimate of this process of settled agricultural village life seems to date to about 3500 years ago, although the macrofossils of *Zea* maize, corn seeds, have been directly dated to about 6000 years ago and pollen has been found in sediments that are dated 7100 years ago. What does seem to be evident is that all of the sedentary agrarian economic systems that involve various domestics emerge roughly at the same time independently throughout Latin America, although the domesticates themselves probably originated from a single center of origin. The discussion of the history of prehistoric agriculture and land use in Latin America will be broken down into two patterns, the tropical pattern and the highland pattern.

Tropical agriculture.

The earliest evidence for agriculture in Latin America comes from the tropical zone. In the Aguadulce Shelter of Panama stone grinding tools were found in sediments dating to 5800 to 3500 B.C.E. that had traces of arrowroot (*Maranta arundinacea*), yam (*Dioscorea* sp.), corn (*Zea maize*) and manioc (*Manihot esculenta*) on their working surfaces. Maize pollen has been found in sediments dating to 7100 years ago at the site of San Andres in coastal Tabasco, Mexico. Of interest is that there are no wild ancestors of maize, the tropical grass *Teosinte* growing in this area and so maize had to have spread ultimately from its source of domestication in the tropical highlands of southwest Mexico where the wild grass is abundant. The earliest maize cobs were found in the Guila Naquitz cave in the state of Oaxaca, Mexico where they dated to about 4250 B.C.E. At San Andres, maize cobs were not found in the earliest deposits that contained pollen but in more recent deposits dating to about 550 B.C.E. Teosinte is abundant in this cave as well. Manioc was also found at San Andres and dates to around 4600 B.C.E., although it is not known whether it is a domesticated variety or not. What is surprising is that manioc has been determined through DNA analysis to be domesticated along the southern border of the Amazon Basin in the states of Mato Grosso, Rondonia, and Acre from a subspecies *flabellifolia* and so its presence along the Mexican Gulf Coast suggests some form of diffusion or exchange at this early date to account for its introduction. Peanuts (*Arachis hypogaea*) are also thought to have originated in the same place, although their age of domestication is poorly known. Squash, *Curubita pepo* is the oldest domesticated plant in Latin America dating to 8,000 B.C.E. and was also recovered from Guila Naquitez cave. The domesticated common bean (*Phaseolus vulgaris*) has been found dating to about 5500 B.C.E.

In lowland South America besides manioc, sweet potatoes (*Ipomea batata*), lucuma (*Lucuma obovata*, a pulpy yellow bronze fruit resembling a persimmon), pacay (*Inga feuillei*, a leguminous tree crop, beans (*Phaseolus vulgaris*), guava (*Psidium guajava*) and cotton (*Gossypium barbadense*) were domesticated by 4000 years ago. All of these species have been found in association with irrigation agriculture at the site of Caral in the Supe Valley on the central coast of Peru. Although manioc, a domesticate of South American origin was found in Mexico, maize, a Mexican domesticate, was not found in South America until after 1500 B.C.E.

In spite of these early initial appearance of domesticates, they had little, if any, impact on food production, at least in terms of resulting in abundant crops and storable foods to allow settled village life. Whether this is because environmental conditions were not conducive to adopting agriculture as the primary economic food source or that cultigens were not productive enough at earlier stages of domestication to be suitable for sustained agriculture is a matter of debate.

Agriculture in the tropical lowlands occurs around 4000 years ago with a concurrent emergence of sedentary village life. Agricultural systems developed that took advantage of the seasonal wet and dry climatic regimes of the lowland tropics. During the dry season, trees in forest plots on deep alluvial soil were girdled with stone axes to kill them and the leaves and branches were then allowed to dry. The desiccated vegetation was then burned with the resultant ash forming easily worked fertile soil. This field preparation took place just before the beginning of the rainy season. Crops were planted in the prepared fields utilizing digging sticks for depositing the seed or cutting. A wide variety of seeds or cuttings were utilized with the choice depending on the ecology and environment of the area. Garden plots were then weeded with hoes, tended and crops harvested when mature.

The use of the cleared fields proceeded for a period of about five years at which time nutrient depletion of the soil and weed invasion made labor costs too great and yields too low for continued agricultural use. Fields were abandoned, new forest plots were sought, and the trees girdled and burned, repeating the previous cycle. This agricultural system is known by a number of terms, including swidden, slash and burn, pioneering agriculture, and shifting agriculture. Eventually, the abandoned garden plot returns to secondary forest through the process of succession. At first glance, this agricultural system might seem self-sufficient since after a cycle of six shifting garden plot moves, the original abandoned plot would have reverted to forest and the cycle could be repeated. However, this assumes that there would be no population growth and invariably such growth occurs in societies that practice this agricultural system. This system relies on rainfall for moisture and does not utilize terracing, since the soil is not exposed for any great length of time since the field is abandoned after five years. However, if this system is implemented on steep slopes soil erosion is a serious problem, and this has been implicated as one of the reasons for the 9th century Maya collapse.

In the low lying regions of Mesoamerica and Central America, maize, was apparently the primary domesticated used in swidden agriculture complemented with lesser amounts of beans and squash. The nitrogen fixing properties of the beans ameliorated soil nutrient depletion, while the spreading, ground-clinging, vine-like plant of the squash helped minimized soil erosion. Typically, crops were planted in raised beds either as ridges (*camellones*) or mounds (*montones*). These have also been found in the site of Matacapán in coastal Veracruz, Mexico also dating to 1400 B.C.E. The purpose of these low ridges is to prevent down slope sheet erosion, facilitate moisture retention during the dry season, and to a lesser extent increase soil fertility through the incorporation of weeds and other vegetation into the soil in the bank formation.

In Mesoamerica the resultant fields are referred to as *milpas*. Milpa production involved the growing of maize cobs that were stored for use throughout the year. The seeds were ground into a meal or masa for use as tamales or tortillas, the former steamed in ceramic vessels, while the later were baked on flat circular ceramic griddles called *comals*. The maize cobs were utilized for fuel. Beans were grown primarily for the seeds that could be stored and eaten in porridge. Squash also could be stored whole and the seed toasted and eaten, often in a sauce.

In the lowlands of Mesoamerica swamp reclamation was practiced in Pulltrouser swamp in northern Belize. Here soil was dredged from shallow swamps to build permanent agricultural fields for growing maize. These fields were maintained by continued mulching with weeds and the addition of soil dredged from the swamp. Bifacially chipped lanceolate stone tool that were hafted onto a wooden handle have been found in the area these have use-wear on them indicative of having been worked through soil suggesting use as hoes or cultivating tools. This tool is referred to as *coa*. The resultant deeper swamps also have the added benefit of ponds for collecting aquatic animals. These bifacial weeding tools have been found in archaeological sites dating as early as 1200 B.C.E. However, they are most frequent at about 0 C.E. suggesting that more intensive land use occurred at this time. Furthermore, it is difficult to determine if these tools are exclusively associated with swamp reclamation and field maintenance or with *milpa* cultivation in general. In either case there increase frequency through time suggests agricultural intensification.

Cotton and Cacao were also grown in the humid lowlands of Mesoamerica. These were both important trade items and were also used for currency. However, they are both quite ancient, with cacao cultivation dating to at least 200 C.E. and cotton probably being grown even earlier. Originally these resources were grown and utilized locally in a domestic context. Later they were incorporated into prestige trade systems. It was not until after 1000 C.E. that these items moved from a domestic and prestige economy into a market economy. Both of these items were important Aztec tribute goods.

In the Amazon and Orinoco basins, the primary domesticated crop utilized in swidden was manioc. This was later replaced or supplemented with maize and plantains. The only animal that was domesticated in the lowlands of South America was the Muscovy duck (*Cairina moschata*). In the low lying flood plains of the river basins of South America, ridge and furrow *camellones* agricultural system were utilized to provide adequate drainage for agricultural fields, since the flooding in these areas corresponded with the rainy seasons moisture necessary for agriculture. With the development of swidden agricultural systems, there was a migration out of the delta of the Orinoco River up the Andes and into the Caribbean. This migration involved the use of manioc as the dominant crop. In the Caribbean, a distinctive root crop agriculture system known as *conuco* evolved on Cuba and Hispaniola, and to a lesser extent on some of the other Caribbean islands. The *conuco* system involves the construction of earth mounds arranged in regular rows within a cleared field. Each mound is about three feet high and about nine feet in diameter. *Conuco* agriculture, unlike the swidden system, was a more permanent system of cultivation in that it slowed erosion, made it easier to control weeds, and improved drainage. This allowed mature roots to be stored in the ground for long periods of time, often up to 18 months. In drier regions of western Hispaniola, *conuco* agriculture was augmented with extensive irrigation canals.

Roots such as manioc and other lowland starchy tubers such as arrowroot (*Maranta arundinacea*) were processed into flour by grating them on boards with chips of stones in them. In the case of bitter manioc, the resultant starch was then placed in a tube called a *wuipiti* created from woven palm and then stretched to extract the juice that was mildly toxic. Although toxic, the squeezed liquid extract was retained, and when cooked, it broke down the glycosides and actually created a sauce. The flour was formed into a flatbread known as *cassava* and cooked on a distinctive round clay griddle with horizontal lip known as a *buren*. Cassava stored extremely well in the humid

tropics and was quickly adopted by Europeans as the food of choice on transatlantic crossings. This was the basic agricultural pattern of the lowland humid Central America, South America, and the Caribbean. Maize was also planted in the South American lowlands and was utilized extensively for making a fermented beverage called *chicha* that was important resource for feasts and communal labor parties.

A distinct form of landscape modification emerged in the savannas of the western Amazon basin. Long zigzag artificial earthwork ridges were constructed in the seasonally inundated savannas of Bolivia. These form enclosures that are 10 to 80 hectares in area and are associated with artificial ponds 10 to 30 meters in diameter and up to 2 meters in depth. have causeways that run from forest island to forest island. The zigzag enclosures apparently functioned as permanent fish weirs and the artificial ponds seemed to have served as a storage facility for fish captured during the flood season. These features were present when the Spanish arrived in the area. Whether these fish resources were exploited to the exclusion of agricultural crops or instead were used to complement protein lacking root crop agriculture is not known at this time.

Along the treeless desert coastal valleys of Peru a different kind of agricultural system developed. Since these desert valleys were treeless, no slash and burn was necessary. However, permanent irrigated fields were required for agriculture in this area. This appeared as early as 2000 B.C.E. Root crops like sweet potatoes were the primary caloric source for this food production system but beans, squash, lucuma, guava, and pacay were also grown. In the Nasca drainage, underground canals or filtration galleries called *puqyu* were developed to utilize ground water since river flow was not always sufficient for irrigation. This system developed by 500 B.C.E. Sunken fields dating back to 0 C.E., known as *mahamaes*, were also developed along Pacific coast of South America to tap low lying ground water. The protein and fat rich fish caught from the productive coast waters supplemented agricultural production. Cotton was an essential component in this food production system because it provided the fibers for making fishnets. Fishing the coastal waters would not have been possible without this net technology. It is entirely possible that cotton was the initial agricultural crop along valleys of the desert coast since there are large permanent settlements there that have abundant fish remains but no food cultigens.

Highland Agricultural Systems.

In the *altiplano* of Mesoamerica the *milpa* system was also practiced, as were ridge and furrow field systems. An example of *camellones* was found buried under volcanic ash at the site of Ceren in El Salvador that dates to around 600 C.E. The ridges are oriented to crosscut the slope and are 10 to 20 centimeters high and arranged in parallel rows that are regularly spaced 38 to 42 centimeters apart. It is thought that slash and burn was initially utilized in areas with abundant moisture that could produce forest like the highlands of Guatemala, but in other more arid areas fields probably did not have to be cleared. However, moisture from rainfall was deficient or unpredictable in some areas and so irrigation systems developed. However, the highland agricultural systems are nonetheless temporal in that they ultimately rely on rainfall for moisture. The earliest and simplest of these was a form of pot irrigation, where a well was dug to the water table in fields and the cluster of plants within the *milpa* were then watered, found in the valley of Oaxaca, Mexico and dating to 1500 B.C.E. Later check dams for capturing rainwater to irrigate terraced fields along the steep slopes in the valley of Oaxaca developed perhaps as early as 500 B.C.E. Floodwater irrigation was also practiced in the basin of Mexico where two forms developed. Canal irrigation is accomplished by channeling of water from either permanent springs or floodwater directly to the fields. Simple dams constructed from rock, soil, masonry or brush are built across intermittent streams used to temporarily store the rainwater runoff and canals are dug to the streams above the dam so that water can be channeled to the fields. Permanent or long-term water storage facilities were never developed. This system appears to date to about 500 B.C.E. Not only does this irrigation system have the advantage to providing more consistent water to the fields but also has the added benefit of allowing the field to be planted earlier in the growing season. This allows maize crop to mature before the onset of frost.

Terracing is a common agricultural practice in the highlands of Latin America because much of the highlands have land with moderate to steep slopes that are subject to extreme erosion if used for agriculture. Terraces are formed by building a series of walls or stone or mud that run parallel to the slope. These walls capture soil runoff and build up fields with deep soil behind them. The terraces also form natural irrigation systems as rainfall runoff can be diverted easily down slope from one terrace to another in a cascading fashion. Rainwater is often stored in retention ponds formed behind terraces called *jagueys*. Cacti (*Opuntia* sp.) and the century plant (*Agave* sp.) are grown on the terrace

ridges. These serve to stabilize the terrace walls and also form valuable crops for food and fuel. Cacti provide food in the form of their fruits (*tuna*). Their fleshy leaves *nopales* can be eaten when fresh and when dried can be burned for fuel. The leaves (*pencas*) of the *Agave* plant can be used for fibers for clothing, twine and rope and the fleshy interior of the leaves eaten. Even more important is the sap that exudes from the plant after its flower stalk has been cut out. This sap of *aquamiel* is fermented into an alcoholic beverage known as *pulque*. The beverage is high in protein and can be readily stored and as such is an important if not essential resource in the domestic economy of the Mexican altiplano. Although it is difficult to determine the age at which terracing appears is most likely to have developed by 0 C.E. in Mesoamerica.

Along the shores of Lake Chalco in the southern basin of Mexico in what is now Mexico City, a distinctive form of drainage agriculture called *chinampa* developed. This has been erroneously termed “floating gardens” but in actuality they are agricultural fields created by digging canals to drain the swampy lakeshore edge enough to produce agricultural crops. As many as three crops per annum could be grown on these fields by utilizing seed beds and transplanting in a continuous succession of plot use. High soil fertility was maintained by replenishing the fields with algae rich soil and decomposing aquatic vegetation dug from the lakebed and applied to the fields. This also served to raise the elevation of the fields thus reducing the danger of flooding. Not only did this produce new extraordinarily productive arable land, it also produced a network of canals for transportation. The highest pre-Columbian food yields in Latin America were produced on these fields with maize as the crop. It is difficult to directly date the age at which this agricultural system was developed but based on settlement location data it appears that this system did not develop until about 1350 C.E.

In the highlands of South America a large number of domesticated plant foods were utilized to include 15 root crops, 3 legumes, 3 grains, and more than a dozen fruits. Together these are referred to as the “Cordilleran Complex”. Two of these crops were the most important staples there. The first of these is a grain, quinoa (*Chenopodium quinoa*) that is adapted to cold, dry climates and has been cultivated in the Andean highlands since 3,000 B.C.E. An even more important domesticate was the potato *Solanum tuberosum*. There are more than 200

known varieties of potatoes. The exact date of domestication of the potato is not known but it is thought to be around 2000 B.C.E. This cultigen became an extremely valuable food source because of its ability to grow well in the extreme high altitudes of the Andes with extremely short growing seasons, dramatic diurnal temperature changes (often with 300 days with frost a year), and little moisture and can be grown, even at altitudes of 3000 meters and wild varieties have been observed flowering at 5000 meters!

An ingenious method of processing potatoes was developed in the highlands of South America about 2600 years ago. The end result of this process is known by the native term *chuñu*, more commonly to us freeze-dried potatoes. *Chuñu* was produced by a number of steps. First potatoes were laid out in a single layer on a large cloth sheet at night. Then the potatoes were allowed to freeze. Once frozen the potatoes were then walked on to crush them. The moisture would then evaporate in the sun the next day. The potatoes then either placed in streams or lakes to leach out bitterness and then the cycle was repeated. When completely dried the potatoes could be stored for up to four years. The potatoes themselves were grown in terraced fields or else in specialized field systems.

The raised field *camellones* field system was utilized extensively in the south central Andes particularly in the Titikaka basin of Bolivia where it was essential for growing potatoes. In this area *camellones* had an additional advantage of mitigating salinization since the lake was saline and its waters would encroach upon the shore as the lake increased in size. Algae grew as a cover crop in the low-lying furrows between the ridges. Today this is used as fodder for cattle and was more than likely used as llama fodder in Pre-Columbian times. An even more ingenious method of cultivation was developed to grow potatoes in the Titikaka basin. This is known as *qocha* agriculture that involves utilizing depressions, low spots, and shallow lakes in the Titikaka basin. These shallow water areas acted as heat sinks absorbing heat during the day and then radiating the heat back out at night to ward off frost. In lower areas of the South American highland *altiplano* maize and other crops such as maize, arrowroot and achia where the frost-free days are more frequent and the growing season longer.

Maize was a particularly important crop and was grown wherever possible at elevations below 2500 meters. Maize, unlike the potato and other high altitude adapted tubers, was difficult to grow in the Andes and required terracing

and irrigation. However, it was an important crop particularly for religious ceremonies and was grown wherever it could be grown. Maize had a further advantage over *chufu* in that it could be stored for a longer in period of time, up to four years. Maize was the crop of choice in the Inca empire and acted as an imperial grain. Terraced plots and irrigation systems to grow it were property of the Inca state and they developed incredibly well engineered terrace and irrigation systems to rival any in the world to grow this crop. Enormous maize granaries were built throughout the Inca empire for storing this seed so that seeds could be available anywhere and at any time for state needs. The maize grain was used to feed soldiers, to make *chicha* for consumption at state rituals and ceremonies, and to be fed to corvée laborers engaged in state work projects.

The juxtaposition of numerous extremely different local environments and their unique ecology and growing conditions in close geographical proximity led in many cases incorporation of local economies adapted to this individual habitats into larger political entities. These local differences have largely to do with temperature and moisture which is a function of the Andes mountain range and its extremes in elevation, its extreme dissection, and also the effects it has on wind patterns and rain shadow. The history of the political economy of the highlands of South America is a series of integration of these various zonal habitats by a process referred to as vertical integration. But it is not vertical zonation alone that has important implications in the history of political economy. The horizontal differences in latitude and its varying photoperiod, temperature, and other physiographic characteristics such as proximity of river drainages is also important in the incorporation of territories and their local economies into larger political units.

Two groups of domesticated animals were of significance to highland South American economies. The first are the camelids llama and alpaca the second the guinea pig. Llama and particularly alpaca was a valuable source of fiber for clothing, skins for leather and meat. The meat was also freeze dried into a jerky called *charki*. Llamas also acted as pack animals. The dung was also an important fuel source in the treeless alpine regions of the Andes. Llamas and alpaca were well adapted to the altiplano and puña regions of the highlands and had the further advantage of utilizing grazing land that could not be used for agriculture and so did not directly compete with humans for either food or territory. The llama appears to have been domesticated by 1000 B.C.E. The guinea pig was kept almost as a

household pet foraging off of domestic food scraps. Although the actual age of domestication is not known for sure it is thought that they were utilized for food when door sills were added to houses so that they could not escape.

Economic specialization.

Economic specialization in Pre-Columbian Latin America did not develop until settled village life appeared. The date at which it appears depends on the area. It appears to have developed around 1600 B.C.E. in Mesoamerica and in South America, perhaps earlier around 2400 B.C.E.

At this time there were probably some kinds of economic activities that were beyond the labor capacity of individual households and might instead have been undertaken by clusters of households. One of these activities would have been ceramic production. While this activity is easily undertaken by individual households, in some regions it might be more effective to have ceramic vessels fired at one time for a number of households to conserve fuel. It might also be the case that individual households might not be in proximity to certain necessary resources. Stone both for making *manos* and *metates* for grinding maize and for chipping into cutting tools, and salt are two such examples. Households have been found that have quantities of debris associated with the production of these items that go beyond the individual requirements of households. The production output, on the other hand does, not seem to go beyond that needed for the local community. It further appears that households that did engage in producing items beyond individual family use also engaged in the full range of other economic activities characteristic of a domestic mode of production.

Another kind of economic specialization developed that involved the production of prestige items from exotic materials obtained in exchange. Full-time craft specialists produced elite prestige ritual and political paraphernalia from these exotic materials, some of it also for exchange. Although, exotic resources are involved in this specialized craft activity the finished products do not really enter the economic sphere of the entire society, instead this production should be considered political specialization. Elite kin that were closely related to the hereditary ruling chiefs in political systems we refer to as chiefdoms undertook specialized craft production. These individuals were supported by surplus food collected by chiefs from their societal constituents. At the site of San José Mogote,

workshop areas for marine shell and feathers were found. The massive carved basalt heads of the Olmec and other monumental stone carving carried out in workshops located in public ritual areas is further evidence for this early craft specialization in Mesoamerica. At the site of Copan a specialized lapidary workshop that produced ritual paraphernalia from exotic materials such as jade and marine shell was excavated in a high status elite residence further indicating that craft production was an elite activity.

Economic specialization for market exchange first appeared in Mesoamerica at the site of Teotihuacan just north of Mexico City sometime after 200 C.E. Here obsidian workshops were discovered in close association with public buildings that suggest state control of stone tool production. This model has recently been challenged but what is apparent is that obsidian tools, whether or not they were produced there, were used in quantities that exceeded needs of general domestic use. At apartment compound S3W1 ceramic kilns and waste material were found from the production of two ceramic types, craters and amphora, out of a much wider range of ceramic forms utilized in the city. This suggests specialization of production for market exchange. This ceramic specialized market production was supplemented with lapidary production of costume jewelry made out of a wide range of media including stone and shell. It is assumed that these items were exchanged in the marketplace for needed resources that the compound did not have direct access to. The compound dates relatively late in the history of the city and so unlikely that the residents had access to their own agricultural fields. Faunal analysis also indicates that they did not raise domesticated animals for food. In any event, it is clear that the residents of S3W1 compound were not engaged in a domestic mode of production and relied on market exchange for their material needs.

Patterns of shift from a domestic mode of production to a specialized mode of production have been demonstrated in the ancient city. Early in the city's history, ceramic figurines were hand made in individual households. Later, this production shifted to specialized workshop production that was probably state controlled. Evidence for this is the appearance of molds found near large public buildings and a change in sex of the figuring producers as evidenced by sex linked patterns of fingerprints. Early in the history of the city women made figurines as part of their general household activities and so this activity resided in a domestic mode of production but as the economy of the city shifted to a specialized market economy, men made the figurines and molds were utilized to speed production, a technology not necessary if made at the household level.

Specialized market production continued to evolve so that by Aztec times craft specialists were well defined and quite numerous even taking on guild-like status. Spanish documents indicate many craft specialists to include lapidary specialists, obsidian tool specialist, feather workers, hide tanners, paper makers, ceramic specialists, charcoal makers, and wood carvers. Evidence for this comes not only from the Spanish chroniclers but also from the incredible caches of elite paraphernalia and art found in the dedicatory caches in the Templo Mayor the Aztec temple in Mexico City.

In South America, a similar pattern of economic specialization developed along the historical trajectory seen in Mesoamerica. A distinct difference is that metallurgy developed early in South America and was a very important craft activity, which although present in Mesoamerica was not seen until very late and was never very extensive. Also, fine embroidered textile production is also indicative of craft specialization in South America and appears in burials in the arid desert valleys of the Pacific coast by 1600 B.C.E. Many of these have religious symbolism on them suggesting use in chiefly prestige economy. These textiles are labor intensive to produce and they were clearly used as markers of social status. Ceramics also are clearly elaborated as craft production with the spectacular portrait vessels of the Mochica being a classic example. These also appear to be part of a prestige chiefly economy but the staggeringly large number of these vessels suggests wider distribution into non-elite households. The fact these required special techniques of production and the great artistic skill in decorating the vessels suggest that only a few individuals could master and so a specialized production rather than domestic production is implied. Ceramic workshops have been found in some of the large urban centers on the Peruvian coast. This would suggest market economy associated with states. This would also account for the large number of specially produced ceramics found in domestic household contexts.

Metallurgy is one of the most significant craft specialization developments in South America. The use of gold, silver, and copper often used together in alloys known as *tumbaga* date to 500 B.C.E. Metal was extracted by smelting from ores. Artifacts were fashioned into both utilitarian household items such as fishhooks, tweezers, spindle whorls, needles out of copper as well as in jewelry and personal adornment such as ear spools, necklaces, pectorals, and head and facial ornaments which were usually of gold, silver or *tumbaga*. Utilitarian items of copper

or copper alloy were made in molds while many of the more intricate gold and silver items were made with the lost wax method. It appears that these artifacts, even the utilitarian artifacts are sociotechnic in function indicating high status families and their production was probably kin-based as typical of chiefdoms and even more complex political economies.

Lapidary specialization in *Spondylus* shell and exotic minerals was also an important craft and figured into the prestige economy of chiefs or important individuals. Most of our knowledge of this craft production comes from mortuary contexts particularly in the dry coastal valleys of Peru where preservation is outstanding.

With the Inca, the economic system is based on a centralized socialist principle of redistribution. All land, and the products of that land, and the output of labor production belong to the state. These resources are collected by the state and doled out in a process of redistribution by the Inca central authority. Much of Inca production was for ceremonial and ritual purposes as well as funding the state bureaucracy and military and for individual household use. There were specified percentages of how this production was to be funded. The overall idea was that the centralized Inca state would provide all of the needs, material and spiritual for the residents of the polity. Even though all land was owned by the state not all of the resources produced were social. Potato production was not usually controlled by the state and so remained in the domestic economy of individual household. In fact most of the Inca economy was state owned and controlled. Cloth was the most valued commodity in the Inca economy and as such was controlled by the state. Cloth had symbolic as well as economic value to the Inca. A distinct group of young women *mamkuna* were chosen from the Inca's territory and cloistered in the great compound called *Aqlla Wasi* where they spun and wove cloth that was used in ceremonies and by the Inca and also prepared and cooked the food for priests and for ceremonies. They also brewed *chicha*. The resources of wool, cotton, and maize all came from state lands. The state also controlled cloth production to dress armies and provided jewelry to symbolize rank and status of the soldiers. Dress style was also associated with status and sex and the Inca state used cloth to enforce this social structure. Metallurgy was also controlled by the Inca state. The Inca ruler had ownership of all mines and as well as all of the output from them. However, smaller mines were considered owned by local communities but even the finished products were still given to the Inca as gifts. Thus all products of metal like those of cloth

belonged to the Inca state and were distributed by the Inca ruler himself. The Inka in effect controlled all craft specialists and their output.

EXCHANGE AND CONSUMPTION

Trade

Trade, as used here, refers to just a limited form of exchange, namely the procurement and distribution of material goods or commodities from beyond the local bounds of a society. However, exchange itself refers to a broad range of relationships between individuals and groups within a society and between societies that can also include labor, ideas, and information, as well as commodities. Exchange not only deals with how a society provisions itself with various items, but reflects social relationships and social organizations that provide the context and impetus for the economic behavior within and between groups. Local within-group exchange is discussed under other headings in this chapter. Here, the emphasis is on trade between regions and between polities. For the Pre-Columbian past, mostly known from archaeological and ethnohistorical sources, material goods are the best evidence of trade, and thus, can be seen as a window into the organization of past societies. The types and distribution patterns of trade materials reflect both costs/constraints of the individuals and groups involved and the organizations and ideological formulations that structure exchange. For example, an important distinction can be made as to whether goods are utilitarian and necessary to the successful adaptation of a group to its environment or the goods are valuable and are only found in elite and ritual contexts. However, if the goods must come from long distances, the modes of trade for both will be the same.

While the procurement of objects from some distance has long been characteristic of human groups since the Upper Paleolithic, the regular import of commodities is not a feature of the archaeological record until the appearance of societies with population sizes and the stability to support internal status distinctions and specialization, with a centralized leadership. These ranked societies or chiefdoms vary considerably in the levels of hierarchy and number of ranked positions, as well as in relationships with neighboring and more distant, and perhaps more powerful, groups. Commonly, by access and control of valuable exotic goods from afar, elites would

distinguish themselves and also use them to manipulate political, social, and economic relationships within the group. Exotic goods can function in this way because “members of traditional societies do not interpret geographical distance in neutral terms. Instead they accord a range of symbolically charged meanings to distance-related phenomena, generally viewing them as inherently superior or inferior, dangerous, or superlatively beneficial to the home society.”¹ Items from long distances could be acquired through interelite exchange and distributed to others, mainly through various forms of gift giving.

While utilitarian goods could and were circulated between regions, transport costs (see below) dictated that only prestige and high-value items would be moved over large distances with any regularity. This long-distance trade of primitive valuables was important for elites from early times until the Spanish Conquest. These items gain value from their rarity and/or from the labor or skill necessary to produce them or craft them into objects, such as marine shells, jadeite, cacao, gold, etc., although their conversion into prestige and power should be added to their use value. The items serve to consolidate position in the local hierarchy, but also to foster alliances between similar size polities. From larger and more complex societies to smaller, the interelite exchange serves to build patron-client relations and to involve polities in the larger sphere of interaction. Thus, considerable resources and energy were given to this trade, perhaps more than would be deemed “rational” in modern economic terms.

Early examples of probable interelite long-distance trade can be found during the first millennium B. C. E. in both Mesoamerica and South America, the times of Early Horizons in both areas. The Olmec of the southern Gulf Coast acquired iron-ore mirrors, obsidian, and jade, along with probably other more perishable valuables, from sources usually several hundred kilometers away. One site in the Valley of Oaxaca produced the small flat mirrors of magnetite, probably worn only by elites, which were traded not only to the Gulf Coast but also to sites to the north. In turn, the Valley of Oaxaca received unworked pearly freshwater shell from the Gulf Coast and Pacific marine shells via a different exchange route. This valuable raw material was then worked locally into ornaments. The Valley of Oaxaca probably also received ceramics, turtle shell drums, stingray spines, shark teeth, and conch shell trumpets from the Gulf Coast and also used Olmec motifs in their own ceramics and sculpture. The widespread

¹ Mary Helms, *Craft and the Kingly Ideal*, 1993:3

finding of Olmec-influenced artifacts in many parts of Mesoamerica reflected the widespread exchange of valuables among elites, and the strong demand created by the more sophisticated Gulf Coast society for exotic materials.

Similarly, South America valued obsidian and shell, but also had metal objects of copper and gold and fine textiles that circulated among early polities. The cult that spread from Chavín de Huántar in the Cordillera Blanca of Peru, the Early Horizon style, is similar to the Olmec in the widespread adoption of motifs and iconic figures. It also seems to have fostered long-distance trade to fulfill the demands made by the elite and consumed in temple furnishings, mortuary goods, and rituals. Obsidian, from 470 km south of Chavín itself, becomes available in many areas where the cult was found, for example. Elites were buried with marine shells, beads of sodalite, quartz, and turquoise, and sheet-gold objects. Slightly later, the relatively isolated and small-scale chiefdoms of the Moquegua valley, Peru, in the first century B. C. E., had pottery and textiles from both the Paracas-Nasca south coast and the highlands in their distinctive “boot” tombs for elites. Thus, throughout Pre-Columbian times, material evidence of long-distance trade is found in most parts of the Americas.

The vitality of this long-distance trade in elite items is revealed by ethnohistorical information from just before Spanish Conquest. Chiefdoms flourished in Columbia, Venezuela, the Ecuador coast, and greater Amazonia that remained independent of the Inka. These paramount chiefdoms had well-defined trade networks. For example, Buriticá, in the Cauca-Patía depression of Columbia, had contacts that extended throughout northern South America to Central America, trading gold, emeralds, slaves, fish, salt, textiles, and gold objects in various directions. The Spanish in fact were surprised by the involvement of chiefs in commerce. Again, these exotic objects serve all over the Americas to reinforce the special position of elites and were exchanged most commonly as gifts between emissaries of various polities on the occasion of ritual visits, alliances, marriages, and similar types of contact. By a series of such exchanges, goods could travel quite large distances, as in the *Spondylus* shells (Thorny Pacific Oyster) found from California to Ecuador in moderately deep water. These very prestigious shells were used as ornaments as far away as among the Maya of the Yucatan Peninsula and more than a thousand miles away in southern Peru among the Nasca and their successors.

Besides the exchange of valuables, there is also the trade of more utilitarian items, such as food items and the raw materials and/or tools needed to carry out basic activities, between areas of differing environmental qualities, especially where geographical distance is not too great (see section on transportation). There is a general conclusion among researchers that such trade increased through time in the Pre-Columbian world. One important characteristic of both Mesoamerica and South America is their great environmental diversity, from jungles to coastal deserts to arid highlands to alpine areas. For the tropical latitudes, altitude is the key variable that underlies the variability. In some places, notably the Andean region, this great variability is found within a few hundred kilometers. There is thus in Andean studies a long history of interest in “verticality” or “zonal complementarity,” the attempts of societies to gain access to many different production zones on both the eastern and western slopes of the Andes to assure stable and sufficient subsistence.

Research indicates that such concern for complementarity has great time depth in the region. The particular Andean intensive use of high altitude zones is undoubtedly the environmental spur, because such zones present problems for large sedentary populations dependent on agriculture. Nowhere else is there such intensive cultivation and use of land above 2800 meters in altitude by humans. Such environments are plagued by cold (because they are tropical in latitude, light is not a problem), which limits the crops and animals that can be successfully raised (see section on Agriculture). However, the cold does allow the development of a freeze-drying technology, which allowed camelid jerky (*ch'arki*) and potato (*ch'uñu*) to be stored and to be easily transported. These can be exchanged with peoples from lower elevations and the coast for important products, such as maize, coca, marine fish, guano, cotton, fruits, and vegetables. Various ecological zones would also vary in their mineral and other natural resources. While most ecological zones could certainly be self-sufficient, obviously nutrition and variety of the diet are greatly enhanced by “zonal complementarity,” as would the availability of various stone and ore resources. It would be crucial for the *altiplanos*, where cold might make the food resources fail or fluctuate in productivity more often, to have access to products from lower elevations.

One area of interest and debate among Andeanists is the nature of the “zonal complementarity.” The older model originated with John V. Murra, where the economic constraints caused by ecological zonation are dealt with directly by highland groups through direct colonization and control of land outside the home territory. The pattern of control

that results is characterized as an “archipelago” of “islands” of ethnic enclaves in different zones. This pattern provides the controlling polity with stability in the supply of desired produce, mineral resources, and perhaps also, in the value of the commodities. An alternative model, first suggested by María Rostworowski, sees evidence of exchange between politically independent groups as a primary mechanism to adapt to “verticality.” These types of exchange would be barter exchange, market exchanges, kin-based and non-kin-based trading alliances, etc. The question is really not which one is right, as both colonization and inter-group exchange are known from ethnohistory and the 16th Century and found archaeologically in earlier prehispanic times. A polity may have direct control of some areas but still have to trade with autonomous groups for some products. Thus, a dynamic situation is likely to be present, where the need for “zonal complementarity” will be met with colonization at some times and in some zones, with exchange at others, and a mixture of the two in most cases.

One research area of interest is the possible time depth of ethnic enclaves and colonies. The highland Titicaca Basin may have been the origin of migration into lower elevations in the first millennium B. C. E., where *altiplano* patterns of ceramics, textiles, and settlement types are found in the Moquegua region of southern Peru. However, Goldstein’s study of Huaracane sites here indicate an independent group probably trading with both the coast and highlands, and mostly trading elite goods, as discussed above. On the other hand, the earliest clear example of colonies may date to the time of Tiwanaku (dominating most of the first millennium C. E.), a Titicaca basin site that was clearly the center of an expansive state. The Omo site in the Moquegua region (beginning in C. E. 550-600) appears to have been settled by colonists from Tiwanaku and to remain separate from local populations. Such similar sites are found throughout the south central Andes and indicate probably colonial and direct control of the major maize-producing areas. However, the necessary archaeology to indicate how various areas were incorporated into the Tiwanaku sphere of influence has not been done. It is possible that settlements would begin with direct control and then have more autonomy through time. Stanish, discussing post-Tiwanaku times in one small valley in the Moquegua drainage, actually feels that there is much shifting between modes of exchange in an area. Times of direct colonization occurred when there was regional political disorganization, so that groups could be assured access to products from an area. At times of political stability, more usual exchange relationships could allow zonal complementarity to function efficiently. Whether this is true of greater regions in the Andes can only be answered with future research.

In Mesoamerica as in South America, the different environmental zones are divided into the *tierra fría*, *tierra templada*, and *tierra caliente*. While each has its products, the difference from South America is that maize can be grown some places in all zones, and the hardships of the highlands are less, because they are at lower altitudes in general. Also, the distances between major zones are considerable, and areas are more self-sufficient in food products than was perhaps the case for the Andean area. The linkages between the zones would occur as long-distance trade of valuable resources and elite exotic materials. Instead, microgeographical environmental diversity is the focus. The Valley of Mexico, heartland of large pre-Hispanic states, is a good example, where within a fairly delimited arid highland, there are altitude differences, rainfall differences affected by altitude and decreasing from south to north, plus varying susceptibility to frosts, depth of soils, and the presence of important minerals. Each community would probably not be able to meet all its needs locally, but another community not too distant might be able to make up some deficiencies, and another community others. The result was to foster early exchange and community specialization, as the most practical way to acquire the necessities of daily life and for a region to prosper. Communities would intensively produce whatever their particular ecological area encouraged and exchange, probably through markets, with other communities. This created larger, regional systems, which became the springboard for the dense populations supported by intensive production that could support the complex sociopolitical societies that developed in the Valley.

This high density of population was generally found in the highlands, but clearly was also characteristic of some of the *tierra caliente* as well. The Maya lowlands of Mexico and Upper Central America, for example, had a dense population of several million at the height of the Classic Maya civilization (circa C. E. 250 – 1000) in an area generally much more sparsely populated today. While the lowland area seems more homogeneous, it too has microgeographical variation in resources, such as stone suitable for cutting tools, salt, clays for ceramics, and variability in the quality of soils for intensive agricultural production. Research in chert lithics (for stone cutting tools) and ceramics reveals that there was community specialization for those close to the raw materials, which were then exchanged widely in a defined local region. The existence of markets in this area is not as widely accepted as for the central highlands, but there was at least barter exchange. Some useful goods, such as obsidian, fine ceramics, and salt, came from a longer distance and probably were part of the long-distance elite exchange discussed above.

From the perspective of a small community in the Maya lowlands, Ceren, one can see how some valuable utilitarian items like these are distributed within the group. Each household in Ceren had to obtain obsidian tools, a fifth of their ceramics, salt, and a jade axe (for woodworking), plus hematite cylinders and marine shell for ritual purposes. Payson Sheets feels that households exchanged some sort of surplus in nearby markets at elite centers for these items. It is also possible that households could acquire these goods in other forms of exchange with elites.

As a result of greater sociopolitical complexity, both the long-distance and the interchange between environmental zones become more institutionalized and formal under the auspices of centralized states, which come to dominate the Pre-Columbian world during the first millennium C. E. and continued until European contact. The scale also increases dramatically, especially in late prehispanic times. However, the less institutionalized patterns discussed above also continue to be present and important in local areas all through time. The Aztec and Inka empires represent the highest levels of sociopolitical complexity present in the Americas, and both were still developing and expanding at the time of the Spanish arrivals. Both empires provide strong examples of the importance and variety of trade present at the end of the prehispanic autochthonous history.

Long-distance trade among the Aztecs was carried out by hereditary guild of merchants called *pochtecah*, indicating a formalized structure to this activity. There were various ranks of merchants, from quite wealthy and powerful, to fairly modest traders in small markets. There is evidence that individuals would begin fairly modestly and work up to higher ranks and wealth. Outsiders could enter at the lowest ranks, but the occupation was primarily hereditary, filling a status that was above the commoners but not having all the privileges of nobles. The guilds, however, were fairly powerful entities, having leaders, being able to set their own laws and carry out their own punishments. The guilds were also in charge in the markets (see below). Twelve cities in the Valley of Mexico, the heart of the Aztec polity, had guilds of *pochtecah*, as did other cities in the polity.

Merchants were not the only individuals to trade in markets but certainly handled the largest quantities and were the ones to bring in valuable goods from some distance. They brought in valuable raw materials for the craftsmen of the Valley of Mexico and were the source of the elite sumptuary goods. The merchants traded products, such as obsidian implements, gold ornaments, cotton capes, lake products, for feathers, green stone, amber, and animal skins

to be worked by the craftsmen of the Empire. Some were also the only ones who could travel and trade outside the boundaries of the Aztec empires. The most powerful guilds belonged to Tenochtitlan and Tlatelolco, the twin cities at the center of Aztec political and economic power. That these were the primary ones allowed trading privileges in neutral ports of trade outside the empire reveals the effect of state regulation upon trade. There is some controversy, supported by ambiguity in the sources, as to how much state control there was of trade. Some researchers feel that there was closely administered long-distance trade, while others feel that merchants functioned quite freely, subject to some regulations, which affected mostly extra-empire activities and transportation. Many *pochteca* functioned within the empire and at all levels in the markets; they were not limited to solely long-distance trade.

Of course, Anne Chapman's theory that the *pochteca* were one of the main routes for expansion of Aztec hegemony reveals the importance of long-distance trade for the Aztecs. *Pochteca* apparently could function as spies in foreign territories and could become a pretext for the Aztec army to conquer an area and turn it into a tribute-paying entity. They could carry out conquests themselves. However, the role of *pochteca* in foreign conquests is probably overstated, and certainly, once an area became part of the empire, merchants could trade more safely. The important point appears to be that *pochteca* were not limited to foreign long-distance trade, and they had diverse economic and political functions within the Aztec Empire.

Tawantinsuyu, the empire of the Inka, was truly a territorial marvel, encompassing almost a million square kilometers divided into four administrative quarters, centered at the capital of Cuzco. There were 80 provinces, comprising the territories of the conquered populations. With so many different subjugated polities and ethnicities, there was tremendous variety within the empire of sociopolitical organization and economic characteristics. What most researchers agree is that Inka political economy was well-integrated, so that while local conditions and economic strategies could vary, the state was able to finance overarching state institutions and activities efficiently. Movement of goods over long distances was obviously part of this economy and was important in political relations and in ritual practices. The state practiced a widespread reciprocity, whereby valuable goods were received from local elites as obligatory gifts, such as shell beads, unfinished *Spondylus* shell, various metal objects. The state would also give local lords gifts of cloth, gold, shell beads, copper axes, and coca, among other things. These "gifts" might actually be considered from our perspective as actually payment for political services, while others are

tribute. The state would also give valuable commodities for "sacrifices" at shrines around the empire. All these goods would be accumulated, transported, stored, and paid out by the state as needed, as a more developed and intensive form of interelite exchange.

For the exchange of goods between different ecological zones, the argument discussed above concerning the organization of zonal complementarity still continues for the Inka. The direct control of various zones and their varying produce through colonists is certainly documented for certain areas, particularly the southern Andes. In these systems, the various enclaves would be discontinuous and could be quite distant. In the central Andes, ecological zones were closer together, and nearby communities could cooperate to exploit a wide variety of altitudinal zones and their products. In coastal communities, specialization and exchange of products was common, with fishermen and farmers forming their own communities and exchanging products via barter. There also was a group of specialist merchants to bring products from further away. The altiplano-coastal interaction continued as it long had, exchanging lowland agricultural and maritime products for the highland ones, both using barter exchange with local groups and the development of colonies. It appears that there was a diversity of strategies in Tawintinsuyu, basically determined by environmental and ethnic traditions.

There is evidence for some parts of the empire of merchants who functioned similarly to the Aztec *pochteca*. This appears to be true of the central coastal valley of Chinchá, where merchants would go beyond the northern borders of the empire to acquire sumptuary goods. These individuals may have been independent entrepreneurs, but the Inka administration certainly regulated it and used these merchants to acquire goods from beyond its control. But there is no evidence of merchants as a specialized group for many parts of the empire. Instead, strongly administered trade, barter exchange, and reciprocal gifts moved goods across the empire, and in this, Tawintinsuyu contrasts with the widespread presence of merchants and markets among the Aztec.

Transportation

Closely allied with the issue of trade is that of the transportation system, as it is the cost of moving goods that constrain or encourage long-distance trade, as it also influences how large an area may interact economically. In

this, the contrast of South America with Mesoamerica is quite dramatic. The former could economically integrate and exchange products over a larger territorial extent than was feasible for Mesoamerica.

Pre-Columbian Mesoamerica was limited to foot traffic on land, because of the absence of draft animals and wheeled vehicles. (Wheels were found only on small figurines or toys but not expanded to carts that could be pulled by people.) Thus, roads were mostly variations of foot trails and emphasized directness with sharp turns and gradients. The limiting factors were distances that could be covered in one day, and the amount of a load that a human could carry, using a packframe and tumpline. Mesoamerican economic characteristics were always affected by the fact that bulk goods, such as staple foods, could not profitably be brought from very far away. Cities, thus, had to be provisioned from nearby, limited hinterlands, and only fairly lightweight valuable goods, such as obsidian, feathers, cacao, etc., would have traveled long distances.

In Aztec times, there were professional porters or *tlamemes*, a hereditary lower-class occupation. Codices clearly show children being trained for this occupation. They were based in towns and available for hire to passing merchants. They would carry a load (around 50 pounds but it probably varied by distance, terrain, and purpose) for one day's journey to the next town. These would return, and the local *tlamemes* would then carry the load another day's journey, long-distance transport thus consisting of a relay of porters. The exceptions to this pattern would include porters carrying supplies for armies and in *pochteca* trips outside the empire. Here, they would accompany the merchants and do all the carrying in stages. Since *tlamemes* had to be paid, probably carry much what they would eat on the trip (which was a minimum of two days), rested, etc., the limited efficiency of this mode of transport is clear. It was, however, an expanding occupation at the time of Spanish Conquest, fueled by demand and the entrance of people displaced by Aztec conquests. The time depth to the status of professional porters is unknown, although it probably extends back to the time of earlier cities like Teotihuacan, although the level of organization probably was not as extensive as later.

Where water transport was feasible, as in the lakes of the Valley of Mexico and along the Gulf Coast, canoe transport was much more efficient, probably by forty times. It was through canoe transport that Tenochtitlan was able to bring food from a more extensive hinterland and unite the whole of the Valley of Mexico into one

interlocked economic region. The canoes could transport more bulky items along coasts as well, permitting more widespread exchange of lowland products than would otherwise have been possible. However, much of Mesoamerican trade was constrained by the limits of human transport.

In contrast, the Andean area had llamas for transport, and llama caravans carrying produce and goods have been important for millenia. The zonal complementarity that seems to be important to Andean societies is made feasible by the ability to move bulky goods by caravan, and thus the "vertical archipelagos" of colonies at some distance from their core is possible. Water transport by rafts along lakes and the coast also allowed the efficient movement of goods. It is how merchants from Chincha could bring products from Ecuador's coasts to the empire. Foods and other important goods can travel much farther distances than in Mesoamerica.

The importance of caravans would mean a greater investment in roads than the footpaths of Mesoamerica. The Inka road system, built partially upon older existing systems, is one of the best for a pre-modern society. It consisted of more than 25,000 kilometers, with suspension bridges over canyons, drainage canals, road walls to keep herds out of adjacent fields, waystations, and causeways. There were main highways, to link the four provinces, and many other roads that linked with these. Waystations or *tampu* were constructed about a day's walk apart. Theoretically, these could only be used by state personnel and for state business, so the regulation of llama caravans along the roads would allow the state to control the movement of goods and trade.

Labor

One of the important resources of any economic system is the labor of its people. Individual labor that serves to support that individual and his/her familial dependents is implied in the discussion of agricultural, craft specialization, and trade above. The labor discussed here is surplus labor mobilized in a hierarchical society to increase production and to complete public works. Such demands for labor will vary with the situation of group, and the burden placed on individuals will therefore vary as well. Probably wherever there were nobles/elites and public architecture, roads, bridges, irrigation systems, etc., the labor of common people was called upon to support the noble households and the building endeavors. Again, it is at the end of the Prehispanic period that we have clear

evidence of the variety and burden of this labor. Part of the labor obligations were intimately linked with tribute (see below), but it would be a mistake to consider all surplus labor as forcibly extracted. It can also be considered a "gift" to the gods, the lord, etc. While the difference between a gift and a tribute obligation may not ultimately make much difference in terms of effort and burden on an individual, it probably was important in the perceptions of social relations among people, nobles, and the state. It is not always possible to determine the exact nature of various labor obligations among the Aztecs and Inka but elements of both expected gifts and forcible extractions appear to be present in both systems.

In Tawantinsuyu, control of surplus labor was extensive and organized into several types. In fact, some researchers feel that the whole key to Inka economy was through its control of labor. The result was to make available to the state the massive amounts of labor that built Inka roads and facilities, storehouses, Inka buildings and settlements. Probably the oldest form was the *mit'a*, labor provided by individuals on a rotational basis. This labor worked the fields of the Inka, the religion, and the local lord, as well as worked on public works, made up the armies, etc. Females wove textiles for the state, as well as worked in the fields. Some of these projects, such as the army or mining work, could require months of service. However, *mit'a* labor was conceived in terms of reciprocity, and the state would provide feasts and support for the labors (including state-supplied song and music) while engaged on these tasks. Such labor probably had been an Andean tradition for the support of lords and religion for a long time.

More permanent forms of control of labor involved people called *mitmaquna* and *yana*. The former were transplanted colonists, including their goods, families, and chiefs, from one area to another, mostly for agricultural purposes, but also for such tasks as maintaining garrisons. Such individuals would maintain their cultural identities and ties with home communities, and thus were easily distinguished from the people around them. Such relocations were ordered by the state and could force people to move quite long distances. These individuals also were in reciprocal relations with the Inka and could expect feasts and gifts. However, *yana* were totally detached from their communities and worked solely for the Inka, as peasants, craft specialists, and chiefs. While not slaves, these individuals were not given gifts in return for labor. The best example of *yana* is the *mamakuna*, women taken as young girls to serve in cloistered compounds. Their labor and activities seem to have been closely monitored. They served temples and the Inka, particularly by weaving and the making of the maize beer so important in ritual. Such

a compound has been excavated archaeologically, with fifty structures and 15,000 square meters of space. As the Inka state expanded, more and more individuals were involved in these labor relations, and the state's use and control of labor was expanding continually.

Land and labor are closely linked in the Aztec domain. Land was generally controlled by nobles, both communal lands and their private ones. Communal land was allocated to commoners in exchange for military service, for corvée labor, and for routine labor and food for the noble household. There is evidence that these relations of commoner and noble were thought of in terms of reciprocity. On private land, however, the commoner households would owe the lord agricultural labor on the lord's own lands, kitchen labor for grinding corn, and also spinning and weaving labor for textiles that were such a crucial part of tribute items in the Aztec empire. In addition, some communities would be designated to provide labor and goods for Tenochtitlan and would do so directly through the imperial bureaucracy. Through time, the imperial system was able to increase the number of commoners subject directly to it, making them tributaries, and owning their labor and products. This was probably accomplished by the seizure of communal lands and the reduction of individuals and communities to a tributary status. Thus, as in the Inka system, there was a gradation of labor from one of reciprocal relations to more stress on forcible extraction. How much time was devoted to the various forms of surplus labor is unclear, but for some commoner households, the burdens could have been quite heavy. For the Aztec, as for the Inka, the control of large amounts of surplus labor was obviously an important strategy for expansion.

Tribute

For many Pre-Columbian societies, surplus labor was actually translated into goods, which were then collected by elites or state officials, according to designated quantities. That is, communities and households owed so many of various goods annually. This "tax" was an important basis of public finance. While it has often been called "tribute," it is really tribute when there is an element of forcible extraction involved, usually because the group has been subjugated and put under the obligation of tribute. Some of these goods would be called "gifts," even if the exchanges involved were unequal. Such gifts were often obligatory, and thus worked very similarly to tribute, but as discussed above with labor, there was at least an expectation of some reciprocity with these. The importance of

tribute in state finance probably has some time depth in both Mesoamerica and parts of South America, but it is only with the final empires that detailed information, though not answering all possible questions, is available. It seems that both the Aztecs and Inca empires were expanding through increasing control of labor resulting in goods that can be called tribute.

All researchers agree that Tawantinsuyu controlled vast amounts of goods, both staple and sumptuary. These goods were the result of labor expended on state lands, herds, mines, quarries, specialist workshops, etc. The empire built a vast system of storehouses to house it, which are well-known archaeological features of Inka settlements. For example, in the Cochabamba valley, there are some 2,400 of these round, thick-walled structures on the mountain slopes that were used to store maize from the state plantations there. To keep track of goods and foods, Inka administrators used the *kipu*, a system of knotted strings not completely understood today. It is known that the *kipu* worked on a decimal system and recorded only the results of mathematical calculations. However, the *kipu* and the administrators who kept and interpreted them were able to keep very exact accounts according to Spanish chroniclers. Thus, the state could keep track of tribute paid to it and then use the proceeds to finance the support of conquering armies to expand the empire and its tributaries, for public works construction projects, to reward the laborers on state lands, and to give gifts to subject lords, all as described above.

The system seems to have worked on the basis of a professed reciprocity, where the state definitely had the upper hand. When territories were conquered, the Inka claimed all land, animals, women, and valuables and then redistributed land and animals to the state, religious institutions, and the smallest part, apparently, back to the community as communal property that would be apportioned to individual households. A man could receive a wife and access to land and some animals from the local administrators, but became *hatun runa*, a tributary, in return for his labor on state and religious lands or participation in war campaigns and public works. Young men would probably start to take part in this labor service as evidence that they were worthy of marrying and becoming official tributaries. According to Murra and other researchers, all tribute was phrased in terms of labor, not products, even though it took quite a legal fiction to sustain this ideology. Thus, for example, the tribute was the care put into llama herding, not the designated number of llamas paid in to the various administrators each year. Of course, as discussed above, the *mit'a* required the *hatun runa* sometimes to leave their communities for construction or wars.

In all cases, the state provided food, drink, and music during their periods of labor. In spite of this professed reciprocity, the empire seems to have required definite production quotas as a result of the labor and to have micromanaged the system to be sure that sufficient production was available in the warehouses.

The Aztec system has many similarities, but also some crucial differences. Military conquest and expansion were important here as for the Inka. And like the Inka, with every territorial gain, the empire gained subjects and tribute. Here, very definite amounts have been documented (even if the actual measure equivalents in our terms are somewhat in doubt and sources do not agree on the exact quantities) that were levied individually on each of the 38 conquered provinces by 1519. Again, the quantities of tribute goods received by the imperial capital annually, paid annually, semi-annually or quarterly depending on the good, are astounding. The distance from the empire center and the products available from a province are generally reflected in the tribute levied.

Cuauhnahuac [a close province] annually sent its overlords 12, 800 cloaks of various designs, 1600 loin cloths, 1600 women's tunics, 8 warriors' costumes of diverse styles, 32,000 bundles of paper, 8000 bowls, and 4 bins of maize and beans.... Tochtepec on the Gulf Coast of present-day Mexico, provided the following yearly tribute: 9600 decorated cloaks, 1600 women's tunics, 1 warrior's costume and shield, 1 gold shield, 1 feather standard, 1 gold diadem, 1 gold headband, 2 strings of gold beads, 3 large jades and 7 strings of jades, 40 lip plugs, 16,000 rubber balls, 80 handfuls of quetzal feathers, 4 bunches of green and yellow feathers, 24,000 little bunches of feathers, 100 pots of liquid amber, and 300 loads of cacao.²

Some of this tribute, especially in luxury or valuable items, often would have to be imported by the province, through probably trading with merchants. For example, cotton was a common tribute item demanded even of non-cotton-growing regions. Probably the cotton was purchased in the marketplace and then formed by women into clothes and delivered to their lords or imperial collectors. On the other hand, some products of a province, though present in other's tribute levies, would not be demanded, such as Tochpan, whose cacao and honey were not part of their tribute, but turquoise (which they had to import) was.

² Frances Berdan, *The Aztec Empire*, 1982: 36

The burdens on provincial commoners in the empire may have been considerable, but it is hard to know exactly what was involved. For example, in the province of Morelos, there were four levels of tribute: lowest to the local lord, from the lord to his local city-state, the city-state to the capital of the province, and then from the province to the imperial capitals. All labor and goods were provided by commoner households, while nobles were responsible for seeing that the tribute levies were met. The number of cotton garments divided by the population does not indicate a heavy burden for the imperial and province level tributes, but we not sure exactly how much was expected of each household or even how much labor it took to produce one cotton garment. Based on modern weavers with similar technology, it could have taken one to four weeks to produce a manta, depending on the sizes that were expected. Evidence from one local lord there could indicate that for just the two lowest tribute levels, four households (actually the women) might have had to make 22 cotton mantas annually on top of any other obligations. Thus, the burdens of service and goods could have been heavy, and not much reciprocity was expected from the imperial level at least.

As in the Inka case, the tribute received was crucial for state finance and was also carefully guarded and recorded in state warehouses by administrators. Tribute was used to support the imperial bureaucracy, armies and military campaigns, support the royal palaces, provide gifts and commissions to merchants, artisans, officials, etc., and to feed the urban dwellers and provide for emergencies. While the amount of staples needed by the imperial capitals and palaces was considerable, these came, because of transport inefficiencies, from near provinces. The bulk of tribute consisted in specialized manufactured goods and valuables. An important aspect of the Aztec system is that individuals could receive these wealth items from tribute as payment or reward, but then exchange some of them in the marketplace for subsistence items, as will be discussed below.

Markets and Currencies

It is axiomatic that modern economies work on the basis of market exchange with valuation set by a specialized currency. Goods and services produced can be exchanged with values set by the market, and thus individuals in economies where self-sufficiency is not the norm can acquire goods and services they themselves cannot provide.

Markets have time-depth as an economic system among many human groups, but there are differences with modern markets. Markets are usually physical places, and currencies may or may not be involved. Markets clearly have been present in many parts of Mesoamerica for two millenia but may have been more limited in Pre-Columbian South America.

In Aztec times, markets were clearly vital to the economic distribution of all levels of settlement, and there was a clear hierarchy of markets. Important towns held markets, sometimes daily, with a wide range of goods, both basic and luxury available. However, even commoner households could exchange their surplus at local markets in every settlement, often held every five days. And the products of such households could be of interest to nobles and other commoners. Adjacent villages would have different days, so market specialists could circulate to all. Large towns would then periodically also hold an important market day, for more variety and wider regional circulation of goods. The greatest market of all, of course, is associated with the imperial capital of Tenochtitlan at Tlatelolco. There is no better description of a Pre-Columbian market than that of conquistador Bernal Diaz del Castillo:

When we arrived at the great square we were struck by the throngs of people and the amount of merchandise they displayed, at the efficiency and administration of everything. The chiefs who accompanied us showed us how each kind of merchandise was kept separate and had its place marked out. Let us start with the dealers in gold, silver, and precious stones, feathers, cloth, and embroidered goods, and other merchandise in the form of men and women to be sold as slaves.... Then there were merchants who sold homespun clothing, cotton, and thread, and others who sold cacao, so that one could see every sort of goods that is to be found in all of new Spain, set out the way it's done where I come from, Medina del Campo, during fair time....I wonder why I waste all these words in telling what they sold in that great square, for I shall never finish describing everything in detail.³

³ The Bernal Diaz Chronicles, Translated by Albert Idell, 1956, pp.156-157.

Economic necessity of using the market plus regulations requiring periodic market attendance served to make markets central. It was illegal to exchange outside of the market. A portion of the goods brought to market were paid to the ruler. By these means, the Aztecs could regulate the markets.

However, there were currency equivalents available to make exchanges easier and more regular, as well as to "even out" transactions. These "currencies" are different from money, because they are also consumables--cacao beans, cotton cloaks or *quachtli*, and quills filled with gold dust were the main ones. These had standardized values, and many items had value in cacao beans or quachtli--for example, slaves (8 to 40 quachtli), feathers (bunch of 20 for 20 quachtli), and quachtli were worth 65, 80 or 100 cacao beans depending on quality. Market transactions consisted of barter of item for other items, by count not weight, and probably one of the currencies to equalize the value of goods being exchanged. And of course, one could drink or wear the currency instead.

There is some difference of opinion about how merchants, markets, and long-distance trade intersected. Many *pochteca* were probably mostly involved in market exchange, buying luxury goods at some distance and bringing them to other markets to exchange. Thus, they were not only trade specialists but provided many market specialists as well. The principal merchants also were the main administrators of the markets, enforcing fair prices and sitting in judgment on complaints, at least in the largest markets. While merchants were responsible for bringing luxury items to the empire, it seems clear that they paid some to rulers or nobles, but also had plenty to sell in the market. The crucial aspect of Aztec economics is that wealth items could be exchanged for subsistence and other basic necessities in Aztec markets. Items intended for tribute would often be purchased in markets, and those received as tribute payments could be exchanged for other items in markets. Thus, the Aztec system was able to economically integrate large areas and balance the costs of conquest of distant areas with funding of its central dense population. Markets are what tied labor, production, trade, and tribute together.

The role of markets and currency is much more controversial among the Inka. Certainly, there was no general currency in Tawantinsuyu; wealth was measured by amounts of commodities. There does not seem to have been extensive market exchange or even the physical presence of markets in many parts of the empire. Barter exchange of local goods, as between the specialized fishers and farmers of the coastal valleys, had probably occurred for

millenia. The caravans of llama from the altiplano trading with coastal peoples had long involved barter exchange. The state otherwise determined what was to be paid into its warehouses, and state administrators paid out goods, staples to fund the labor requirements and wealth goods to control elites, for example. Of course, the state had to balance the costs of what it received and paid out to the purposes achieved. Widespread market exchange as the economic basis does not seem to be present.

Markets are only present in some areas and continued as part of the diversity allowed under the empire, mostly on frontier areas of the empire. But, some researchers have argued for a limited currency type of finance in Tawantinsuyu. The argument mainly involves parts of the Empire, mainly in the north and in the central Peruvian coastal valley of Chíncha, where market exchange and a kind of currency existed before Inka incorporation and continued under Inka control. The exact way in which the Inka controlled and tapped into these economies is unclear. In the Pasto region of Ecuador, for example, a shell-bead currency was in use that even continued in colonial times. Also, some researchers argue that certain sumptuary goods functioned as a special-purpose currency, generally only exchanged for itself and for only certain types of exchanges. Fine cloth and coca are the two most important, where the state would control a large proportion of production and distribution, but recipients could move the valuables around themselves. Only coca, however, might be exchanged for other goods. However, the Inka economic system is of a different nature than that of the Aztec, the main difference being the prominence of markets in one and their relative unimportance in the other.

Summary

As attested to in the beginning, it is only possible here to touch on some "highlights" of Pre-Columbian economies in Latin America. The great time depth and variability across Mesoamerica and South America makes it impossible to characterize economic systems except in rather gross terms. Most peoples for most times depended on reciprocal exchanges within their local spheres, with periodic access to long-distance goods, especially utilitarian necessary ones. These goods were probably obtained through relays of reciprocal trading partners from one area to the adjoining and so on. With the rise of elites, exchanges of rare and valued items become more prominent. The exoticism of distance becomes one of the driving forces behind elite exchange, and thus the energy and goods

expended to acquire them could be considerable. What is distinctive about these economic exchanges is that the use value of such items would largely be in prestige rather than in any other more tangible form. Such valuables are used by elites to reinforce their status and separateness from others in their society. However, elites would also use such goods to redistribute to clients and would become the source of necessities that must come from afar. This type of exchange was still very widespread in the New World on the advent of Europeans, dominant in the Caribbean, Amazonia, northern South America, and most of Central America.

Although many aspects of Aztec and Inka economy are found in the earlier societies in their respective geographic areas, it seems that nothing resembling the scale and complexity of the Late Prehispanic systems had been seen before. Markets, long-distance trade, and tribute were present in Mesoamerica from probably at least Teotihuacan times, but the Aztec integration of all three is on a much larger scale. Similarly, trade between altitudinal zones, barter exchange among coastal societies, and colonization of "archipelagos" are present in pre-Inka societies. However, archaeologically, there is no evidence of such a geographically extensive and highly centralized economy until the Inka. Thus, the Spaniards came upon the peak economic developments present and were, by and large, able to coopt, build, and transform this Pre-Columbian basis. These colonizers had more trouble with societies that were not as centralized or whose economies of a simpler type. What the conquerors imposed on the Native Americans of large parts of Mesoamerica and South America was not so radically different; they understood tribute taxation, corvée labor, centralized storehouses, and centrally administered economies. In some places, they understood market exchange and currencies as well. In fact, if not for strong political controls and the disruptions of demographic collapse caused by the introduction of new diseases, it should have been possible for native peoples to enter and thrive in the global economy opened to them. The colonial history of Latin America was deeply influenced by the Pre-Columbian economy present when the Europeans arrived and how the latter made use, or misuse, of what they had gained control.