

**III. NOTES ON TRADE IN ANCIENT MESOAMERICA**

**Brian D. Dillon**

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## INTRODUCTION

The subject of "trade" in pre-conquest Mesoamerica has long intrigued (or plagued) archaeologists, culture historians, economists and historical geographers alike. The role it played in the individual ancient cultures and the effects it exerted upon them to change over time have often been studied. Questions about what was traded, in what volume, from whence to where, the status of "trade" in the overall regional or interregional economies, and the influence or lack of influence of politics, markets, demand and supply and percentage of production destined for export have often been addressed, but seldom very fully answered. In view of the great volume of literature on the topic, I confess that I cannot hope to contribute much in the way of answers to these pressing questions. My aim, rather, is to impart a feeling of the scope of some of the general implications of trade; the diversity, known or assumed, of products traded, as well as a familiarity with some of the misconceptions that have "guided" some of the research carried out in the field, and through their perpetuation, have tended to work against a more complete knowledge of the subject.

To this end I will attempt to establish what can be meant by the term "trade", and offer some brief examples demonstrating the value of studying "trade" relative to the archaeological reconstruction of Mesoamerican culture. A short selection of approaches to the topic, both the descriptive and the explanatory, will be discussed and evaluated. In order to better assess the factual basis of the theories described I will take a detailed look at a few selected resource items that were of importance in aboriginal times. By doing so, I hope to demonstrate that the basic data utilized is inconsistent with some of the hypotheses that have been proposed and nonexistent for others. Finally, I will offer a very few suggestions for work that might be done in the future, and how it ought to be carried out.

This overview makes no pretensions of being exhaustive; doubtless I will have omitted as many important points as I have included. However, I feel that the examples presented will be sufficient to support the contentions I wish to convey.

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## SOME DEFINITIONS OF "TRADE"

Hole and Heizer (1973:342) observe that "it is easy enough to recognize 'foreign' objects in a site, but much harder to demonstrate that they were traded and to pinpoint their origin." However, some students of Mesoamerican archaeology have tended to immediately project cultural institutions of historic trading peoples back to societies known only from excavations upon discovering such "foreign" items in their digs, or sometimes even when artifacts were found without provenience. Caso (1965:928) cautions us that "objects pass from one place to another by trade, tribute or pillage, so that the provenience by itself can be only a very uncertain indication that the object was a local product." How much more remote is an accurate assessment of origin when no provenience data exists at all, to say nothing of the means by which the object moved.

If it is possible to establish that "trade" might have occurred in an archaeological society or between societies, the next logical step has often been to determine its cultural role. "Trade" studies, when applied carefully and with discretion, have been very successful as tools in the empirical examinations of dead cultures and in archaeological reconstructions. However, the most common failing in Mesoamerican studies of trade has been an overeager ascription of patterns discernible in the Postclassic period to earlier times, a hazardous undertaking at best. Quite often the actual model of "trade" based on late times is poorly understood as well, and utter chaos may well be the result. Silva-Galdames (1971:42) should be heeded when he suggests that: "Trade must not be inferred; it has to be demonstrated."

Parsons and Price (1971:180) observe that "the 'formative' demographic, settlement, agricultural and other productive systems, on the basis of archaeological evidence, were demonstrably different from those of the Classic and Post-Classic; it seems reasonable to assume that these observed differences may be closely correlated with other institutional differences." Therefore, we can most likely never know the actual form that trading organizations took in all but the latest of Mesoamerican cultures, and assigning models of dubious value in attempts to clarify the situation cannot help but obscure it further.

There has been much speculation in recent years on the cultural and social implications of Mesoamerican trade, especially in the Preclassic period. The lack of actual contextual evidence to support claims of far-reaching trade routes and other such cultural manifestations is equaled, in my opinion, by the degree of confusion engendered by the imprecise use of the term "trade".

Chapman (1971:208) warns of valuable results being "nullified when the terminology is not respected, when it is deprived of its specific meanings and reduced to everyday vernacular." Yet many

treatments of the subject consider "trade" as a given element, without bothering to explain what exactly is meant by the word. Some authors seem to assume that there is a common consensus on its definition, which there is not. "Trade" is offered to indicate tribute, exchange, plunder, procurement and even communication. Some writers employ the term interchangeably with, or to represent one or all of the above words. The variety of meanings associated with the term points to the fact that in reality, there is little agreement on the definition of "trade".

Some students have recognized that "trade" is not equivalent to the other meanings popularly associated with it and have attempted to clarify the situation. Flannery (1968:102) suggests that: "exchange is not 'trade' in the sense that we use the term, but rather is set up through mechanisms of ritual visits, exchange of wives, 'adoption' of members of one group by the other and so on." Hole and Heizer (1973:342) strike the same chord by stressing the need to reject preconceived notions in studying the phenomenon: "exchange may literally be non-economic in the sense that no gain is expected nor any economic necessity fulfilled." There are, it becomes apparent, numerous ways in which, or reasons why, objects should move from place to place without any necessary connection with what we consider "trade".

It is therefore much better, when foreign objects are found in dateable archaeological contexts or described in early histories, to account for them with a less loaded term than "trade". Perhaps we should adopt a culturally neutral expression such as "movement", but the word "trade" is so imbedded in the literature that such a measure would be unlikely to succeed. In any case, if and when the word "trade" is used, it should be qualified.

#### APPLICATIONS OF "TRADE" STUDIES TO MESOAMERICAN CULTURE HISTORY

Despite the confusion that some treatments of the subject have generated there have been others that have increased our understanding of ancient Mesoamerican culture in important ways. This interest tends to be manifested in two basic directions. "Trade" has been studied as a means of obtaining a greater knowledge of cultural integration at individual points in space and time, and also has been examined as a causal factor in cultural change. The contributions of "trade" studies to Mesoamerican archaeology as a whole have been many and varied.

In constructing relative chronologies, trade pieces, especially pottery, are of the utmost importance. The concept of "horizon styles" (Kroeber 1944:108) helps to establish the sequence of the regional traditions that it comes into contact with, and serves as the anchor in local sequences that otherwise might not be subject to cross dating. The ideal horizon style, according to Kroeber, would embody the following characteristics: an extremely short life-span; broad spatial

distribution; stylistic components distinctive enough as to preclude the possibility of confusing it with other styles of non-contemporaneous times. Examples of the application of this concept to Mesoamerican archaeology are the association of "plumbate" pottery (Shepard, 1948) with the Late Classic and Early Postclassic periods, and that of Mixteca-Puebla style decoration with the Late Postclassic (Nicholson, 1971).

The movement of articles through tribute or trade has been studied in attempts to determine the political boundaries of specific ethnic groups, as well as in establishing cultural parameters. Expansionism in the Postclassic period was effected through both "Military force and tribute exactions" (Willey, et.al., 1964:493). Barlow (1949) correspondingly defined the limits of the "Empire of the Culhua Mexica" by using a listing of direct tribute to Tenochtitlan, on the individual town level, to represent Aztec domination. In arriving at their estimate of central Mexican population in the Late Postclassic of 25.2 million persons, Borah and Cook (1963) make extensive use of the Matricula de Tributos from the Codex Mendoza. The authors reach their figure by counting the number of individuals tributary to the Mexica per town as family heads, and then multiply by 4.5, the estimated family size. Without the detailed tribute books, such a figure might not have been suggested.

Hole and Heizer (1973:339) suggest that one of the most important contributions of "trade studies" has been the illumination of the types of interaction engaged in by contemporaneous peoples. "Precise knowledge of the geographical limits of trade enables us to plot the areas of effective intercommunication or interaction for each group of prehistoric people; this knowledge in turn lets us make reasonable guesses about the sources of influence and the nature of contacts between areas." The authors elaborate: "a careful analysis of trade in a prehistoric context can inform us perhaps more quickly than any other means, of the scope and nature of interaction in which the people who lived at any one site were participating" (ibid.:342).

Willey, et.al., (1964:492) ask the basic question about the internal organization of early Mesoamerican civilization: "What were the political, social, religious, and economic ties that bound these societies together?" And to what extent was external and internal trade, among other institutions, "significant integrative factors?" The increase of long-distance trade would work towards augmenting the wealth of those involved in it, encourage production of more specialized items and upgrade the level of workmanship, and create new demands for products or resources that previously had been limited to localized areas because of ignorance of their existence by the neighboring populations, and as such would be an important focus in any society. Trade between major centers of cultural innovation could have had larger effects on the development and spread of new ideas:

"Trade in objects and commodities would have been accompanied by the diffusion of the religious and sociological complex common to the Mesoamerican co-tradition" (Parsons and Price, 1971:169). It is interesting to note, however, that there were apparently four regionally distinct merchant's religious cults in the Late Postclassic period, and that substantial differences existed between them (Thompson, 1966b). Thus we must not be too quick to assume that there was any common form of institutionalized cultural association with trading organizations at this or any other time.

The role of "trade" as a vehicle for cultural communication and diffusion has often been considered by Mesoamericanists: Flannery (1968:101) links the Olmec with the Preclassic peoples of the Valley of Oaxaca; Bernal (1969:87) suggests "commercial consulates" of the Olmecs in their dealings with peoples outside of the Tabasco-Veracruz heartland; Classic Teotihuacan is represented as maintaining "embassies" at Tikal (Silva-Galdames, 1971:52-53); and Millon believes he found a Huastec enclave at Teotihuacan (1973:35) in addition to a barrio with close relations to the Valley of Oaxaca (ibid.:41-42), both of which existed presumably to engage in trading relations.

A logical concomitant to determining the importance of trade as an agent of cohesion between separate cultures is to evaluate the influence of the absence of trade as well. Silva-Galdames (1971:58) accounts for the "marginality" of certain areas within Mesoamerica proper to this cause: [since] "trade is guided by commercial interest it follows that when a region is too far from cities or it does not have a commodity attractive to cities, it will remain outside of trade networks. It will therefore be beyond those relationships that are generated in cities which bring about cultural transformations."

Some students even see trade as the raison d'être for "cities", cultures, or entire civilizations. Hammond (1972:44) in his short sketch of Lubaantun, suggests that the site's probable manipulation of the cacao "industry" in that portion of Belize "enabled it to trade with other parts of the Maya area, and by trading and other contacts tied in to the general development of Classic Maya civilization." Grove (1968:184) urges us to believe that "trade was the major force to which we should attribute Olmec presence in the Mexican central highlands." Others extrapolate that assumption back to account for the Olmec presence in the Tabasco-Veracruz heartland itself (M. Coe, 1965:123, Parsons and Price, 1971:174-178), and it does not stop there.

Even the Classic Maya are represented as living or dying on their foreign commerce, easy prey for the "business-minded" central Mexicans: "The fact is that the Maya of both highlands and lowlands have never been isolated from the rest of Mesoamerica, and that Mexican influences have sporadically guided the course of Maya cultural history since very early times..." (M. Coe, 1966:52).

"It was...trade that linked Mexico and the Maya, for they had much to exchange...[and in Postclassic times] it was probably the smooth business operations conducted by the Chontal that spared the Maya from the Aztec onslaught that had overwhelmed less cooperative peoples in Mesoamerica" (ibid.:142). Chapman (1957:132) had previously voiced the same general attitude: "The Maya social and political stratification, internecine warfare, as well as the economics of production and consumption, was to a large extent dependent on the maintenance of trade relations beyond their ethnic frontiers." She further claims that the "fall of Tenochtitlan, the center of economic and political power", also guaranteed the collapse of trade networks throughout all the rest of Mesoamerica. For the Aztec state itself, Acosta Saignes (1945) sees trade as crucial to an understanding of the Tenochca rise to power, and as an important element in the development of Aztec society.

A theoretical view that has been gaining many adherents lately has been the thesis that long-distance trade is a direct concomitant, if not a causal factor in the development, of a more complex culture or civilization. Two basic distinctions must be made before any assessments of the consequences of movement of items can be advanced: whether we are talking about local or long-distance movement, and whether the articles in question are of an essential or non-essential nature. Most studies of Mesoamerican trade have been concerned with the long-distance trade in luxury items because of its importance in understanding cultural diffusion, but more recently attention has been paid to the effects of local trade in "essentials" on cultural development.

The basic difference between local and long-distance trade is that long-distance trade usually necessitates a supra-familial organization to insure success in the undertaking. Fried (1967:204) sees trade in luxury items playing a vital role in the emergence of the "state" by exerting pressures towards social stratification in egalitarian societies. Parsons and Price (1971:188) envision the genesis of ranking as promulgated and reinforced by trade in luxuries, and Tourtellot and Sabloff (1972) promote the view that Classic Maya society could not achieve "statehood" status without economic intervention from central Mexico. Voorhies (1973), in criticizing the latter suggestion, proposes that no foreign impulse was necessary for the development of a complex trading organization to ultimately be instrumental in state formation. It can certainly be argued that articles symbolic of the distinctions of rank are useful in maintaining social distance in a classed society, but more questionable is the view that a classed society necessarily evolves out of the ability of certain individuals to obtain such luxury goods.

Exotic materials used in dress, ritual or in other contexts work to reinforce the notion of separate and powerful status for those people equipped to procure them. They serve to accentuate the differences between their possessors and the masses, as well as providing opportunities for the privileged group to "flex their muscles" in

obtaining more of them. This is not to suggest that the evidence of luxury items in archaeological contexts always is an indication of warlords, chieftains, priests or traders, but merely to reinforce the view that non-essential luxury items probably served a very real function in their own social context. Flannery (et.al., 1967:454) comments that when luxury trade was carried on between "elites, such contact probably stimulated exchanges of the 'lore' known only to the elite-calendrics, hieroglyphic systems, and symbolic art--thus widening the gap between farmer and chief." It is important to note, however, that the "elites" are considered to already be in existence.

Following the same basic idea, but calling upon a different kind of evidence is the thesis that would attribute the development of complex society not from a trade in luxury goods, but in utilitarian items for common consumption. Here the generation of an institutionalized organization monopolizing "essential" resources is seen as a precursor to a more complex social structure. Rathje (1971) suggests that the origins of Maya lowland civilization resulted from the organizational development required to procure resources that he feels were essential for survival, and also suggests the applicability of his model to the formation of Olmec civilization as well. An underlying tenet of this hypothesis is the opinion that the Central Maya area is both extremely uniform in terms of ecological and economic potential, and extremely poor in valuable or even "essential" resources. Both of these assumptions are subject to question, and an examination of the natural situation in the Peten will be likely to disprove them. Perhaps the seeming lack of resources deriving from the Peten as represented by the archaeological record can be attributed to the possibility that the majority of them would have been of an impermanent nature.

Silva-Galdames (1971:63) sums up the importance of "trade" to hypotheses concerning cultural development perhaps in the most succinct way possible: "Trade...promotes civilization and it is not, in our opinion, a consequence of it." In considering trade to be a causal factor in the creation of "civilization" one must assume that trading systems were in existence prior to the actual development of complex political and social systems. "Trade" probably throughout the history of its presence in Mesoamerica was firmly rooted in extremely complex and culture-specific matrixes incorporating religious, political and social factors, and it would seem to be misleading at best to divorce it from that larger context so as to consider it an independent variable in order to account for the system as a whole.

Organized "trade" probably played roles of varying importance in different societies over time and space, but doubtless was prominent in all of those that we have come to consider civilizations. Willey, et.al., (1964:490) attempts to outline basic features which one could recognize the existence of a "civilization" from purely archaeological contexts, and enumerate seven, of which the last is "extensive foreign



trade." We seem to be at present no closer to a strict definition of how to establish the actual means by which movement of resources and manufactured goods took place, but few would contest the fact that such movements did occur. Taken in sum, perhaps the greatest overall contribution of Mesoamerican "trade" studies has been to sharpen our awareness of the quantitative and qualitative differences to be found throughout Mesoamerican culture history.

#### APPROACHES TO THE TOPIC

##### Conquest-Era Descriptions

One of our greatest sources of knowledge of Mesoamerican cultures in their most diverse aspects derives from the records kept by the European conquerors. When the first Spanish came into contact with the flourishing native civilizations, they were impressed by the lively trade in items from all known regions of the Mesoamerican "world", in the diversity of things traded and in the strangeness of the more exotic items.

Possibly the earliest exposure to the remarkable phenomenon we are concerned with here was the frequently cited meeting in 1502, during Columbus' fourth voyage, of the great seagoing trading canoe off Bonacca island in the Gulf of Honduras. Usually represented as Chontal Maya (the most famous long-distance traders of Mesoamerica), the identity of the canoe's paddlers is still in some doubt. Lothrop (1924:13) suggests that the merchants, who were carrying axes of copper, cotton cloth, obsidian blades and many other objects, were actually from Honduras (Paya?) instead. Regardless of the "nationality" of that specific canoe, it does serve to illustrate that there was considerable movement of goods by sea in the Caribbean at the time of the conquest. Oviedo (1959:Vol. III, book 32:422) reports that "along said coast [eastern Yucatan and northern Honduras] there is an extensive trade...canoes go from Yucatan loaded with clothing and other goods to Ulua and from there they return with cacao."

If the long distances covered in the interest of trading surprised the Spanish, they were no less impressed with the distinctly Mesoamerican type of market. The great open-air market at Tlatelolco was described in much detail by Gomara (1966:160-163), as well as Bernal Diaz (1956:215-217), the latter relating: "we were astounded at the number of people and the quantity of merchandise that it contained, and at the good order and control that was maintained, for we had never seen such a thing before." The garrulous conquistador then proceeded to describe each type of ware or product, food or resource offered for sale, and concluded: "One could see every sort of merchandise that is to be found in the whole of New Spain." The staggering array at what must have surely been the largest market in Mesoamerica left Diaz for once, at a loss for words: "why do I waste so many words in recounting what they sell in that great market? for I shall never finish if I tell it all..."

Another well-known description is that of Ximenez (1926:128) for a market day in the Guatemalan highlands some years after the conquest: "The selling and buying is the exchange which is the most natural form of trade; they give maize for black beans and black beans for cacao, exchanged salt for spices which were aji or chile...Also they exchanged meat and game for other things to eat, they swapped cotton cloth for gold and for some hatchets of copper, and gold for emeralds [sic], turquoise and feathers..."

Lest we imagine that commercial enterprise and regular markets were characteristics mainly of the highland regions, Landa (1941:94) reassures us that for the lords of northern Yucatan, "The occupation to which they had the greatest inclination was trade." The bishop duly reports on the "considerable amount of barter between those living in the interior and those on the coast. From the former came flint, cotton cloth, and some maize in exchange for fish and salt." As well as major sea-routes, overland trails played an important role in the movement of goods from one area to another. That the entire land route from Tabasco to Nicaragua was commonly known to merchants in Postclassic times is attested to by the bark-paper map that was prepared for Cortes by traders from Xicalango to aid him on his epic march to Honduras.

With the drastic demographic collapse of the native population (Borah and Cook, 1963, estimate that there was a population decline of around ninety percent in the hundred years following the Spanish entry into Mesoamerica) and the culture shock of conquest and subjugation, accounts of purely native commerce tapered off until all that was being recorded was the outright taxation of the indigenous peoples by the colonial government.

### More Recent Approaches

With the birth of the archaeological study of Mesoamerican culture, new generations of scholars tackled the subject of "trade" from the purely descriptive viewpoint, building on or uncovering more of the earlier historical data, and making use of new skills derived from their different respective disciplines.

The fields of geography and historical geography have done much to increase our understanding of the natural context and resource potentials of areas which in pre-Hispanic times engaged in "trade" with other locales. West, Psuty and Thom (1969), in their excellent survey of the Tabasco lowlands, describe in detail the landforms, resources and ecology of the area and, with an eye towards the archaeologist, attempt to plot out centers of habitation and routes of commerce.

Scholes and Roys (1948) in their ethnohistoric study of the Chontal Maya, describe the closest thing to a "race of merchants" in Mesoamerica, doing much to reduce the anonymity of "trade" during the

Postclassic period in regions as far distant as Tabasco and Honduras.

Of a slightly different nature are those studies firmly rooted in the present. McBryde (1947) describes the human ecology of western highland Guatemala among the descendants of the Quiche, Cakchiquel and other ancient tribes, providing possible clues to pre-Hispanic settlement, environmental exploitation and exchange. The modern ethnographic approach is used in understanding the present-day regional market systems and economy, and in separating the introduced features from the indigenous ones by Tax (1953) for Panajachel and McBryde (1933) for Solola in the same region.

The trend towards an holistic approach to the study of Mesoamerican culture history and archaeology has brought many talented people from different disciplines into the area, and produced a great amount of data that is useful to those interested in the phenomenon of "trade". In examining the topic today, one cannot afford to ignore the work of the ethnographers, geographers and ethnohistorians whose efforts have so rounded out our information on the possibilities of ancient trade.

### Explanatory Models

When descriptive information on the nature of "trade" in ancient cultures is incomplete or lacking, there has been a recent tendency to project hypothetical models based on relatively more secure conquest-period data back in time in order to provide an explanation. Of the several currently in vogue, I will deal only with the two that have received the most attention and caused the most confusion: the Pochteca and "Ports of Trade". These two constructs have been often used, either singly or in combination, when some students have sought to portray a specific mechanism to account for foreign objects at sites, cultural diffusion, or other "problem" situations. Although both their applicability and accuracy appear subject to question, their popularity seems to rest on the assumption that the path which Mesoamerican cultural development took was of a relatively simple and undifferentiated nature, continuous and not very different at any one time in its progression to its final expression.

### The Pochteca Model

At the time of the Spanish conquest of Tenochtitlan, merchants were a favored and influential group. At the top of their social ladder was a category that has long been generically labeled as pochteca, who "are not to be confused with peddlers and petty traders who sold their wares in the market places of the Valley [of Mexico]. The pochteca engaged only in foreign trade" (Vaillant, 1972:147). Aztec military expansionism often went hand in hand with the activities

of certain elements of the pochteca, and several students (i.e., Parsons and Price, 1971:171) have pointed out that the Aztec "long-distance trade pattern" cannot be understood outside of the context of the peculiarities of the Mexica political and military organization. Acosta Saignes (1945) goes so far as to consider the pochteca as the primary agents of Aztec "imperialism", and so important that the Aztec state as we know it could not have existed without them.

Sahagun (1959:book 9) describes the different kinds and activities of pochteca at some length, and one can distinguish between the broad categories of traders who dealt in merchandise from beyond the limits of Aztec influence: the puchtecatlatoque, or "principle traders" who were the patriarchs of the trading "families" or corporations (ibid.:3), and who usually stayed at home to administer the receiving end of trade and deal with red tape; the slave-traders, who generally obtained their foreign wards by buying them directly from the warriors who had captured them, and who were recorded as being present at Tochtepec as well as at Tlatelolco. Sahagun describes them as the most important of all merchants, which, given the Mexica penchant for blood and human sacrifice, is not surprising. The teucunenque, or lordly outpost traders (ibid.:8), represented the Aztec nobility in their transactions with foreign merchants. The naoaloztomeca, or "trader-spies", the type most often associated with the pochteca label (ibid.:4), who went in heavily armed groups to foreign parts, and probably filled the lowest position in the hierarchy.

The exact status of the pochteca in Aztec society has been the subject of much debate. Sahagun tells us that they formed a separate, semi-autonomous political unit within the social structure, that they lived in their own barrios separated from the bulk of the population, that their status was transmitted hereditarily, and that they possessed their own special god, Yacatecuhtli, or "he who guides". The pochteca are said to have had their own courts dealing in both civil and religious matters, with the power to punish offenders.

The degree of privilege relative to the rest of Aztec society probably increased in direct proportion to the distance from Tenochtitlan. Although Vaillant's (1972) description of Mexica society was strongly influenced by Bandelier's earlier study (a la Lewis Henry Morgan's kinship scheme) and by all of its inaccuracies, the placement of the pochteca in a separate social class is probably correct. Acosta Saignes (1945) studies the pochteca as a distinct caste within the Aztec state, and feels so strongly that they were different from the rest of society that he proposes that they were actually foreigners from the gulf coast residing in Tenochtitlan-Tlatelolco.

Perhaps Chapman (1957:120) strikes closest to the mark when she suggests that "their status seems nearly to approximate that of some skilled crafts-workers", (a connection indirectly made by Sahagun as well) and cites similarities between them and the prestigious feather-artisans in the types of favors and exemptions granted,

and in their familiarity with luxury goods. The pochteca most likely enjoyed their greatest freedom and power when they were on journeys to foreign lands, and their privilege of autonomous judicial action probably was only exercised when they were the only representatives of the Aztec state in the area. It should be remembered that when the pochteca returned to Tenochtitlan laden with much wealth, they were required to slink into the city in the rags that they had set out in, to dispell any fears the nobility might have of encroachments on their power.

In addition to their role as spies, some pochteca groups acted as agents provocateurs, furnishing the Aztec state with a "valid" excuse for attacking hitherto friendly or neutral powers. Vaillant (1972:149) states that "often the pochteca deliberately provoked the local population in the hope of starting a war, and in the time of Ahuitzotl a group of Mexican traders had to withstand a four-year seige in the city of Quahtenanco on the Pacific coast. When eventually the ruler sent an army...he learned that the merchants had fought their way out of the town and had conquered the surrounding district by their own efforts." The pochteca were often simply sacrificed in the power plays of conquest; the first campaign of the triple alliance in the Huastec area, during the reign of Moctezuma Ilhuicamina, was precipitated by the convenient murder of Aztec traders in or around Tuxpan.

Expansion of the pochteca model, and therefore perhaps misuse of the term pochteca, which we have seen to have represented various functionally different groups with poorly understood social standings within the Aztec state, possibly begins in earnest with Chapman (1957). Here pochteca is used generically to refer to "the various types of full-time professional traders who carried on trading relations exclusively with peoples beyond the frontiers of the Aztec empire" (ibid.:120). The peculiar characteristics of one of the pochteca groups, the naoaloztomeca, is then ascribed to all long-distance traders of Aztec times, and thenceforth to earlier cultures as well. In much of the literature today, pochteca has been used to refer to any kind of organized, socially distinct group of traders in Mesoamerica, and such a definition is certainly misleading.

The pochteca model, in which traders double as spies or warriors, has been suggested for just about every pre-Hispanic culture in Mesoamerica at some time or another by someone. Michael Coe, perhaps making the most liberal use of the construct, extrapolates it back to explain the "Olmec presence in central Mexico" (1965:122-123) and to account for the collapse of classic Maya civilization after the establishment of a "Teotihuacan hegemony" spearheaded by pochteca in southern Maya area (1966:81), with a Teotihuacan-dominated Kaminaljuyu functioning much as did the later Aztec Xoconochco. A suggestion of some of the shortcomings of the explanation is revealed (ibid.:84) when it is proposed that even Tikal came under the grip of the pochteca. "Perhaps it was the resplendent, gold-green tail feathers

of the shy quetzal that they were seeking, to adorn the headdresses of the Teotihuacan nobles." The central Mexicans would hardly go to the low-lying Peten to search for a bird that lives exclusively in the high cloud forest (see Pelts and Plumes), certainly not if Kaminaljuyu was already under a "Teotihuacan hegemony". Coe concludes by explaining the presence of the Cotzumalhuapa culture (ibid.:90) as the result of another pochteca group traveling in the area in Preclassic times.

Other students use the pochteca model with some modification: Grove (1968b:184) proposes it to account for the sites in Morelos that he labels as "Olmec", and Parsons and Price (1971:205), while carefully stipulating that they do not assume a pochteca-like organization for the Olmec, show no compunction at ascribing the model back to Teotihuacan, despite their own criticism of Coe's usage: "the Aztec long distance trade pattern cannot be understood except in the context of the Aztec state and its policy of militarist expansion" (ibid.:171). Wiegand (1968:59) has suggested the pochteca were responsible for the distribution of the products of the mines of the Suchil branch of the Chalchihuites culture, Ferdon (1955:26-27) calls in the pochteca to account for "Mexican" influences seen in the Hohokam and Anasazi peoples of the American Southwest after the fall of Tula, as do Hedrick, Kelley and Riley (1974:7,67) for the "wave of Mesoamerican ceremonialism" seen in the Southwest at the end of Pueblo III times. Many other examples could be cited as well.

Strictly speaking, it seems highly questionable to project the institution of the pochteca backward to cultures that are known only from archaeological remains without implying that those cultures also had the same social, political, military, and economic structures and orientations as the Aztec. Acosta Saignes (1945) notes that there is no mention of any kind of pochteca organization in the "Toltec" histories, so it would seem extremely doubtful that it would be found elsewhere if not even present among the antecedents of the Aztec themselves. Due to the complexity and ambiguity of the Aztec situation with respect to the definition of what a "pochteca" really was, his social standing, and the variety of implications that the word conveys, it would seem most unwise to use the term out of its Aztec context.

### The "Ports of Trade" Model

If the pochteca cleared the way for the Aztec conquests of foreign areas and the adage that "tribute follows trade" is correct, then it is necessary for us to better understand the nature of the "free trade" that preceded the military takeover of distant lands. To this end, Chapman (1957) proposed a hypothetical construct labeled the "port of trade", in the context of assumed relations between the Aztec and Maya civilizations.

What might be called an "economist school" looked at

Mesoamerican trade with a view to fitting the New World phenomena into a universal evolutionary schema. A three-stage sequence was visualized in the evolution of the economy and therefore of society and culture itself: from the reciprocity characteristic of "primitive" cultures through the various forms of redistribution found in the context of the "emerging state", finally ending with the modern "price making market" that is characteristic of our own civilization (Polanyi, et.al., 1957). The "port of trade" was suggested as a necessary step in the progression of the economy from simple to complex in the second stage of the schema, and Chapman (1957:116) states that "independent trade areas of this kind, harboring numbers of warehouses, storing the goods of distant trading peoples, while the local population of the area itself did not engage in trading expeditions, have been found to exist in widely different places of the globe."

Chapman locates six "ports of trade" within Mesoamerica proper: Acalan in west-central Peten, Chetumal on the east coast of Yucatan, Naco and Nito on the gulf of Honduras, Xicalango on the Laguna de Terminos, and Xoconocho on the south Chiapas coast. An idea of the strategic placement of these areas can be gained from Scholes and Roys' (1948:318) description of one of them, Xicalango, as being the "convergence point of (1) the coastal sea route from Yucatan, (2) the land and river route across the Peten of northern Guatemala from the Caribbean coast of northern Central America, and (3) the river route that tapped the rich Usumacinta valley and its tributaries."

The "port of trade" is described as a city or town located in a neutral or politically weak area intermediary to two or more strong powers, functioning as a tension-relieving device to facilitate interaction without direct contact between the populations involved. Exchange was administered by backers and carried out by their upper-crust merchant representatives, who met on peaceable terms. The basic difference between the kind of exchange that took place in the "ports of trade" as opposed to all other kinds of trade was that here the merchants dealt only in luxury items, they were a distinct social group of relatively higher social standing than the local merchants, and that they, in keeping with their status, did not involve themselves in trade in the local markets at all.

For these reasons, Chapman totally disassociates the "ports of trade" from the local markets and even bases part of her argument for the existence of the "free ports" on the assumption that markets were not common in pre-Hispanic Mesoamerica. In these "neutral" areas it is claimed that the contractual nature of the "marketless" business is reinforced by the "existence of factors and warehouses, both of which were notably lacking within the Aztec empire proper as well as in Yucatan" (Chapman, 1957:146). The argument for the presence of "ports of trade" in Mesoamerica is rendered dubious on two counts: by reason of contradictions in the internal logic of the

construct, and by misrepresentation of much of the evidence of an important nature relative to trade and markets in pre-Hispanic times.

The title of the book (Polanyi, et.al., 1957) in which the Chapman article is found implies that the economic systems being studied are to be found in "early empires", but neither of the two civilizations that Chapman deals with would fall under that term. The Aztec "empire" really was more on the order of a city state maintained by tribute from other cities or towns allied to or conquered by the capitol, Tenochtitlan. The Mexica do not seem to have consolidated their "subjects" once these had been vanquished, but rather to have pursued a policy of minimal interference as long as the tribute kept coming in. In the main, the local customs, religion, language, and socio-political structure was kept status quo, although the calpixqui (or resident Aztec tribute collectors) and Aztec garrisons, if present, assuredly introduced an element of Nahuatl and slid to the top of the existing social order. Chapman senses the unsuitability of the term "empire" in her treatise, and offers "militarily powerful metropolitan units" (1957:116) instead; but one can hardly characterize the Maya of Late Postclassic northern Yucatan, who were divided into eighteen tiny and jealous provinces (Roys, 1972: 11) as being militarily powerful or metropolitan on the same order of magnitude as the Aztec state.

Highly questionable also in the inclusion of Xoconochco as a "port of trade" as it was certainly not "politically weak" or "neutral", but directly under the control of the Mexica. Chapman rationalizes its inclusion in her schema by stating that "goods flowed to the center [from that location] not only as tribute or tax, but were also traded by the pochteca" (Chapman, 1957:120), although this is subsequently contradicted in part by her statement (ibid.:122) "Once a territory was conquered and therefore subject to tribute payments, the pochteca ceased to trade there." If Xoconochco was indeed a "port of trade", then certainly any number of other Mexica dominated cities or areas could likewise be labeled as such. The great town of Tochtepec on the southern boundary of the Aztec area of influence proper in addition to dispatching calpixqui to the towns nearby also served as a jumping-off place for all pochteca groups desirous of traveling farther south, who no doubt engaged in commerce with those nearby peoples not under the Aztec yoke. The variety of goods coming from the province of Tochtepec as seen in the Codex Mendoza exceeds that of any other location, and many items of tribute are not native to the region, necessarily being imported from some distance. The corollary comes even closer when we note that Vaillant (1972:149) reports that in Tochtepec "all the corporations [of pochteca] owned storerooms and rest houses for their members."

Warehouses also must have existed in northern Yucatan to cope with the extremely seasonal salt harvest (see Salt) that would have called for storage throughout the rainy season. Roys (1972:47) comments on the practice of building fires on top of the newly collected



piles of salt in order to form a "hard crust which the rain did not penetrate," which hardly points to anything other than keeping it for some time.

Chapman (1957:116) notes that all of her proposed "ports of trade" were located in "regions where cacao cultivation was predominant, a significant fact, since the cacao bean was the universal money in the Mesoamerican and Central American regions" (see Cacao, for fuller discussion of "cacao as money"). She (ibid.: 134) also claims that "the long-distance traders used only the cacao bean as money. The traders carried a kind of pocketbook filled with cacao beans." Yet the contradictions in the argument are obvious: "How would the pochteca and ppolom [the Maya long-distance trader] trade in the absence of markets? Obviously nothing but barter in kind was feasible..." (ibid.:135), and if their "ports of trade" seemed always to be located in "regions where cacao cultivation was predominant," of what value would cacao beans be to them as "money"? The "coals to Newcastle" implications are self-evident.

The most questionable assumption in the entire argument is the case made for an absence of markets in much of Mesoamerica, specifically the Maya area (ibid.:132), and the position that the long-distance traders did not frequent them when they did occur. It is admitted, however, that "some pochteca did purchase goods in the markets of Tenochtitlan-Tlatelolco which they traded in foreign ports" (ibid.:125). M. Coe (1966:142) perpetuates this assumption and makes a questionable assessment of the ecological situation to boot: "Markets are rarely mentioned where the lowland Maya are concerned, in contrast to Mexico where they were so large that the Spanish were astonished, and it is probable that they were unimportant in this very uniform land." (But one wonders at what he means then by his comment on page 24 of the same book on the "agricultural potential of the lowlands, which is by no means uniform.")

Gomara, however, reports that "each district and parish has its square for the exchange of merchandise, Mexico and Tlatelolco the largest...[in the rest] one every five days is customary, and, I believe, in the whole kingdom and territory of Moctezuma" (1966: 160). Spores (1965:972) extends the range of markets further: "the entire southern Zapotec area was devoted to extensive commercial enterprises. A great weekly market was held in Miahuatlan... Nearby Amatlan seems to have been a village that was largely devoted to commerce" and "Tehuantepec was of course a great market center, and goods and traders went from here to all parts of prequest Mesoamerica." For the Maya area in Postclassic times, Thompson (1964:25) states that "we can suppose that every fair sized town had one [a market] and, in earlier times, they were probably a feature of every important ceremonial center. Presumably they did not differ, except in importance, essentially from the great markets of Central Mexico, about which there is ample information." In Roys' (1972:51-52) very chapter that Chapman uses to support her no-market argument we find the following notation: "Large market places were established

at Cachi and Chauacha, important commercial centers in north-eastern Yucatan. At the former...there was a market-court at one corner of the square, where disputes were settled by certain officials. In the latter town a part of the market was housed in stone buildings with thatched roofs. Similar markets were likewise organized at other large towns... In the interior of the country none of the markets seem to have impressed the Spaniards sufficiently to elicit a description, but they are mentioned and they evidently existed in the more populous communities." Landa (1941:96) comments that the Maya, when "at their markets...traded everything which there was in the country" and also reported a strict regulation of commerce by the civil and religious authorities.

One would assume that weekly markets held in the open air would leave very little in the way of remains that could be discovered archaeologically. If there really is a dearth of markets mentioned in the early conquest accounts, perhaps it is due to the impermanence that is characteristic of markets in the Mesoamerican area today. It would be expected that markets might cease to be held under any kind of threat to traditional behavioral patterns, and the Spanish conquest qualifies in the first degree. The most significant clue we have regarding this possible situation comes from the pen of Gomara (1966: 345) who records that on Cortes' march to Honduras, merchants sent to guide him informed him that "they no longer went to the fairs [markets] as they had formerly done, because the people had fled to the forests, the wandering Spaniards having burned many towns." The drastic decline in the native population, especially in lower altitudes (Borah and Cook, 1963), that resulted from introduced diseases that were part of the European's cultural baggage would certainly have affected the continuation of the traditional pattern of regular market days, and commercial congregations would have been ideal centers for the contraction and spread of such diseases.

The "port of trade" model has been invoked for, in addition to the Late Postclassic period, the Olmec (M. Coe, 1965:122), Teotihuacan (Parsons and Price, 1971:182), and various cultures by others. If "ports of trade" have but questionable validity in the context of the Maya and Aztec areas in Protohistoric and early historic times for which they were originally proposed, there seems little justification for projecting the construct back to cultures for which we have no historic accounts whatsoever.

#### PERISHABLE RESOURCES

The greatest weakness of many of the existing theories concerning ancient Mesoamerican "trade" is that they either ignore or do not specify the articles which were being imported and exported. "Movement of articles" can only become "trade" when one class of objects is exchanged for another, and both can be identified. The use of models, heuristic or otherwise, can be helpful in illuminating and reconstructing the possible social and economic mechanisms of

ancient trade, but only a familiarity with what was, or could have been exchanged over distances can bring the study of "trade" out of the realm of pure speculation.

Numerous imperishable "trade items" are known archaeologically in Mesoamerica, principally pottery, precious stones, metal items, and a few other categories of objects that were able to withstand the ravages of both time and the tropical elements. But assuredly, the perishable items that were imported into consuming areas must have constituted a large, if not the largest proportion of the total "trade". There are many historic examples from Mesoamerica of the movement of coveted items that would leave no archaeological trace. Perhaps that which comes most quickly to mind is the Aztec preoccupation with capturing candidates for human sacrifice. In Protohistoric times, the successfulness of Aztec warfare was perhaps gauged by the numbers of captives taken, rather than the acquisition of new territories. Given the sanguinary nature of the Tenochca, their stock of war captives were probably in need of constant replenishment, and human lives were undoubtedly a precious commodity.

The detailed but albeit fragmentary accounts of the early conquistadors, coupled with the modern work of ethnologists and geographers, have enabled us to catch a glimpse of the wide variety and importance of perishable items that were and are involved in trade in Mesoamerica. In the absence of firm archaeological preservation, we are forced to rely upon the histories, on representational art and iconographic studies, and on analogies from the current ecological situation of the area and the resources that it offers for our primary sources of information.

In the following sections of this paper, the characteristics, uses of, and geographical distributions of five perishable resources that may have played an important part in the exchange systems of ancient Mesoamerica are described. The archaeological intangibility of these items (as well as the seeming lack of value of some of them to the western mind) may account for the lack of references to them in much of the literature. When they are mentioned, often they become poorly understood or misrepresented. For these reasons, I wish to demonstrate that they indeed had an importance in the ancient cultures in which they existed, and that by studying them we can better understand the needs, desires, and values of the people involved. Most to the point, we can then begin to appreciate their cultural value as tradeable items.

In choosing salt, quetzal plumes, feline pelts, rubber and cacao as the five resource items for study, I have of course omitted countless others that deserve to be represented. The five selected, however, range in nature from the absolutely indispensable to the purely non-essential, yet all are possessed of the common characteristic of perishability.

My lack of attention to all other potentially tradeable items is not meant to imply a value distinction, merely my own preference in selection. There is no argument being presented against the importance of cotton, copal, dyes, slaves, foodstuffs, textiles, tobacco, honey and wax, seashells, fish, stingray spines, rope, body paint, pitchpine, spices and herbs, bark cloth and paper, tortoiseshell, animal teeth and bones, lime, cinnabar, hematite, ilmenite, pyrites and mica, and other precious or semi-precious stones, weapons, beads, copper and gold, volcanic tufa, obsidian, flint, metates, pottery, amber and many others in the ancient Mesoamerican cultures; quite the contrary, they all are in urgent need of being studied in detail. It becomes apparent that virtually every item under the sun that could have possessed an intrinsic or arbitrary value, no matter how obscure to us, surely moved about by human means from place to place in ancient times. The items that I have chosen to study are no more or less important than those few enumerated above.

### Salt

Salt is absolutely necessary for the continuation of human metabolic processes; without it we die. Salt may be ingested in pure mineral form, or through a secondary food source high in saline content. Grains are notoriously low in this respect, vegetables and root crops are somewhat higher. Of the secondary sources, meat has the highest salt concentration, and therefore hunters and pastoralists, owing to their diet, seldom suffer from the lack of it.

The economic basis of Mesoamerican civilization, as most indications suggest, was predominantly agricultural, but a few domesticated animals were known. In addition to the staples of corn, beans, squash and other plant foods, turkeys and dogs were eaten, no doubt helping to offset the chronic salt-deficiency that must have accompanied the basically vegetarian diet. The role that domesticated animals played in the diets of ancient Mesoamericans, however, is still poorly understood.

Indications are that the average peasant farmer seldom had an opportunity to eat meat. Benedict and Steggerda (1936) in their study of modern Maya from northern Yucatan discovered that over 70 per cent of everything eaten was derived from maize, and McBryde (1947:10) states that "The present inhabitants of [highland] Guatemala, especially the Indians, are essentially vegetarians. Maize supplies perhaps as high as 80 percent of the total food consumed." Archaeological information is much harder to come by, but Haviland (1965:17) comments on the "Paucity of bone fragments in...middens" at Tikal, suggesting that either domestic dogs "scavenged discarded bones. Or perhaps meat was not important in their diet."

In most of the sedentary civilizations extant at the time of the Spanish conquest, meat was reserved for the noble class as a

luxury food, possibly because of its scarcity. In the regions of extremely high population density poaching wild game would have been a near impossibility, as the animals would have tended to have been outcompeted by the sheer weight of the human population. Yet salt would remain a crucial concern, as Roys (1972:53) states: "Its importance as an article of diet among agricultural peoples who eat comparatively little meat can scarcely be exaggerated." The major source of salt then, would of necessity have to be in mineral form.

As mineral salt can only be produced in certain geographically restricted areas, it must have been a primary (if not the first) article of "trade" from the beginnings of sedentary life in Mesoamerica. Those people with their own salt supply would be in a much more favorable position than those who had to trade for it. Mendizabel (1929:209), in his comprehensive study of the salt sources in prehispanic Mexico suggests that in order to be independent politically, pre-conquest populations had to have control of their own salt resources. In earliest times, however, before population pressures became too pronounced, the situation may have been different.

Political conditions often must have contrived to disrupt the movement of salt into consuming areas that could not produce it, and there are several accounts of this occurring. The classic example is that of the Tlaxcalans, who were surrounded and virtually isolated by their Aztec enemies for many years. When the Spanish arrived on the scene, the people of Tlaxcala were partially cajoled into joining in with the Europeans by a speech of Xicotencatl the elder's: "...the Mexicans make war on us every year...we are hemmed in in our own lands, so that we do not dare to go outside even to seek for salt, so that we have none to eat..." (Bernal Diaz, 1956: 136). Later, when making obeisance to Cortes, the old leader apologized for his country's poverty, suggesting the lack of salt, and his people's practice of eating dirt in attempts to obtain it, as the best possible indication of it.

A similar situation existed in Yucatan at the time of the conquest, and Landa (1941:40) writes of squabbling between the "Chel, who lived on the coast [and] would not give fish and salt to the Cocom, making them go a long distance for it...". The Spanish conquerors were also affected upon occasion: on Cortes' march to Honduras in 1524-1525, there was much suffering from the lack of salt, particularly in the Tabasco and Chiapas lowlands, and the Europeans had to rely on traveling merchants for their meagre supply.

In those regions where salt exploitation was most feasible, it must have been a major item of "trade". Foreign items in archaeological contexts in such areas would provide the evidence for what might have been traded in return. Weaver (1972:190) makes this connection for the large salt-producing portion of northern Yucatan: "...for each Peten polychrome pot [found there], its equivalent in salt made the return trip to the central core region."

Perhaps in later times the wealth of Mayapan was based on its proximity to the saltpans of the north coast. Tozzer (1957:226) reports that the rights to salt exploitation were jealously guarded in that region by the local chiefs, and that "to these all who came for salt made small offerings, either of the salt itself or of things from their own land...". Weaver (1972:188) in speaking of Dzibilchaltun, suggests that it must have had a population "far greater than could be maintained by outlying agricultural settlements. Trade undoubtedly flourished, and the fine salt deposits nearby provided an exchangeable commodity."

The Yucatec Maya were not the only peoples who were blessed with large and productive salt resources, for in Aztec times "The salt lake of the Valley of Mexico produced sufficient salt for the large [Mexica] population and even for an active commerce, particularly with the Otomies...and the Chichimecas" (Mendizabal, 1929:193). The Tarascans were also aided in maintaining their political independence by their own ample reserves of salt within the boundaries of their "empire".

But even among those people who could command as much local salt as needed, the substance was apparently brought in from other areas upon occasion. The Mexica imported salt from the country of the Matlazincas in the form of tribute (Codex Mendoza, 1938: folio 34, the only mention of salt in the document) because they preferred its taste to that of their own. It is possible that the Matlazincas obtained this salt in turn from the Pacific coast by trade or other means. The Tarascans apparently had also had the same predilection for foreign salt, as "a favorite [south] eastern raid had as its goal the fine salt deposit of Ixtapan" (Weaver, 1972:270) on the Pacific coast of Guerrero. Weaver (Ibid.:219) even suggests that a motivation behind the establishment of the Chalchihuites outposts of Mesoamerican civilization by the "Toltec" was to take advantage of the salt playas or bolsones of Durango and Zacatecas, but noting the proximity of Tula to the Lake Texcoco source, this is rather improbable.

Throughout Mesoamerica, it seems that sea-salt was much preferred to the highly nitrous products of the inland salt wells and solution basins. While these were decidedly important, "such sources could hardly compete with the Yucatecan salt, which needed only to be shoveled from the beds at the proper season and could be transported for much, if not for all, of the distance to its foreign market by canoe" (Roys, 1972:53). Before we can talk about the role of salt as a "trade" item, we must know more about how and where it occurred, and of the methods of obtaining it.

Salt was acquired from three general geographic loci: salt lakes, salt wells or streams, and from the sea itself, and mineral salt was extracted from brine either by solar or fire evaporation, or simply by surface collection of natural salt concretions or impregnated earth.

Salt lakes may be only seasonally occurring, as in the north of Mexico, or permanent with occasional cycles of shrinkage and replenishment, as are most of those found within the neo-volcanic axes. Salt lakes are formed in the bottoms of basins of interior drainage, with either limited or no outlets. Highly mineralized soils contribute a variety of salts in solution which "migrate with the water table" (Stevens, 1964:286) and ultimately end up in the lake water. The accumulation is highest in the halomorphic soils which are characterized by greater evaporation than precipitation, and the haloids of sodium, potassium and several nitrates become impregnated into the soil in high percentages. Sometimes seasonal playa lakes upon receding will leave a deposit of nearly pure sodium salts around their margins, called tequezquite in the basin of Mexico (Apenes, 1944:37), but more often the crystallized "salt" will be haloidal soil where extreme salinization and evaporation has occurred.

To extract salt from the waters of salt lakes involves a specialized technology, either the building of solar evaporation pans around the lake edges, or in the use of fire and ceramics. The processes of extracting salt from inland lakes by these measures are best known from numerous accounts and studies centered on Lake Texcoco. Gomara (1966:138) describes the salt industry of Ixtapalapa: "They have a rich trade in salt, which they make and sell there, or ship out to fairs and markets. They draw the salt water from the lake through ditches and collect it in pits, in which the salt crystallizes, and with it they make balls or loaves. They also distill it, which is a better method, but more laborious. Moctezuma derived a great income from it." Mendizabal (1929:187) makes the case for the primacy of the strictly solar method in the development of salt extraction technology, but probably both were used contemporaneously from the beginnings of ceramic times onwards. A selection of one method over the other would most likely be a result of other variables than time of invention and subsequent diffusion, such as availability of firewood, length of dry season and, especially, the relative salinity of the brine to be used.

During the time of Tylor's visit in 1860, large portions of Lake Texcoco were still being walled off and salt extracted by solar evaporation, and Apenes (1944:40) found a still-active "folk industry" of salt extraction in existence in this century. Although the recent hydrologic re-organizations of major scale have contrived to make Lake Texcoco many times more saline in modern times than anciently, Apenes found extraction processes continuing, in his opinion, unchanged from prehispanic times. He describes the methods of extraction and the different native categories of salt resulting from the variations in the "solubility of various salts at different temperatures", each of a distinctly different quality.

Tolstoy (1958) believes to have found the archaeological remains of a prehispanic salt industry at Texcoco, where he suggests that the tlateles, or earthen mounds on the lake margins served as loci

for the evaporation of brine by fire in conjunction with a distinctive pottery type, which he labels Texcoco Fabric-Marked. The structural characteristics of "TF-M" however, bear little relation to the large, flat clay pans or pailas described by Apenes (1944:39) that seem to be the best shape for water evaporation, and Nunley (1967:521) states bluntly that "There is no evidence to support the hypothesis that TF-M [as well as the tlateles themselves] was involved with the salt-making industry..." Nunley has in turn been rebutted by Charlton (1969), who affirms that the distribution of Tenochca communities specializing in salt extraction coincides with Tlateles, which are in fact the "wastage" from the extraction process itself, and that Texcoco Fabric-Marked pottery is indeed a useful kind of vessel in salt making. In spite of the contradictory evidence for the exact mechanism of extraction, there is a general consensus of opinion that Lake Texcoco did support a large salt making industry in pre-conquest times.

In most cases the small salt wells or streams that are found sprinkled throughout the highland areas could produce only enough salt to support the populations immediately proximate to them. In pre-ceramic times salt most likely was obtained by immersing porous organic materials in the brine and then burning them to retrieve the salty ash. Later, salt was extracted principally through distillation with fire, and with few exceptions, production was on a small scale. Modern ethnographies of highland native groups indicate that salt extracted from small wells is still of religious and economic importance (i.e., Cancian, 1965:36-37), and McBryde (1947: 59-60) reports that the major source for the Guatemalan highlands in ancient times, Sacapulas, is a going concern even today.

An indication of the probable magnitude of the salt industry of the Yucatan peninsula has already been mentioned. Many early European observers commented upon its operation, and the Spanish were not slow to appreciate the economic potentialities for themselves. The natural conditions most favorable towards sea-water salt extraction anywhere in Mesoamerica are found on the northern coast of Yucatan, where the littoral is ringed with long barrier beaches and reefs that create salt lagoons and tidal swamps of shallow depth. In addition to having a much longer dry season than the rest of the peninsula (Koeppen's Aw to Bs in the west, as opposed to Am-Af in the east) which makes for better evaporation, the karst landscape of northern Yucatan gives birth to no rivers that may dilute the highly saline sea water. On the Pacific coast similar conditions exist in places, but the saline content of the water is lower, and the shoals and shallows that are pre-requisites for the construction of successful salt-pans are few and far between.

The process of solar evaporation of sea-water in Yucatan was described by Ciudad Real (1932:307) in 1588, and although the region had been under Spanish domination for some years, the methods were most likely little changed: "On almost all that coast, from Campeche to the Rio de Lagartos and further, there are wonderful salt-beds,



which without being worked give quantities of coarse and very white salt of great value...ship loads of it are carried to New Spain, Havana, Honduras and Panuco and other parts. [They]...stretch along the coast, following the sea-shore, and with rain-water when it falls, the salt coagulates in them and at that time the Spaniards and Indians repair to them and in the water they pile all the salt they can. Afterwards they take it from there and make large mounds on which they put fire which makes a thick and strong crust that does not melt although it rains for days and nights upon it... From these mounds [they make] loads and carry it inland..."

In pre-conquest times, the weight of raw salt probably insured that it would travel principally by canoe, and most students (Blom, 1932a:535-536; Benson, 1967:69; and Thompson, 1964:16,36) suggest that salt was carried in this manner from Yucatan to, among other places, the Gulf Coast, Honduras, and the Peten. The extraction process, as indicated, must have been highly seasonal, and large amounts probably were stockpiled the year round if a continual "trade" was to be kept up. Ciudad Real's earlier mention of "rains for days and nights" suggests nothing other than storage over the rainy season, when weather and water conditions would not allow for efficient evaporation of brine.

One would expect that little of the aboriginal constructions for salt extraction such as dikes, platforms and the like would have survived the colonial period unchanged, for Yucatan at a later time provided much of the salt demanded by the "patio process" of silver refining in the Chichimec region. Tylor (1861:84) in 1859 commented upon the great quantities of salt that were brought to the Valley of Mexico from the "Salinas of Campeche" by water via Tuxpan. The finer Yucatecan salt was used as food in Mexico City, the coarser being sent north to the mines. Roy's (1972:53) claim for prehispanic times: "Yucatecans enjoyed what was virtually a monopoly of the salt business on the Atlantic seaboard" perhaps was just as applicable to the situation discussed by Tylor in the 19th century.

Throughout Mesoamerica are localized regions with either an overabundance or dearth of salt. Those areas generally lacking natural sources are the better part of the Peten and other low-lying regions such as portions of the Gulf Coast, and river valleys on the Pacific littoral, and isolated highland country including the southern reaches of the Chichimeca, much of the southerly portion of the neo-volcanic axis, and most of highland Guatemala.

In addition to Yucatan on the Atlantic coast, several other localized sources of varying productive capacity exist: in Tabasco and southern Veracruz are a few salt wells and "piles" associated with salt deposits at Tlacotalpan, Iztapangajoya and Iztapan (Mendizabal, 1929), and in the shallow waters of Chila lagoon in the Huasteca solar evaporation took place. The sea-salt extraction complex extended up the Pacific coast, with important works at Iztapa in Guatemala, Salina Cruz in Oaxaca (Spores, 1965), Iztapan

in Guerrero, and at Barra de Navidad on the Jalisco-Colima border. Less important sources occur intermittently, and no coastal area is very far removed from a salina of one order or another. The only major source in the Maya central area is at Salinas de los Nueve Cerros (Thompson, 1970:23,29) on the Middle Chixoy in Alta Verapaz, which was surely of great importance in classic times.

In the Mexican highlands the major salt-producing areas, besides the basin of Mexico itself, were in the Colima basin, centered around Lake Sayula, the Tonalan, near modern Guadalajara, and two in the present state of Michoacan, the first directly to the east of Lake Chapala, a district of salt-springs and wells, and secondly, the salt pans of Lake Cuitzeo. In the Oaxacan highlands, north of the Altas de Miahuatlan, was the largest concentration of salt wells and streams outside of the volcanic highlands, fairly evenly distributed throughout the area. The highlands of Chiapas and Guatemala are relatively poor in salt, but San Mateo Ixtatan and Sacapulas in southwestern Guatemala possibly could have produced enough for the entire region.

Most areas rich in salt supported large and vigorous populations that are known from conquest-era accounts or archaeological excavation. The numerous other civilizations with inadequate salt sources must have been engaged with them from very early times on in order to obtain this precious commodity, but the role that salt and salt trading played in the rise of Mesoamerican civilization remains to be seen.

### Pelts and Plumes

The largest carnivore in Mesoamerica is Felis onca, the jaguar. Impressive in size (males can attain a maximum weight of around 250 pounds), demeanor and power, the great cat has been represented in art and figured in ideology from the very beginnings of civilization in Mesoamerica. The feline motif has also been one of the longest-lived; it pervades the art of the Olmec culture in all mediums, and Kubler (1971:19) notes that the jaguar image is incorporated into the art and iconography of Teotihuacan, Tula and Chichen Itza by itself or in the form of a composite cult symbol that he refers to as the "jaguar-serpent-bird icon". The importance of the jaguar in Mesoamerican consciousness and expression was such that in 1970 a conference (see Benson, ed., 1971) was held to discuss the various implications of feline motifs throughout Mesoamerican culture history.

During the Classic period, a high mark of prestige was a breech-clout of jaguar or ocelot (Felis pardalis) skin. At Teotihuacan, "by far the largest class of jaguar images consists of human beings wearing jaguar costumes. Sometimes the costume is an entire pelt with head and claws and tail..." (Kubler, 1971:25). The "militarist" peoples of the Postclassic period often likened their warriors to jaguars in terms of fighting ability and ferocity, the military orders of "jaguar knights" in Aztec times being the best known

example. Moctezuma even imported jaguars from the lowlands and kept them in his private "zoo" in Tenochtitlan, and Bernal Diaz (1956:212) compared the fearsome collection of animals and the noises that they produced not unfavorably with "a hell". In the Protohistoric period the highly prized skins of the big cats served as symbols of the importance of those who wore them, and their use was almost certainly restricted to the "privileged" classes. Among the Quiche (Carmack, 1968:73) puma and jaguar skins were used to cover the "thrones" of rulers, and the eagle and jaguar skins sculpted in stone in the rock-hewn structure 1 at Malinalco probably represented a similar practice of associating authority with the jaguar seat.

Puma skins are known from late times to have been likewise favored, but their exact identification in the representational art is difficult, as there are no distinguishing marks (such as the jaguar's "rosettes") to set them apart from more mundane clothing. Unlike the puma (Felis concolor), whose range throughout Mesoamerica closely approximates that of its principal prey, the ubiquitous white-tailed deer, the jaguar and ocelot are rather restricted in their distribution. They are "most at home in the tall shady forest along streams and watercourses that traverse the coastal lowlands" (Leopold, 1972:446). The jaguar will hunt and kill whatever form of animal life is most available in its locality, and although it sometimes ranges into the sub-tropical monte of the foothills, it generally remains in the tierra caliente where game is more abundant. The greatest concentrations of jaguars and ocelots was through the hot lowlands of southern Sinaloa and coastal Nayarit to Xoconochco, the southern gulf coast regions and most of the Yucatan peninsula as well as the coastal lowlands of Honduras, Nicaragua and Costa Rica.

Much movement of the skins of F. onca, and to a lesser extent, those of the smaller F. pardalis must have taken place in ancient times. Since it is not always possible to distinguish the individual species of cats represented in Mesoamerican art, some students prefer to label those depictions of indeterminate nature merely as "felines", while others continue to call all cats "jaguars". In any case, the native peoples made distinctions along species lines; most indigenous groups in direct contact with the big cats were found, at the time of the conquest, to have had separate and distinct names for jaguar, puma, and ocelot.

In maintaining status distinctions by dress and adornment, feathers have also played an important role in Mesoamerica. The practice of using feathers in this way is likewise very old, probably as old as religious and secular authority. In the vestments of important personages from pottery, stone sculpture, and murals from the earliest times on, feathers of rare or geographically restricted origin are in evidence. Capes, canopies, fans, fringes of cloth, embroidered textiles, headdresses, crests, robes shields and standards as well as many other objects were decorated with or constructed wholly of a multiplicity of valuable feathers.

Virtually all feathers used in such elaborate applications were from the tierra caliente, or from the tropical river valleys that dissected some highland areas. In Aztec times, those of the toucan, parrot, macaw, and hummingbird were worked by the members of the prestigious "guild" of feather-artisans, but the most valuable ones were harder to obtain. The striated red, white, and pink body feathers of the roseate spoonbill (Ajaja ajaja) could be secured from the peoples of the gulf coast, but the emerald-green iridescent tail plumes of the quetzal were to be found only in the cloud forests of the highlands to the south.

The feathers of the latter bird were in constant demand due to their impressive length of two to three feet as well as their "precious" green color. Quetzal plumes were probably reserved for only those people of great rank and honor. It is hard to find a Classic Maya stela without great splays of quetzal plumes decorating the personages depicted, and in highland Mexico, far from the source of these feathers, their representation in art is common in both Classic and Postclassic times. An extremely elaborate headdress, sent back to Charles the fifth by Cortes is still preserved in Vienna; the piece, reputed to have belonged to Moctezuma himself, has been variously estimated as containing either five-hundred (Nuttall, 1888: 27) or six-hundred (Morley, 1946:440) tail plumes. Since these plumes are only present on the male of the species, and only two, or at most three, are grown annually, this single remaining example represents a massive amount of quetzal-plucking.

In Protohistoric times, the people of highland Guatemala, Honduras and even Nicaragua and Costa Rica sent as tribute or trade items both feathers and live birds to Tenochtitlan. The greatest tribute in "quetzal" plumes listed in the Codex Mendoza comes from Tlaxiaco in the Mixteca Alta, but today the bird is almost unknown north of the Chiapas highlands. Xoconochco contributed eight-hundred handfuls of quetzal feathers periodically, and Cotuxtla the same amount, but these were almost surely imported from the Alta Verapaz region or elsewhere. Nuttall (1888:39) in interpreting early historic accounts notes that the "extensive aviary in Montezuma's "palace" was constantly supplied with living specimens...Indians...administered to each want and bestowed special care on the raising of young broods." So between the influx of plumes from distant lands, and those that were "farmed" at home, the Tenochca nobility must have had an ample supply.

Protohistoric peoples practiced a form of "wildlife management" that guaranteed the continuation of breeding stock in its natural habitat. Both Bernal Diaz and Gomara report that birds of precious plumage were caught in the wilds at the right season, plucked, and then set free again, and that killing the quetzal was a capital crime. This annual tail-feather harvest probably took place immediately before the nesting season, as the quetzal incubates its eggs in cramped nests in hollow trees, much to the detriment of its plumes. The breeding male uses his feathers to attract his mate, and they reach the peak

of their excellence right before the eggs are due. So accordingly, the "harvesting" of tail plumes must have occurred at a very rigidly determined annual time.

The quetzal is still very much sought after today, and perhaps the popularity that its feathers "enjoyed" in Europe during the last century effectively eliminated it from areas in which it had previously been common (Oaxaca?). Over a hundred pairs of live birds are reputed to be smuggled out of Costa Rica alone annually. Stuart (1964:323) suggests that this practice of recent times, coupled with the "greatly accelerated destruction by man of its [cloud forest] habitat in the twentieth century", have rendered the quetzal "rare and local".

The bird is an inhabitant of the upland cloud-forest, seldom found at elevations below 4000 or in excess of 9000 feet. They are omniverous but seldom if ever descend from the trees, being easy marks for predators. The northern bird, Pharomachrus mocinno mocinno, is the larger of the two subspecies called "quetzal", and consequently has the longer plumes. His smaller southern cousin, Pharomachrus mocinno costaricensis, can live at slightly higher altitudes due to the higher temperatures in its range. Stuart (ibid.:323) reports that the birds live in the "humid mountain cloud forests from Oaxaca to Panama", but many students place the northernmost extent of P. mocinno mocinno in the Chiapas highlands. The great numbers of plumes listed as coming from the Mixteca Alta in Aztec times, as well as the presence of the cloud-forest configuration in parts of the Oaxacan uplands (West, 1964b:373) lends credence to the possibility of a large quetzal population in this region during ancient times.

No doubt exists, however, that the birds were "endemic to the Central American highlands" (ibid.:375), and assuredly both subspecies were exploited. The yearly replenishment of the male's tail feathers probably ensured a continual supply of these delicate items so treasured by the ancient Mesoamerican civilizations. One has only to examine Proskouriakoff's (1950) study of Maya sculpture to gain an impression of the imagination with which perishable items such as feline skins and quetzal plumes were put to use, and of their importance that accrued to them in Classic Maya society. Perhaps quetzal feathers better than any other resource of ancient times qualify as a completely non-essential item of prestige value alone, a value hard to imagine from our western viewpoint.

### Rubber

A well-established tradition of rubber use existed in ancient Mesoamerica and its environs. By the time of the Spanish conquest, the area of rubber utilization had far exceeded its natural distribution, and large quantities were moving from the producing to the consuming areas. Rubber was put to use in both strictly functional applications as well as in many other ways relating to religion, ritual, and curing.

The development of an indigenous rubber technology is considered by some students to be a diagnostic trait of Mesoamerican culture itself.

Of the more than fifty species of plants (Polhamus, 1962:61) present in Middle and North America that yield rubber, only two can be considered as potentially important sources in pre-hispanic times. Most of the others, due to the meager quantity and quality of their "latex" were not, from what is known, exploited. The two visible sources, that of the sap from trees of the genus Castilla found in the tropical lowlands and littorals, and that from the roots of the xerophytic desert shrub Parthenium argentatum, or guayule, were utilized because a large percentage of their weight is represented as rubber latex.

Of these two plants, extremely different morphologically as well as in geographical distribution, Castilla was pre-eminent in importance. Castilla rubber was used in all areas of Mesoamerican influence (the stability of its latex made it the more desirable in all contexts of use) and was preferred over guayule if and when a choice existed. Significantly, both guayule and castilla rubber are found within the sphere of Mesoamerican cultural influence, a condition that no doubt led to the primacy of the Mesoamerican peoples in rubber technology (Stern, 1950:4).

The major interest the colonial period Spanish had in the various applications rubber was put to by the conquered peoples chiefly concerned its use as an element used to impregnate fabrics, to stiffen them and make them water repellant. Using native rubber for impermeating raingear continues among some indigenous groups in southern Mexico and Guatemala to this day; Covarrubias (1947:photo 31) illustrates rain slickers so treated in the Tehuantepec region. In ancient times, soldiers and travelers most probably were the major consumers of rubber put to the purpose of waterproofing, and no doubt contributed in some way to its adoption throughout Mesoamerica. Raingear in general, as well as sandals, were coated with a protective layer of rubber latex. Banners were stiffened with it, as were war-shields, and although it is not reported, it is probable that the obsidian blades set in the edges of macanas or sword-clubs were anchored in a rubber mastic which could be more easily melted out by heat for replacement of dulled blades than, for example, pine-pitch. Cooking utensils were covered, canoes were caulked, drumsticks padded and rubber was also put to a myriad of other strictly utilitarian applications.

Rubber also enjoyed a great popularity as an intermediary with the supernatural in worship and in curing. In certain circumstances, modelled figurines or "idols" of castilla rubber have been preserved in nearly their original form; several have been recovered from cenotes in the Maya lowlands (Davalos Hurtado, 1961:548-549). As with copal or pom, rubber was burnt as incense or offered up as a sacrifice in hardened cakes in devotional practices among the Maya (Landa, 1941:142-143). In areas of close proximity to the major

concentrations of castilla rubber, the latex was drunk in its semi-liquid form; in places farther removed, it was eaten or swallowed in its solid state. An indication of the possible variety of ancient applications in curing can be gained from the mention of rubber being used by historic Maya peoples in treating common dysentery (Roys, 1931:49), "poisonous snake dysentery" (ibid.:52), minor burns (ibid.:69), "swollen knees" (ibid.:121) and slivers or splinters in the foot (ibid.:204), to note but a few. The Nahua peoples of conquest times also ascribed all manner of cures to the ingesting and administration of rubber to various parts of the body, generally concerned with physical betterment and in increasing "suppleness". Castilla rubber was used by priests in ritual body painting and for daubing on statuary in addition to functioning as glue in the manufacture of mosaic masks for ritual use.

Undoubtedly the best known use of rubber in ancient Mesoamerica was in the fabrication of balls for the ritual ball game. Ball courts are characteristic features of most major sites of the classic and postclassic periods, and most students consider the ball-game to be a hallmark of Mesoamerican civilization (i.e., Kirchhoff, 1971:8-9). The different forms that ball-courts can assume have been studied by a number of students, and A.L. Smith (1961) convincingly demonstrates that temporal seriations are indeed possible in certain areas.

Rubber balls were manufactured in a number of different ways, usually by mixing herbs or other solid matter with the latex to harden it and give it greater cohesion. Isabel Kelley (1943) describes the particulars of ball making in modern Nayarit, where a modified form of the ancient ball game still persists, using local castilla rubber.

The ball game is known from the area to the north of the Mesoamerican heartland by the presence of several ballcourts as well as by a few actual balls themselves that have been preserved through dessication. During the northward expansion of Mesoamerican culture via the Chalchihuites groups, rubber use reached its greatest extent, spreading through the "Gran Chichimeca" and beyond. Ball courts are found at La Quemada, Zacatecas, the Schroeder site in Durango, and at Casas Grandes, Chihuahua. It is probable that at this time the Chichimec nomads of the area were playing a variant of the game without ball courts, as they were at the arrival of the Spanish. Courts are known from several Hohokam sites in Arizona; Snaketown and Wupatki both have archaeologically reconstructed examples.

The development of a tradition of rubber use in this area far from the northernmost castilla stands probably led to the large-scale exploitation of the second, and closer source; guayule. The original rubber ball in the arid region stretching from Zacatecas to central Arizona must have been made of latex from castilla, and imported from the south. Uncertainties of supply, compounded by distance and the intervening "hostiles" must then have prompted the exploitation of guayule, a plant most likely already familiar to the northern cultivators, as an alternative source. Although much closer

than castilla, Parthenium argentatum still is extremely localized in its distribution, and likewise had to be imported into some of the consuming areas. Production of rubber from guayule on a scale applicable to the demands of the ball-game constitutes an important regional specialization, but probably not the original introduction of a rubber technology of advanced proportions in the area.

Of the ten known species of Castilla, five are found within the Mesoamerican region: C.fallax, C.guatemalensis, C.lactiflua, C.nicoyensis, and C.elastica. Most of the differences between the five are so minor as to be insignificant in the context of rubber exploitation, and the modern species distinctions are based primarily on variations in bud formation, flowering and in geographical restriction. C.elastica is the most widespread and so references to "castilla" rubber generally imply that it is elastica that is being utilized. Polhamus (1962:100) makes the point that in pre-conquest times these different species were probably not distinguished, and selection was most likely made on the basis of the individual merits of each tree as a producer.

Castilla bleeds freely with the first tapping, but seldom can more than one extraction of latex be made successfully. The proportion of actual rubber content in the sap increases with age; the non-rubber element being as high as 50 percent in the first few years of life, but dropping to around one-tenth after eight or nine years. Most botanical studies suggest that castilla is not a true canopy forest tree, but rather inhabits specialized zones within the rain forest configuration. West, et.al., (1969:61) in Tabasco locates the elastica as scattered throughout the second story of secession, and does not mention it in any other context. Pittier (1909:251) however, states that its "natural habitat is in the clearings and other open spots of the virgin forest...in company with cecropia, or in the fertile, sparsely wooded alluvial flats of the valley bottoms". Castilla appears then to grow "wild" in a number of closely corresponding ecologic situations, tolerating shade but preferring sunlight. Polhamus (1962:99) notes that "trees that grow in the thickest forest... [their] latex is very thin and easily collected, containing less rubber than that of others, whilst trees that grow in full sun exposure have...a very thick, highly coagulated latex."

The general impression received of pre-hispanic rubber exploitation, if and when the topic is discussed, usually concerns wild trees being "hunted" out of the forest, tapped, and then abandoned. In light of some of the characteristics outlined on the previous pages, this view may not be entirely correct.

A semi-intentional form of cultivation may have existed as a concomitant of swidden agriculture in the lowland areas, with castilla growing up in resting milpas as a fallow crop. The practice of raising "cash crops" in the fallow period of fields is known from the modern Totonac area (Kelley & Palerm, 1952) where vanilla is planted in milpas immediately after their abandonment. The presence of castilla



in the fallow field would have encouraged an adherence to the necessary period of time for the regeneration of soil nutrients by precluding burning until the optimal tapping age of the trees (eight or nine years) had been reached. The "one shot" nature of castilla tapping would tend to argue against intensive cultivation, but encouragement of the trees in the weed invasion following abandonment of cornfields would certainly allow for a greatly increased production of rubber over that of collection in the wilds. Castilla can certainly get along without the aid of man, but would tend to benefit from the creation of a cultural landscape that approximated the ideal natural one described previously by Pittier.

Castilla will grow at elevations as high as six or seven hundred meters (especially *C.guatemalensis*) but rubber content in the sap begins to become insignificant at a much lower altitude. The geographical occurrence of castilla in Mesoamerica follows the Pacific coast from the Nicoya Peninsula to San Blas, primarily in the humid river valleys interspersed along this area of Koeppen's Aw climate; the Atlantic coast from the southern Gulf of Honduras across the Peten to the Tuxtlas and southwestern Veracruz, with the northernmost stand being a discontinuous and isolated element in the Huasteca. Of these areas, the most important were the Peten, Tabasco, and Veracruz, where the rain forest was most exuberant. The Pacific and Huastec areas saw little large-scale production, as most of the rubber found in these locales was of poor quality and consumed locally. Across its entire extent, castilla is not evenly distributed. There are heavy concentrations of trees in some areas, a dearth of them in others, with a general sprinkling throughout.

Stern (1950:75-76) places the time of diffusion of the ball game over all of Mesoamerica at the end of the "formative period", and the ball court at the Schroeder site has been tentatively dated to the middle classic (Ayala phase). The playing of the ball game must have provided a constant demand for rubber in those areas where rubber was hard to obtain, and almost assuredly the ball game was not merely restricted to those sites with recognizable ball courts. Such rubber would have had to have come from either the far away lowland sources within the nuclear area, or from the small stands of guayule in the arid bolsones. The supply of castilla rubber from the south probably was curtailed by the retraction of Mesoamerican influence from the northern area after the fall of the "toltec" groups, and the people of Zacatecas, Durango and Arizona most likely had to rely on guayule exclusively.

Several rubber balls have been excavated in the American southwest. A ball found at Snaketown was analysed by Hauray (1937) who tentatively identified it as composed of guayule. The people of the arid north were probably familiar with the properties of guayule long before the introduction of the ball game, with its concomitant increased demands for rubber. In historic times, guayule was used by country children within its area of natural distribution in making small rubber balls or was chewed as gum (Altamirano, 1906:1100) and

the latex was extracted from the pulp by constant mastication of the plant's roots (Lloyd, 1911).

Guayule does not give up its latex in a flow of sap, but rather contains it in isolated pockets in its extensive root system. The extraction of the rubber therefore necessitates the total destruction of the plant, but since guayule can generate its maximum rubber content in a single year, the yield is immediate. The rubber element increases throughout the year until the greatest proportion is reached immediately before the start of the rainy season, whereupon it might constitute up to a quarter of the plants dry weight.

Parthenium argentatum, as with castilla, is present in isolated patches within its area of maximum distribution, and there are few concentrations of major proportions. It is usually found on limestone ridges and other calcareous soils, at elevations of approximately five to six thousand feet, in areas possessing less than ten annual inches of rainfall. The parameters of guayule distribution encompass portions of the states of San Luis Potosi, Nuevo Leon, Coahuila, Chihuahua, Durango, and Zacatecas, with a slight extension across the Rio Grande into the Big Bend region of Texas.

Blom (1932b:540) expresses a conviction that the rubber used in the highlands of Mexico and Guatemala "was grown exclusively in the tropical lowlands, and brought to the highlands...by traders." But the exact mechanism of movement for this rubber is unknown. The best known example of the actual workings of any mechanism of movement is found in the Aztec tribute lists of the Codex Mendoza (1938, Clark), which is still at best ambiguous and subject to varying interpretations. An example of this ambiguity is shown by the debate over the actual quantities of rubber that are represented in the codex and the form in which they were transported.

The Codex Mendoza lists Cosamaloapan, Tochtepec, Michapan and other towns of the gulf coast, twenty-two in all, that contributed rubber as part of their "protection" to the Aztec state. Clavijero (1958, Vol. II:214) describes this tribute as 16,000 (Aztec numerical notation) pelotas, a term that has been interpreted as either "balls" as in the finished product for the ball game, or "loads" (cargas) referring merely to the shape of a large amount carried. Blom (1932b:540) demonstrates that the Nahuatl word for rubber olli is a derivative from the Maya term for "round thing" or uollic, and infers that the form of traded rubber was that of the small, finished ball. Lowe and Ries (1948:37) however, consider them to be loads of 100 pounds each, giving a total listing of 1,600,000 pounds. Furthermore, this interpretation places the tribute as being exacted from each of the twenty-two towns, not from the area as a whole. After citing some dubious figures for "individual annual yield" per tree (12 oz.) the authors conclude that "the busy Olmeca may have worked as many as 2,133,333 trees each year in order to pay taxes to their overlords" and, "The Nahua merchant man must have done a rush business in distributing the Olmeca tribute" (Lowe & Ries, 1948:37-38). This

assessment of the amount of rubber is almost surely excessive, but the staggering outlay of time and resources is proposed, one feels, in order to account for the vast amount of rubber that was known to have been consumed in Postclassic times solely by means of tribute exactions.

"Free trade" leaves no written records, yet the rubber contributed by sources other than strict tribute must have been of no little consequences. Furthermore, there is no way of knowing how much of the rubber taken as tribute from the towns of the Veracruz region might have come from other major producing areas (i.e., Tabasco and the Peten) primarily, only to then be seconded to Tenochtitlan by the subject towns themselves. The cautions necessary in examining the tribute lists for the presence of rubber apply no less to any other item, and the Codex Mendoza best serves to illustrate the type and range of political contacts of the Aztec state rather than as an accurate guide to the actual sources of supply.

The remarkable properties of rubber, whether from castilla or guayule, lent themselves to many uses of major import to the Mesoamerican and related peoples. Perhaps the greatest number of which, when one considers the diversity of applications known to us, remain solely in the realm of conjecture. Likewise, the mechanisms by which the rubber to fill those needs moved are unknown, and subject, as are those of all other resources described in this paper, to all manner of speculation.

### Cacao

Virtual oceans of ink have flowed from the pens of those interested in the phenomenon of cacao cultivation in Mesoamerica. The first accounts by the Spanish regarding this product are speculative and relatively unreliable, but a few of the early chroniclers took the trouble to record their observations with some concern as to time, place and ethnic affiliation, so we are not totally in the dark. The status that cacao occupied in Mesoamerican society and economy is still a poorly understood and much debated topic.

Thompson (1956:109) in probably the most ambitious statement regarding the function of cacao yet written, suggests that it played an important role in cultural development. Besides "stimulating trade throughout Middle America and, with trade, the spread of ideas," Thompson sees the possible origins of the complex Maya system of reckoning time and arithmetic and ultimately, the development of the Long Count dating system in the familiarity with large numbers gained from transactions involving cacao beans.

Cacao was used as a common religious offering at the time of the conquest, and in parts of rural Mesoamerica is still important in that context today, as a direct sacrifice, or to solemnify contracts

of marriage, compadrazgo, and the like. The numerous examples from Roys (1931) for the modern Yucatec Maya, together with those listed by Thompson (1956:106) for Mesoamerica in general in which cacao is used in a medicinal way point up a probable analagous function as a curative in pre-Hispanic times. Cacao was taken for general pains, or more specific ailments such as snakebite, poisoning or burns, and was either ground into powder and mixed with honey and/or spices in hot water to be drunk as the nahuatl chocolatl. More serious wounds were dressed with the "butter" extracted from the beans by pressing.

Assuredly, the leading means of consumption was in the form of the luxury beverage chocolatl. Millon (1955:220-221) sees the development of an "almost universal demand for cacao, as evidenced by the wide use of cacao as a luxury food, [which] seems to have been instrumental in the development of inter-provincial trade in ancient times." Thompson (1956:101-102) notes that cacao was of such importance that depictions of it in the architectural sculpture, "stelae" and murals of Santa Maria Cotzumalhuapa, Copan, El Baul, El Tajin, and Teotihuacan are fairly common. The wide distribution of possible producing and receiving areas points to the probability that cacao was well known throughout these regions of its ultimate extension by at least the early classic period.

There are indications that in the non-producing areas cacao was reserved for the upper strata of society, and the notion of cacao's sovereignty as the "universal" currency of Mesoamerica has been often suggested as the common denominator in poly-ethnic interaction anciently. Millon (1955) however, sees the role of cacao as money in a subordinate position to its major function as a food restricted to those in control of cacao groves, or the wherewithal to secure it by trade or tribute. He concludes (ibid.:221) that the economy of ancient Mesoamerica as regards cacao was "based primarily on production for consumption rather than production for exchange." This view is shared by Benson (1967:62) who suggests that "for the most part cacao was a luxury, as most of the cacao crop went to the priests and nobles and the surplus was traded to other areas."

As mentioned previously, many other students are not of like mind, preferring to consider cacao as a medium for tribute or exchange, often, one feels, in the hopes of discovering a "true" monetary system comparable to those of modern times, where every object can be assessed in terms of a single standard of value. Blom (1932a:538) speaks of "regulated currency" in the form of cacao beans existing as the "international monetary unit of the Aztec, Maya, Chorotega, and other nations" and Bergmann (1969:86) echoes this view by claiming that "nearly all goods and services were obtainable in exchange for cacao beans." These rather broad assumptions are based largely on well-documented accounts of two areas in which cacao did serve as a kind of money and also on the subsequent practice of the colonial Spanish of paying Indian wage-laborers in cacao.

The first of the two conquest period examples is that of the famous market center of Tlatelolco, described by Cortes, Bernal Diaz and Gomara, which is too well known to be repeated here. The second is for Nicaragua, a major cacao producing area, in which Oviedo (1959: book 42, 363-364) states that "everything is bought with cacao, however expensive or cheap, such as gold, slaves, clothing, things to eat...", even going on to relate the going price for the attentions of the "public women" in cacao terms. Oviedo describes the method of counterfeiting the beans by filling old skins with clay (Thompson, 1956:100-101 lists other methods), and this practice certainly reinforces the case for a "cacao currency".

As a medium of exchange, cacao would have had several inherent advantages over other items. With careful curing the beans will keep for at least a year, and not lose their value for making chocolate. The individual beans would be low enough in value to make for ease of small purchases, and their relative durability, small size and ease of storage would make them ideal for use when traveling. Finally, the constant consumption as food or drink would guarantee a continuing market for them, and likewise function as an automatic inflation control.

It must be remembered that cacao was still an article restricted to the upper strata of Mesoamerican society, a point which the chroniclers cited above all make clear. As a prestige item, it would have been coveted by those who would not have normally had an opportunity to obtain it, and if the elite upon certain occasions allowed cacao to trickle down to the common people to be used in rituals as offerings, or payed them for purchases with it, this only underlined the monopoly that the upper classes held in controlling cacao.

The use of cacao beans as "money" by the Spanish in dealing with Indians has been well documented. Thompson (1956) devotes the better parts of five pages to the fluctuations of areal and temporal value of cacao used as currency in New Spain. The conquistadores learned early that recalcitrant Indians could be bribed with presents of cacao, workers paid in it, and that it could be sold to them at a great profit. Thus it behooved the early encomenderos and settlers to foster the cultivation of a crop that was primarily directed not for export to Spain, but for domestic consumption. O.F. Cook (1916) reported that as late as the time of his writing in Guatemala cacao was still one of the few articles that could be sold to the natives for money, and that the coffee growers were importing it from Ceylon and the West Indies in order to meet the demand. Thus the possibility that the social disorder created by the Spanish conquest and subsequent developments enabled more classes of people than previously to gain access to cacao would not be discounted. The European colonial practice of using cacao for payment instead of money has done much to give the impression that cacao circulated through all classes in pre-conquest times, and most who have treated the subject consider it to be a survival of the state of affairs at contact. As I hope to have pointed out, the matter of "cacao as money" is by no means settled.

From any standpoint, cacao was an extremely valuable resource in Mesoamerica, and was cultivated by all peoples living within its natural range. It was even in one recorded instance transplanted to an area not suited to its cultivation, and kept alive by artificial means. Millon (1955:176) suggests that this wide distribution by human agency is indicative of the great age of its cultivation in Mesoamerica. At the time of the conquest, cacao was moving between widely separated groups, some of it in the form of tribute, other represented a barter commodity exchanged for goods.

The subject peoples of the Mexica who lived in the tierra caliente paid a substantial portion of their "protection" in the form of cacao. The kind of relationships that existed between Tabasco and Tenochtitlan is not well understood, but the area does not seem to have been tributary to the Aztecs. It is known that great quantities of cacao came from Tabasco in the form of trade, and therefore were not listed in the Mexica tribute rolls, and perhaps some of the Veracruz cacao in the Codex Mendoza may have originated in Tabasco. Bergmann (1969:85) claims that "areas producing on a large scale for trade [he means tribute] with the Mexican plateau were restricted to a few districts, principally those of Soconusco [Xoconocho] and Tabasco." This statement is misleading, for whereas Tabasco did trade with the Mexica (West, Psuty and Thom, 1969:99-101; Scholes & Roys, 1948:29-31), Xoconocho was a subject area and produced cacao as tribute. The fundamental importance of this distinction is that "free trade" is relatively hard to document whereas tribute must be compiled exactly to be a successful operation.

There are two different species of cacao, Theobroma cacao, the "cacao proper", and Theobroma bicolor, commonly called patashte (from the nahuatl patlaxli) and is the less desirable of the two. There are furthermore two distinct forms of T. cacao; the first and favored is the "criollo" variety, whose fruit is milder and less bitter than the second, or "forestero" type. A criollo seedling takes five years to begin to yield, and is especially susceptible to disease; forestero yields in only three years and is much hardier. Both types need constant care and protection from the numerous insects and small animals that have a taste for their fruit. The most destructive are red ants, monkeys, parrots, squirrels, and rats, and parasitic plants also pose a threat to cacao. The crop, to be economically successful, must therefore be tended continuously by man.

The individual pods of the tree contain from twenty to fifty separate seeds or "beans", depending on whether they are "branch" or "trunk" pods, and the size and quality of the bean varies with the species, rainfall, soil conditions and seasonal length. Cordero (1884:20) states that the Xoconocho crop took twice as long to mature as the Chontalpa type (probably because of lower rainfall). The two annual yields from Chiapas, taken immediately before and after the rainy season, were superior in quality to the four annual crops from Tabasco.

Cacao grows best in rich, well-drained soil, preferably of alluvial or volcanic origin. It is the soil, not the tree, that must be shaded, and kept constantly moist, as the humidity of the earth is more important than the amount of annual rainfall. According to Erneholm (1948:269-273), cacao can tolerate a minimum of forty inches of precipitation per year and a dry season of up to four months if irrigated. It will not grow where the average annual temperature is below seventy degrees fahrenheit and does best in areas of extremely high humidity (90 percent plus). In regions of lower rainfall, cacao is limited to the narrow valleys of streams and rivers, or in the karst landscape of northern Yucatan, to the occasional silt-filled cenotes.

Most students agree that the central area of cacao cultivation was within the limits of Maya speech. With the increasing centralization of power in the highland areas during classic and postclassic times, cacao began to expand in its distribution. From the core area it was spread north and south, probably by Nahuatl speaking peoples, along the coastal areas that would support it. The single occurrence of cacao growing in the highlands (Duran, 1951:252-253) is for Huaxtepec in Morelos, where Moctezuma II ordered cacao seedlings to be transplanted from the Cotaxtla region of Veracruz. Bergmann (1969:88) mentions that the northernmost extension of cacao on the Pacific coast reached to the Rio Ameca, and Paso y Troncoso (1905: Vol. 1) mentions the northernmost Atlantic groves as located at Tuxpan. Production in these peripheral areas was never on the same scale as that of the central region, and the Pacific coast north of Chiapas as well as the Huasteca were particularly insignificant. Bergmann (1969:88) says that in these places the cultivation of cacao was at most an adjunct to gardening, and that it was raised primarily for local use. The Aztec in late postclassic times thus had to look to the south and east for their major supply of cacao.

Sauer (1950:538) states that cacao was grown on the Pacific coast from the Nicoya peninsula to Tepic, and that on "the Atlantic side it had a similar latitudinal extent, but its cultivation was in fewer localities and in general less significant." He suggests that the principal producing areas were on the Pacific slope, in spite of its longer dry season than the Gulf coast, and his neglect of the Atlantic side (perhaps due to the absence of volcanic soils?) is puzzling. Perhaps Sauer received his stimulus from Acosta, who wrote in 1590 (1604:295) that "Guatemala was recognized at that [pre-hispanic] time as the chief center of production of cacao." This position is highly debatable.

Xoconochco was a but not the major producer of cacao for the Mexico, as the tribute lists from the Codex Mendoza (1938:fol. 46-47) show that the production from this area was less than half of the total for the entire cacao tribute of the empire. Borah and Cook (1963:151) in rating the overall values for items of tribute, rank the cacao exacted from Xoconochco as equal to either that from Huatusco or Cotaxtla, and only one-fifth more valuable than that from

Cihuatlan. The impression that the Guatemalan and Xoconocho areas were the primary producers probably is due in part to the Spaniard's predilection for temperate highland abodes over the steaming swamps of the Gulf coast, and to the biased and distorted view of affairs given by Aztec informants. The early importation of European diseases and parasites decimated the people in the lowlands (Thompson, 1970: 52-54) but were not nearly so destructive at higher altitudes. The continuation of the Xoconocho and Pacific Guatemalan crops from the pre-conquest through colonial periods can be explained by the fact that there are cool highlands right behind the boca costa that laborers in the lowlands can retire to if their health is threatened. Until the recent anti-malarial campaigns in the tropics, the coffee and banana plantations on the Pacific lowlands used labor that migrated seasonally from the highlands, or was able to live immediately above the malarial zone.

Despite its early depopulation, Tabasco must have also been a producer at least as large as Aztec Xoconocho. Roys (1972:106) makes the point that only in Tabasco was cacao production on such an intensive level that food had to be regularly imported to feed the pre-hispanic laboring population. The rulers of this area, being free of direct Aztec domination, might have had an incentive to produce more cacao than a subject people under threat of force. Thus there is good reason to doubt that the Xoconocho coast was the major producer in pre-conquest times.

Cordero (1884:3) states that the principal centers of production during the colonial and independence periods in Mexico were Tabasco and Chiapas, in that order. Millon (1955:175) is of the opinion that the most important "aboriginal areas of production" were "Tabasco, closely followed by northern Oaxaca, central and southern Veracruz, southern Chiapas, south-western Guatemala, and Honduras..."

The opposite view, however, continues to receive attention: Bergmann (1969:95) claims that "there is no evidence to suggest that cacao production in [north] eastern Guatemala and northern Honduras, the areas which supplied Yucatan [he omits Tabasco altogether], was ever on a scale approaching, much less equal to that of the Pacific side of the isthmus." This statement is equivocal, as both of the areas were known to have had a large "trade" in cacao with merchants from the west, and also because he ignores the other great Atlantic growing areas. To suggest that the highland Mexicans consumed more cacao than the lowland Maya is hazardous at best.

Millon (1955:282) relates that "it is in the Maya languages that the most extensive terminology for cacao products seems to have existed. Conversely, Nahuatl provides the greatest terminology for the cacao trade." The tradition of cacao use among Maya speakers was much more widespread at contact than among the highland peoples, and one must assume a consumption of fairly large proportions. The Relacion of Merida (1885:70-71) reports that the inhabitants of northern Yucatan used a "great quantity of cacao which is brought from



the province of Tabasco and from Honduras..." Landa (1941:40) says that cacao was also grown near Chetumal, "the only province of Yucatan where it was produced on any considerable scale." Roys (1972:52) reports a cacao producing area on the Rio Hondo, from which originated an overland trail for the export of that crop to the north. Hammond (1972:42-44) suggests that the very reason for the existence of Lubaantun in coastal Belize was the proximity of the site to the "largest zone of prime cacao soil in the whole of southern British Honduras". Ciudad Real, in 1588, spoke of the area near Asencion Bay; "the Indians say a great river runs through it, and on both its banks there are many people to convert and conquer and that they have many plantations of cacao trees..." (Ciudad Real, 1932:325). Finally, the royal questionnaires to all holders of Spanish land-grants in 1579 and 1581 requesting information on local conditions, including trade, were answered almost unanimously from Yucatan with reports of cacao from Tabasco and Honduras being imported in large quantities. Faced with such evidence, it is most probable that the production of cacao on the Atlantic coast was as viable a concern, or superior to that of Xoconocho.

It seems that the misrepresentation of producing areas therefore is the result of post-conquest alterations in the pre-existing patterns. It has been shown that there was an impetus for the Spanish to continue cacao production, even before the development of an European market for it, but with the catastrophic drop in the native population in the lowland regions, there is little doubt that the patterns of cacao cultivation were radically changed.

Bergmann (1969:91) however, claims that "there is nothing in the early documentation to suggest that the earliest Spaniards caused any change in the distributional pattern of cacao prior to 1548. [The year that official records were first collected in Guatemala that deal with cacao.] There is no evidence that new areas were planted to cacao where cacao had not previously been cultivated, nor that production was eliminated from an area during...the campaigns of conquest." It becomes evident that the closer one looks at the contrast between pre and post-conquest culture it is seen that major changes did occur, and this applies specifically to the question of cacao. Certain areas of production, like Tabasco, were largely ignored, and other areas of previously little importance, were, because of their closeness to the nucleated settlements of the Europeans, much expanded. In some cases it appears that the Europeans fostered an intensive cultivation of cacao where one had not previously existed. In other situations, entire areas were depopulated and cacao production dwindled away to a mere vestige of its former importance.

The changes in exploitation of cacao as a resource after the conquest have contributed in large measure to the uncertainties and confusion as regards to the aboriginal experience. That cacao was an item of great worth in ancient Mesoamerica is unarguable, but its role in the societies and economies in which it appeared cannot be studied

with much hope of reaching accurate conclusions until the more basic concerns are met squarely. When so much confusion exists regarding where cacao was grown and in what proportions, it seems premature to speak of it as having a common universal value and importance wherever it was found.

#### CLOSING REMARKS

The perishable resources considered in the preceding pages would only in very unusual circumstances be preserved in archaeological contexts. In order to formulate hypotheses concerning patterns of movement and interaction based upon empirical data, some archaeologists have turned to substances that are prone to preservation. A most promising development in the recent study of Mesoamerican culture as it relates to "trade" has been the work undertaken in determining the sources of obsidian for many important sites.

The feasibility of such studies in Mesoamerica was demonstrated by Weaver and Stross (1965) when a basic typology was begun by comparison of the varying percentages of chemical trace elements that could be detected by rapid-scan x-ray fluorescence. Heizer, Williams, and Graham (1965) began the plotting of the different obsidian sources and the corresponding artifacts that could be "fingerprinted", and since that time, obsidian from the sites of Tres Zapotes (Hester, Jack, and Heizer, 1971), La Venta (Jack, Hester, and Heizer, 1972), San Lorenzo (Cobean, et.al., 1971), Cerro De Las Mesas (Hester, Heizer, and Jack, 1971), Seibal (Graham, Hester, and Jack, 1972), Cholula (Hester, Jack, and Heizer, 1972), Cempoala, Quiahuiztlan and El Tajin (Jack, Hester, and Heizer, 1972) and several other sites have been subjected to analysis. Cobean, et.al., (1971) list twenty-five separate geological sources for obsidian in Mexico and Guatemala, and the list is still growing. The obsidian studies have provided us with the first real archaeological data that can be tested in hypothetical reconstructions of "trade". The work done in this area has demonstrated that an intimate familiarity with the basic data is necessary before hypotheses can be formulated, and that such an approach is the best insurance against careless speculation.

"Trade" is one of the most popular panegorics in use today when problems of causality are being considered. It is perfectly suited to that role for, as we have seen, the term is not really subject to a strict definition and can be invoked without much concern for substantiating evidence. My feeling is that the point has not been reached where one can begin to construct models of interaction and movement of articles, because the corpus of archaeological data is too small. The limitations presented by the accidents of preservation have almost guaranteed that complex models of interaction in the past will be narrow, and represent only a part of the situation as it existed.

Although my criticisms at times may have seemed overabundant, I confess that I have very few specific suggestions calculated to illuminate the murk that has obscured the problems of Mesoamerican "trade" for so long. Certainly the obsidian studies should continue, and it is to be hoped that with time, a complete inventory of all sources will be possible along with a corresponding refinement of laboratory technique. Despite the attention to analyzing the samples from archaeological sites, surprisingly little work has been done in establishing the cultural sequences and associations at the obsidian "mines" themselves. The earliest accurate report for a major source that was concerned with more than sample collection is that of Holmes (1900) for Cruz Del Milagro in Hidalgo. A hiatus in the interest in the "workings" existed from that time until relatively recently, until the studies by Coe and Flannery (1964) for El Chayal, Graham and Heizer for Papalhuapa (1968), and Spence and Parsons (1972) at Cruz Del Milagro and other nearby deposits.

Most ideas concerning the actual mechanisms through which "trade" was effected have been derived from the historic descriptions of Protohistoric peoples in Mesoamerica, yet many of the great commercial centers of Protohistoric times have never been adequately excavated (Tochtepec is a case in point) and we would learn much if they were. The exact location of the trading town of Xicalango is still in doubt; Ruz Lhuillier (1945) identifies the site of El Aguacatal as such, but it has no Late Postclassic occupation, Scholes and Roys (1948) place it under the town of Cerillos, and others suggest that it lies to the east or south.

In order to understand the phenomenon of ancient Mesoamerican trade, one must consider questions of the influence of space, time, and distance, the individual desires of the specific peoples involved, the availability of the items desired, and the political, physical, and cultural barriers that existed and how they could have possibly affected the nature of the assumed trade. The only conceivable way in which such questions may begin to be answered is by careful excavation and recording, coupled with a selective consideration of all historical, ethnographic and geographic sources. Needless to say, these suggestions could only apply to the Postclassic period and in earlier times a different kind of modus operandi would be required.

A suggested procedure to be followed before discussions of the socio-cultural aspects of trade in early societies could be made would entail the following: (1) adequately defining and describing the article in question by botanical, mineralogical, metallurgical, or other means; (2) determining whether or not it is actually "foreign" in the context found by establishing the limits of its "natural" occurrence; (3) plotting the overall distribution of the supposedly "foreign" object in all known archaeological associations; and finally, (4) researching all available ethnographic or geographic and ecological sources that could possibly contribute information of a clarifying nature. It will be quickly observed that perishable resources do not lend themselves to such an analytical framework

easily, but to ignore them would guarantee inaccurate results. The very real results that can be derived from studying perishable resources have been demonstrated by Puleston (1971), and it is to be hoped that more research will be directed towards them.

One must review the possibilities suggested by the information gleaned from all courses of study, and consider them to be only that, not probabilities. I submit that the only precept to be followed to the letter in attempting to understand "trade" in archaeological cultures is that which should be called to mind whenever an attempt is made to create the tangible from the intangible: the only rule is that there is no rule. In dealing with as unknown a quantity as Mesoamerican trade, where hard evidence is so noticeably lacking yet theories so abundant, attempting to work with preconceived ideas cannot help but obscure what little information we may be able to gain by all of our other efforts combined.

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Abbreviations Used

AA	American Anthropologist.
AAnt	American Antiquity.
CIW	Carnegie Institution of Washington.
HMAI	Handbook of Middle American Indians, University of Texas Press, Austin, Texas.
INAH	Instituto Nacional de Antropología e Historia de México.
MARI	Middle American Research Institute, Tulane University, New Orleans, Louisiana.
UCARF	University of California Archaeological Research Facility, Berkeley, California.

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