UNIVERSITY OF NORTHERN COLORADO

MUSEUM OF ANTHROPOLOGY

WARFARE AND THE EVOLUTION OF THE STATE: A PERSPECTIVE FROM THE MAYA LOWLANDS

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David Webster

(Pennsylvania State University)

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The purpose of this paper is to investigate the role of warfare in the evolution of lowland Maya society, particularly as it relates to two fundamental processes of state formation--differential access to basic resources (wealth) and the monopoly of physical force. Warfare has recently been emphasized as an important mechanism in the emergence of 'primary' states (R. M. Adams, 1966, 1972; Sanders and Price, 1968; Chang, 1968). On a more theoretical level the evolutionary potential of warfare has been treated directly or indirectly by Fried (1961, 1967), Service (1962), and Carneiro (1970). Although there is considerable difference of opinion among these writers about the significance of warfare on various socio-political levels, all seem to agree that it was an important component in the process of primary state formation. Another basic point of agreement is that warfare can fruitfull be viewed as an adaptive set of behaviors in response to ecological stresses, an assumption which is followed here.

I have chosen to consider the Maya for a number of reasons. First, I believe that the processes of cultural development in the Maya lowlands were largely indigenous, despite the obvious borrowing or influence reflected in tangible outward forms (e.g., art, inscriptions, architecture) which ties them to other areas of Mesoamerica. Maya civilization, in other words, was "pristine" in Fried's (1967) sense. Second, the Maya were clearly involved in the process of state formation even if no fully urbanized stage was ever realized, as many authorities have maintained. Third, my own work in the Maya lowlands (Webster 1972, 1974a, 1974b) has convinced me that the traditional picture of the Maya as peaceful, intellectual, theocrats, is wrong, and has seriously inhibited progress in understanding cultural evolution in the area. Finally, I agree with R. N. Adams' (1968:1192) emphasis on the dynamic aspects of cultural systems, including "....conflict marginality, and disonance as sources of creativity and change". Analyses of Maya cultural development have often ignored this dynamic dimension.

It has long been recognized that one of the dominant themes of socio-political evolution has been the convergence of wealth and political authority, ultimately resulting in social stratification--the effective monopolization of wealth (i.e., basic resources) and coercive force by a small segment of a larger social system. The crucial question, from the point of view of this paper, is the role played by warfare in the process of concentration of wealth and power. Before turning to the subject of warfare, however, it is necessary to examine some of the ramifications of wealth and political authority in pre-state societies.

Recent literature on ethnographically-known peasant societies has demonstrated the existence of various kinds of "leveling" mechanisms which ultimately frustrate the disproportionate accumulation of wealth by members of the community. These may involve no more than informal (but potent) negative sanctions such as public ostracism or accusations of witchcraft; or, there may develop more formal institutions which encourage the accumulation of modest amounts of wealth on the one hand, but require its expenditure in public displays on rituals on the other. An example of the latter is the cargo system widespread in Mesoamerica, as described by Vogt (1961). Such leveling mechanisms have often puzzled students of socio-political evolution since they would seem to short-circuit the necessary process of wealth accumulation (e.g., see Webb, 1968:3). In fact there is no problem here. As Wolf (1957) makes

abundantly clear, leveling mechanisms are the result of the economic articulation of peasant communities with a larger, dominant, more complex political unit. The "closed corporate" community which is in part a result of leveling mechanisms is a response to stresses generated by this articulation, and stems from the awareness of the relative impotence of the local community vis a vis the larger culture in political and economic terms. As such, leveling mechanisms are not to be seen as obstacles to the formation of state-type institutions, but products of them (this is not to imply, however, that they are associated only with the modern colonial or capitalistic state; they may also have been present in prehistoric times). To assume that leveling devices such as described for modern peasant societies were present on the pre-state level seems unwarranted.

Turning now to ethnographically-known tribal (non-peasant) agricultural societies it seems clear that, far from being discouraged, accumulation of wealth is common and is often related to political authority. Probably the most complete discussion of this point is found in Sahlins' study of the "Big Man" role, widespread in Melanesia, in which an individual, through initiative, ambition, and labor, is able to acquire enough wealth to significantly enhance his prestige (1963, 1972). Prestige confers political authority, to be utilized in settling disputes, leadership in warfare, etc. The important point here is that "wealth" (which usually means subsistence goods) is not an end in itself. It must be expended (given away) as an investment in reciprocal personal relationships. True wealth lies in the network of interpersonal relations and reputation that such redistribution creates. Two limitations on the political authority so derived are that it cannot be passed on, dependent as it is upon an individual personality (although male descendents of Big Men have a greater chance to achieve this status than others), and the existence of competing forms of authority based upon non-economic characteristics such as kinship, age, and impressive personal qualities.

Rewards more tangible than mere prestige often acrrue to the egalitarian leader. These may include a disproportionate share of wives who, in the long run, remove much of the labor burden from the "Big Man's" shoulders and provide him with numerous offspring to bolster his political support (Sahlins, 1972:136). The "Big Man" may have an advantageous position in local trade networks, and, of course, he has plenty of personal support should be become involved in intra-group disputes. But, in the final analysis, while he has political relationships (esp. with his household production force) he has no political dependents in any strict sense.

Egalitarian agricultural societies, then, are not to be distinguished from states in that one lacks wealth accumulation while the other is typlified by it. In fact, there are motivations, including economic and political ones, for wealth accumulation in both. What differs are the ways in which wealth is generated and used, and its limitations on potential for establishing political relationships.

Of crucial importance is the interaction of war, wealth, and political authority in ranked societies, or chiefdoms, since it was presumably from societies on this level that the earliest states developed. Space does not permit a detailed examination of the enormous range of variability among chiefdoms, but some of their salient features from the point of view of this paper are as follows:

1). Agricultural or pastoral (and very rarely hunting and gathering) patterns are well developed, to the point that considerable surpluses may be produced, but such surpluses are as much stimulated by the organizational hierarchy as they are precon-

ditions for its existence. Community economic specialization may be present in complex environments.

2). High ranking individuals or families are nodes of secular and religious authority, and high status is ascribed by birth. Integrative functions fulfilled by those of high status are variable, but may include economic redistribution, arbitration of disputes, ritual leadership, organization of community labor, and leadership in warfare (by which I refer both to the initiation and organization of conflict and its resolution), as well as other intergroup political affairs.

3). Those of high rank enjoy a number of prerogatives (esp. status symbols) denied to people of lower rank; highly-ranked individuals may themselves be producers, but more commonly are supported at least in part by some of the surpluses which accrue to them for redistribution.

4). Ranked societies are integrated by the idiom of kinship, whether real or fictive, and surpluses funneled into the hands of the chief are "gifts" due to a senior kinsman, but always with the assumption of reciprocity. If the reciprocity, from the point of view of the producers, seems economically negative, remember that the "cost" they incur is the overhead for the hierarchical structure, which itself fulfills numerous adaptive functions.

5). The ability to use coercive force, as opposed to persuasive authority, to enforce political decisions is very limited on the part of the chief, and is largely a function of his economic activity which influences his public support.

6). Many well-developed chiefdoms exhibit a high degree of internal political instability; they often seem to be less political entities than political arenas. This instability reflects the ineffective monopoly of force possessed by the chief, and the ambitions of "out-of-power" individuals of nearly equivalent rank.

Several obvious features distinguish ranked societies from egalitarian ones in terms of wealth and political authority. First, as Sahlins (1972:139) has noted, "Now men do not personally construct their power over others, they come to power". By virtue of his superior kinship ranking the chief "comes to power" in the sense that at least limited control over group economic resources is already vested in the position he occupies by birth. Second, the chief's economic, ritual, and political authority are of a higher order than competing forms of authority which may be present—e.g., age or personal qualities. Third, the chief possesses the publically-sanctioned right to expend part of the surpluses he controls on his behalf—i.e., for status symbols, such as ornaments of dress, an oversized household, or an elaborate tomb. These status symbols play a dual role; they at one and the same time enhance the individual prestige of the chief while they symbolize the hierarchical organization of the society as a whole. Finally, the position of chief is a highly desirable one, yet because of the kinship idiom which sanctions the hierarchical structure others are not able, through their own economic activities, to acquire similar status. But, precisely because there are others of nearly equivalent rank (and because genealogies can be so easily manipulated), and the chief lacks an effective monopoly of coercive force, another individual can usurp his position and enjoy his prerogatives provided the force at his disposal is superior. Force, in other words, becomes for the first time a common political tool and, as Sahlins has pointed out (1972:144-45) the almost constant internal conflict characteristic of many chiefdoms has underlying economic causes.

From the point of view of socio-political evolution advanced chiefdoms confront us with something of a paradox. On the other hand, there are processes or structures present which prefigure institutions characteristic of the state. Among these are hierarchical political structuring, centralization of economic activity, and negative reciprocity which favors at least limited forms of wealth accumulation and differential consumption. But, in other respects, the particular organizational features of chiefdoms would seem to frustrate evolution to the state level. Wealth accumulation, so important in generating differential access to basic resources (a prime characteristic of the state according to Fried, 1967) is limited by the reciprocal obligations of the chief to his producer-kinsmen. Effective monopolization of coercive force is difficult because whatever force the chief commands is largely derived from his redistributional activities, which continually reinforce his political support. But those owing support to the chief themselves produce most of the surpluses which they receive from him through the redistributional network. Thus, the chief can only attempt to increase his political support (and consequent force at his disposal) by, paradoxically, increasing his demands on those who support him, and there are obviously limits beyond which these demands cannot go without destroying the support-base itself. Withdrawal of support results in increased authority of competing individuals or factions which eventually may be strong enough to usurp his position.

How, considering these impediments in the organizational principles of chiefdoms, did any of them, and the Maya in particular, manage to develop state-type institutions? That this transition was difficult and unusual is demonstrated by the fact that it occurred, as an indigenous process, on only a handful of occasions. Under what circumstances were the evolutionary constraints released in early Maya society, allowing social stratification and associated concentration of wealth and coercive force to develop? It is at this point that I feel a consideration of warfare becomes essential.

Perhaps the most systematic examination of the role of warfare in the evolution of complex societies is Carneiro's "Theory of the Origin of the State", in which he singles out warfare, generated by population growth in "environmentally circumscribed" areas, as "....the mechanism of state formation" (1970:734). Carneiro's model possesses the elegance of simplicity, postulating that intense warfare over limited resources in productive regions sharply bounded by inhospitable environments produces the preconditions for social stratification; under these conditions conflict is generated and defeated groups are unable to escape, and must suffer political and economic subordination to the victors.

I am in agreement with his basic thesis, which emphasizes ecological processes (population growth, resource limitation, and competition) as fundamental to evolutionarily significant warfare. I feel, however, that two main problems remain unresolved. First, the characteristic of rigorous environmental circumscription seems inappropriate to many areas where early states emerged. It may apply, for example, to the desert-bounded valleys of coastal Peru or Egypt, but in other precocious areas, such as Mesopotamia or highland Mexico, the picture is rather of zones of high agricultural and demographic potential interspersed with more marginal zones. These zones were often defined as much by the subsistence techniques of the farming populations themselves as by conditions of the natural environment. An example is the marked predeliction of Pre-Classic populations in the Valley of Mexico to settle and exploit the lower piedmont at the expense of other zones heavily utilized in later times (William T. Sanders, personal communication). In areas which lack environmental circumscription, and which demonstrate this sort of variability in productivity, groups defeated in warfare would not face the choice of subordinating themselves or perishing, but

rather of subordinating themselves or accepting lower standards of living in adjacent, more marginal zones. If we accept for purposes of argument (implying no necessary agreement on my part) Carneiro's own assumption that no politically autonomous group ever willingly subordinates itself to another, then the last choice would presumably have been attractive and adopted under many circumstances. And, if political subordination does not occur, how does social stratification develop?

An even more fundamental question is why states did not develop under conditions of population growth, warfare, and limited resources in environments which were circumscribed--e.g., Polynesia? Impressive ranked societies were found on many of the circumscribed island environments of Polynesia, and warfare was commonplace; but in only one instance--Hawaii--was there an abortive process of state formation. Even the Hawaiian example should probably be regarded as an instance of secondary state formation, since the political consolidations of Kamehameha were made possible by European armament.

A possible retort to this question is that in the Polynesian situation the "circumscribing" element--the sea--was, in fact, an avenue of transportation, and that migration was an effective choice for those dispossessed by conflict. But, as Sharp (1957) has argued, migration by sea was a desperate gamble even for such intrepeid seafarers as the Polynesians. Sahlins reinforces this view by citing numerous examples of defeated groups staying where they were and accepting onerous exactions of tribute, while awaiting peaceful assimilation into the dominant group or a chance to fight another day (Sahlins, 1958).

But the most serious problem involves the explanation of how the weaknesses in the socio-economic structure of the chiefdom are overcome, allowing state-type institutions to stabilize. As noted above, one such weakness is precisely that chiefs possess ineffective control of coercive force, and consequently are unable to keep subordinate groups subordinate indefinitely, thus instituting social stratification. Integration of new elements, defeated or otherwise, seems rather to be commonly achieved through assimilation or adoption into the dominant group--i.e., inclusion in the kinship structure. What emerges is a larger (and probably more fragile) chiefdom, not an incipient state. Even in the case of Hawaii, where far-flung conquests occurred, no long-term political integration on the state-level resulted; expansion only further strained the limited amount of coercive force at the disposal of the Hawaiian "king", and, unable to consolidate his position by force, he turned to the traditional pattern--ever more lavish displays of conspicuous consumption to validate his status (Sahlins, 1972:144-145). Of course, the result was ever increasing economic demands on the producers, eventually undermining the only real support base the king possessed (and it should be noted that Kamehameha controlled an inordinate amount of physical force in the form of European weapons). It is the structural inability to institutionalize wealth and power accumulation to a high degree that seems, in other words, to limit the evolutionary potential of ranked societies, and Carneiro does not explore this problem.

Like Carneiro, I believe that warfare can act as an evolutionary catalyst under certain circumstances to facilitate the evolution of state-type institutions in conjunction with other systemic stresses and processes. The following discussion attempts to specify some of these circumstances as they applied to lowland Maya cultural development. Much of what follows is a reworked version of a more extensive paper that I have previously written on this subject (Webster, 1974b) and which documents more completely many of the subsequent interpretations.

The Maya lowlands cannot, except by the broadest stretch of the imagination, be considered a circumscribed environment. Although they are partially bounded by the sea they are contiguous with other extensive tropical lowland areas to the west and southwest, and with the tropical highlands of Guatemala to the south. Moreover the Maya lowlands are very extensive--covering about 100,000 m^2--an area much larger than the Sumerian heartland of southern Mesopotamia and completely dwarfing such obviously circumscribed and precocious ecological units as the Nile Valley or the Peruvian coastal valleys.

Although the lowlands are certainly less ecologically complex than, say, the Mesoamerican highlands, they are by no means as homogeneous as many previous works seem to imply. From the point of view of tropical forest swidden agriculturalists, there are zones of high productive and demographic potential surrounded by more marginal zones (see Sanders, 1973, for a discussion of this variability). Among the most favorable regions are the river systems of the east and southwest (Belize and Usumacinta-Pasion drainages), northwestern Yucatan, and, most important, the Tikal-Yaxha lake region of the northeastern Petén. Even within these productive zones considerable local variety exists in terms of fertility, moisture content, susceptibility to erosion, etc. (Simmons et al., 1959), a fact with important implications for incipient economic stratification (see below). These are precisely the regions which have the earliest traces of agricultural settlement and which exhibit the most precocious sociopolitical development.

Of fundamental importance is the fact that the Maya lowlands were, at about 1500 B.C., essentially an open niche for agriculturalists--a niche which apparently received major increments of human populations only after about 1000 B.C. Where the earliest agriculturalists came from is still an open question, but Puleston and Puleston (1972) argue persuasively that a major source area was the Gulf Coast lowland to the west. This area, of course, supported the Olmec culture (probably impressive chiefdoms) which experienced its fluorescence after 1200 B.C. This is an important point. Presumably the Olmec heartland was heavily populated, and its gradual breakup after 800 B.C. may have resulted in spin-offs of population into the contiguous Maya lowlands. If this was the case, it would partly explain some of the very early ceramic remains in the Usumacinta-Pasion drainage (see R.E.W. Adams, 1971)--migrants from the Gulf Coast might expectably have preferred riverine environments similar to those of the Gulf Coast. Moreover, these routes would have funneled early colonists into the core area of the lowlands--the Tikal-Yaxha lake region.

Although we cannot reconstruct these initial movements of population in any detail on the basis of present archaeological knowledge, it seems clear that we cannot conceive of the lowlands filling up randomly or at the same rate. Pockets of cultivation were discontinuous, reflecting the varying potential of local environments and the preferences of the cultivators themselves. Centers of population probably differed markedly in terms of absolute size, density, and rates of increase, with important implications for our conflict model.

One of the characteristics shared by most regions in which early states developed is rapid population growth, whether due to migration (e.g., in the colonizing of lowland Mesopotamia by highland farmers), internal population growth (which seems likely for the Peruvian coastal valleys), or, more likely, both. Hassan (1973) has argued that "neolithic" population growth was on the average of 0.1% annually, well in excess of Paleolithic rates, and under optimal conditions could have been as high as 1.77-2.65%. The latter are comparable to "explosive" rates of increase in many parts

of the world today. Although less precise, Coale's recent calculations suggest similar rates of increase for early food-producing societies (1974:41-43). Hassan also suggests that, given productive agricultural economies, the only way to stablize long term population growth (barring emmigration), was to practice various forms of conscious, internal controls--e.g., abortion or infanticide.

Judging from Maya archaeological data, population growth in the lowlands was not checked by these sorts of controls; local equilibrium was rather maintained by constant fissioning. Such fissioning is, of course, implied by the movement of people into the lowlands from the Gulf Coast (and perhaps elsewhere) in the first place. But more striking evidence comes from Pre-Classic contexts in the lowlands themselves. Upward demographic trends are reflected in survey data from several areas, including the Pasion drainage (Gordon Willey, personal communication) and the Belize Valley (Willey et al., 1965; see Sanders, 1972:123 for a summary graph). The extraordinary homogeniety of Pre-Classic culture (at least as reflected in ceramics) by lake Chicanel times (ca. 100 B.C.-200 A.D.), as well as the enormous geographical extent of the Chicanel ceramic sphere, covering almost 100,000 m^2, clearly indicate rapid population increases and movement. R.E.W. (n.d.) has compared the rapid expansion of Chicanel populations with the spread of Danubian swidden farmers in Europe prior to 4000 B.C.

To understand the growth of Maya hierarchical culture we must understand the implications of this dynamic demographic situation. Unless checked by natural or cultural factors, rapid population growth may result in disequilibrium in cultural systems, necessitating adaptive cultural adjustments. In particular, conflict and competition may be seen as both symptons of disequilibrium and adaptive responses to it which may lead to higher levels of organization. I have elsewhere (Webster, 1974b) calculated rough estimates of the carrying capacity of the Maya lowlands as a whole in terms of a reconstructed Pre-Classic subsistence pattern. Reasonable estimates imply densities in the range of 30-55 people per km^2 for high quality agricultural land (note that this is far below the capacity of later times when various forms of intensive agriculture may have been in use; Turner (1974) calculated Late Classic population densities around Becan at 168 per $km.^2$). Taking into consideration the variability of the lowland environment, with much marginal or unproductive land, I have suggested a total carrying capacity in the area of 1.5 million people; these are probably maximum figures. Assuming relatively modest rates of annual increase (0.8%) well below Hassan's maximum figures, and a small seed population of 1000 people at 1500 B.C., overall population would have increased to this level in 1100-1300 years. In other words even without immigration from outside the lowlands proper (and this undoubtedly occurred) potential carrying capacity would have been reached by 200-400 B.C., and perhaps earlier in optimal zones. These are rough, order-of-magnitude figures, but if they are reasonably accurate population pressure and concomitant ecological stresses and adaptive responses (including warfare) should be in evidence by 200-400 B.C.

Prior to 400 B.C. we have little evidence to suggest that the Maya were anything but egalitarian tropical farmers residing in scattered hamlets or farmsteads. However, if large increments of population were derived from the Olmec heartland to the west, it is possible that although a good deal of deculturation occurred in the process, relic features of ranking were retained in a superficially egalitarian context (this seems to have been the case among the Maori in New Zealand). The early Maya may have been, in other words, pre-adapted to the development of hierarchical organization once there were sufficient ecological stresses tomake such organization adap-

tive. In any case, evidence for status differentiation in the form of ceremonial architecture and luxury burial goods, indicative of at least minimal principles of ranking, begin to appear after 400 B.C., especially in the "core" areas previously mentioned. That this process begins about the time that population pressure became a problem seems anything but fortuitous.

Faced with rapidly growing populations and dwindling supplies of land, local Maya groups faced several possible alternatives, once fissioning was no longer able to maintain equilibrium. Acceptance of a continually declining standard of living was, of course, an unattractive and only short-term solution. To judge from available archaeological data, internal, conscious controls on population growth were not instituted. Possibly the social "cost" of population control was too high, since the Maya had never seemingly practiced it (see Dumond, 1972:288 for a discussion of this point). A final solution was expansion of local resources, which could be accomplished in two basic ways. The first way was to expand local productivity through various sorts of intensification--shorter fallow systems, terraces, raised fields in bajos, etc. While various kinds of intensification were doubtless undertaken, there is little evidence to suggest that they were widespread in the Pre-Classic (prior to ca. 250 A.D.). But there is another alternative--the acquisition of new land through warfare.

I have elsewhere (1974b) argued that warfare was one of a series of adaptive functions which accrued to highly-ranked individuals or groups after 400 B.C., when population growth and resource limitation placed a high value on hierarchical organization and its concomitant economic and political centralization. I do not mean to suggest that all Maya groups simultaneously saw aggressive expansion as the solution to their problems; it was only one possible choice among others. There were numerous local populations of varying size and social complexity, and a variety of adaptive choices for each, at different times and under different circumstances. But constraints on adaptive solutions to ecological stresses must not be seen only in terms of internal or natural variables, but also in choices made by other groups in the larger system of interacting populations; information from the larger system conditions local choices. Thus, if aggressive expansion were undertaken by only a few groups, other competing populations would be restricted in their choices (e.g., internal population control would be maladaptive) and would be at a competitive disadvantage if they did not respond in kind--i.e., develop their own military capabilities. I suggest that warfare, at least on a small-scale basis, began in those zones which had the highest demographic potential and were colonized earliest, and that conflict was an important process in the formation of well-developed chiefdoms in these areas. Here, I take issue with Fried (1967) who, while admitting that warfare was endemic in chiefdoms and had valuable functions, seems to think that it had no evolutionary implications for the formation of ranked societies.

My own basic assumption is that warfare stimulates or intensifies political organization--an organized group is a more competitive one. But this is not to suggest that aggressive competition is, in the final analysis, adaptive in any direct sense. In fact, if we look at the entire system of lowland cultures, warfare is obviously not a viable long term solution to the stresses plaguing the Maya. It provided neither for an increase in overall resources or a marked decrease in overall population. It may even, in some areas, have intensified the very problems that it was intended to solve. For example, it was probably partially responsible for more rigid political structuring, perhaps with under-populated border zones and increases in local population size and density. Warfare in the Maya case must, then, be seen as a

short-term, local solution to problems of land shortages as conditicned by the limited information available to the local populations, and it seems likely that it was just those groups with demographic advantage and highest organization (i.e., those in the core areas) would find warfare a most attractive solution.

In the Maya situation, the real adaptive significance of warfare was, as we shall see, in terms of socio-political or economic changes only indirectly related to it, and which the Maya themselves had probably not foreseen. It was disjunctive rates of population growth and differential demographic potential which gave some lowland regions a decided edge in military capability and developmental precocity, and which kept the whole system from stabilizing at the level of constant, though inconclusive, petty struggles.

The earliest Maya centers, with public architecture and elaborate burials, begin to appear after about 400 B.C. There has been a distressing tendency to see them as an "artificial" (i.e., non-adaptive) component of Maya society. Even so recent a student as Webb (who by the way has championed Carneiro's arguments) has written:

> "Although the concentration of labor, and probably population, in these centers undoubtedly served valuable ideological and social ends ...no really vital survival needs were met; on the contrary, the centers were actually a poor fit for the environment. In other words this nucleation was caused not by any environmental advantage but rather the operation of belief systems and social prestige in conjunction with kin ties. It is probable that the leaders of major kin groups were able to gather followers about them who would in turn provide the labor needed for program of large scale religious and building activity precisely because of the pleasures which these activities themselves provided"(Webb, n.d., p.30).

I am in complete disagreement with Webb's contention. Why do most tribal agriculturalists get along perfectly well without such time and labor consuming "pleasurable" activities? In my view, the ceremonial facade of Maya culture was a sympton of adaptive organization, not an end in itself. Maya centers were not, except for a few, relatively late instances such as Classic Tikal, nucleated to any degree in terms of population, but were rather nuclei of organization--political, economic, and ritual. Most Maya scholars would probably agree that early centers were "capitals" of more-or-less well developed ranked societies. Such centers were, in fact, a good "fit" for an environment in which one of the common responses to stress, population nucleation, was either impossible or inefficient because the environment was most effectively exploited by dispersed populations residing in scattered hamlets or farmsteads. Note that the Maya are a conspicuous exception to Fried's assertion that "Most rank societies are strongly based on villages" (1967:174).

Webb's comments betray another commonly held notion about the hierarchically-organized leadership structure of Maya society--namely, that it possessed no "managerial" (i.e., adaptive) functions. There has always been difficulty in conceiving what sort of adaptive managerial roles the Maya leadership might have played. Unlike many other areas where early states developed there was no need for management of "hydraulic" resources as postulated by Wittefogel (1957). Rathje (1971) has maintained that trade in various sorts of non-local "necessities" was responsible for the emergence of Maya elites, but few archaeologists seem to agree that early pressures to import such dubious necessities as salt, obsidian, or igneous rock can account for

the organizational features of Maya political structure.

If my contentions about population growth, resource limitation, and consequent ecological stress are correct, then several adaptive functions commonly found in rank ranked societies would have been valuable in the Maya situation, including redistribution and adjudication of disputes. Of particular importance would have been leadership in warfare, a function which Sahlins (1958) repeatedly points out for chiefs in many highly competitive Polynesian societies.

During the late Pre-Classic and the Early Classic (ca. 100 B.C.-500 A.D.), the organizational syndrome of Maya society spread very rapidly, but many of these early centers did not exhibit the "classic" traits (e.g., carved monuments, hieroglyphic writing) which seem to have been disseminated widely only after the necessary institutional base had been formed (esp. after 600 A.D.). This pattern becomes explicable if the institutions were vital, while the forms of the facade were secondary. The remainder of this discussion is based upon the following assumptions:

1) That well-developed chiefdoms appeared in many parts of the Maya lowlands by 400 B.C.-250 A.D.;

2) That these chiefdoms were an organizational response to ecological stresses;

3) That warfare was one response to resource limitation;

4) That leadership in warfare was an important adaptive function, among others, of highly-ranked individuals or groups and that Maya centers were among other things foci of offensive and defensive military operations.

The skeptical reader may demand at this point some tangible proof of the existence of Pre-Classic warfare. My own work (Webster 1972, 1974a) and that of my colleagues at Becan, in southern Campeche, Mexico, has demonstrated that the enormous earthworks at this site are defensive structures and were constructed at the end of the Pre-Classic (ca. 100-150 A.D.) and continued in use throughout the Early Classic. I emphasize that the Becan fortifications are among the most impressive in Mesoamerica, comparing favorably with Post-Classic military architecture from the Mexican highlands and completely dwarfing such celebrated Post-Classic Maya defensive systems as those of Tulum and Mayapan. A much earlier example may be the earthworks, tentatively described as fortifications, found by the French at Los Naranjos in northern Honduras (Baudez and Becquelin, 1974). These earthworks have construction phases dating back to 800 B.C. Our knowledge about any aspects of Pre-Classic Maya society is extremely fragmentary, and I have no doubt that other evidence for early warfare remains to be found in the highlands. A related point is that archaeological evidence about warfare is theoretically proportionate to the intensity of prehistoric conflict. I have argued, however, (1974b) that the scale or intensity of conflict is not directly related to its political or evolutionary effects. That is to say small-scale warfare, in terms of sizes of forces involved, casualties, etc., may have had important systemic effects but may be poorly reflected in the archaeological record.

The same processes which, by late Pre-Classic times, made aggressive expansion an attractive adaptive choice, produced another internal condition of great evolutionary importance--incipient economic stratification. Fried has characterized this stage of incipient economic stratification, in the absence of fully-developed state

institutions, as "....one of the least stable models of organization which has ever existed" (1967:225). He goes on to note that it is so unstable; in fact, that it has never been observed by ethnographers. In societies with incipient economic stratification there are strong pressures which either promote rapid reversion to simpler egalitarian or ranked principles of organization or, on the other hand, stimulate the development of more effective institutions of internal political control (i.e., state type institutions). In only a few instances has the latter tendency been successful. Incipient economic stratification is easiest to envision in environments where there is marked limitation of the most productive capital resources (e.g., hydraulic resources), a point made by Flannery et al. (1967:453-54) for the Valley of Oaxaca in highland Mexico.

I suggest that economic stratification was possible and, indeed, probable in some productive regions of the Maya lowlands for several reasons. First, as noted previously, local areas possess great variability in soil conditions and consequent productivity and efficiency of cultivation. This fact, plus the probable advantages of cyclical bush-fallow swidden systems, would have predisposed initial agricultural colonists and their descendants to monopolize, as kin groups, these attractive areas as effectively as possible. Later increments of population, whether migrants or spin-offs from existing populations, would have to be content with less desirable land. R. M. Adams seems to imply the same process for southern Mesopotamia (1966, 1972). Even in the core areas of high overall potential, then, we would find some kin groups controlling inordinately desirable resources, either in terms of quality or quantity; given the association between prestige, wealth, and political authority on all levels of socio-political integration there would be a strong tendency for local groups to monopolize such resources as effectively as possible.

As population growth continued and resource limitation became more acute another factor probably intensified this incipient economic stratification--i.e., increasingly rigid principles of land tenure as the basic resource-land-dwindled in supply. Principles of ranking were developed or intensified, in part, to deal with this stressful situation, and in my opinion it was the kinship groups already possessed of economic advantages which "floated" to the highest positions in the ranking structures and dominated the emergent organizational centers. The implications of this process itself are fascinating (e.g., was there a changeover from territorially-based descent-line systems to damage type organization as population grew and redistribution became necessary?), but will not be pursued here.

Lack of effective internal leveling mechanisms made incipient economic stratification more stable than it would have been had these mechanisms existed. In fact, it is possible that various chiefly prerogatives, especially those involving ritual activities, could be used by highly ranked individuals as "inverse" leveling mechanisms to chastize upstart individuals of lower rank. Sahlins cites several examples of chiefs singling out personal enemies for human sacrifice (1958). Even so, the internal stresses generated by economic stratification would have been formidable and eventually destructive had it not been for a related process-intense competition between local, similarly-constituted, political groups--a process which was dominated by the very individuals already enjoying economic advantages.

Warfare acted to preserve and/or increase incipient economic stratification in two ways. First, on the systemic level, the concentration of effective military leadership in the hands of highly ranked kin groups conferred upon them (insofar as they were successful) great adaptive significance, thus dampening the internal stresses

which might otherwise have been generated by their privileged economic positions. Second, aggressive expansion of some chiefdoms in the high density zones allowed successful incorporation of new land. Such newly acquired land represented a resource external to the traditional structure of the society, in the sense that no local kin groups or individuals held prior claim to it. It, thus, represented a capital resource which could be advantageously manipulated by the highly-ranked managerial groups whose leadership in warfare was largely responsible for its acquisition in the first place.

Motivation for this manipulation is seen in the previously discussed interplay between wealth and political authority in ranked societies. If the chief's political authority is in part related to his redistributional role and to his ability to exhibit impressive status symbols, he will have a strong tendency to attempt to monopolize newly acquired resources. His success will be conditioned by public acquiescence that his efforts were essential in procurring these resources; the chief in a sense is being "rewarded" for his adaptive services as war leader, a reward that is painless because it takes nothing tangible from his traditional kinsmen. Warfare, in short, may put a new dimension of wealth, with all of its potential political ramifications, at the chief's disposal at the same time as he has acquired heightened prestige and public support from successful war leadership. Of course, the chief and his immediate household could directly utilize only a small amount of land for their subsistence support. One way to derive benefits from land over and above subsistence requirements would be to form client-patron relationships with economically disadvantaged people, exchanging land-use for labor and political support. Judicious and unequal redistribution of this wealth might also have been made to close kinsmen (military supporters?) with a number of consequences. Differential rewards of this sort would exaggerate whatever economic stratification was already present and more rigidly define an economic special interest group. They would also enhance the prestige of already highly ranked individuals (Sahlins, 1958:146, implies that this was occurring in Hawaii) creating a political special interest group with a stake in maintaining the political status quo (as long as meadership is effective). This is a marked departure from the internal divisiveness exhibited by many chiefdoms.

The ideal situation for the intensification of economic stratification would be the gradual conquest of small amount of land in marginal or boundary zones and subjugation of groups occupying them, rather than rapid, widespread conquest which opened up vast new areas and eliminated their populations. Such a process of gradual accumulation would have allowed only partial alleviation of the economic imbalances in the expanding society, and those still disadvantaged would have increasingly sought out patronage relationships with highly ranked individuals or groups. Militarily successful chiefs may also have been "bought off" by weaker neighbors, with obvious potential for self-serving monopolization of wealth.

The process of concentration of coercive force is somewhat more complex. To the extent that the economic position of a chief was improved through his success in warfare (i.e., at the expense of "foreigners"), so too did his prestige increase, and with it his public support upon which his ability to use force depended. But wealth accumulation could have enhanced the position of the chief in another, largely negative way; he could "buy off" through unequal redistribution of the wealth at his command those power factions most dangerous to him. In other words, his power would have increased to the extent that competing power factions were eliminated; of course, there may have been a positive effect to this process--potential opponents might have become enthusiastic backers. Another possibility for power accumulation would have

involved the creation of economic dependents using his new resources; such "clients" may have been recruited from among his own people or temporarily subordinated elements of defeated groups. In any case, the "external" wealth had the potential to greatly fortify the chief's political position, and his consequent access to coercive force, so long as the chief was militarily successful.

Another factor in the accretion of power probably involved the emergence of quasi-professional military units. I have argued elsewhere (1974b) that in the Maya situation such units, even though small, would have been very adaptive since they would not have been subject to the same seasonal or occupational limitations on military activity which affected the basic producer. Note that these limitations crippled the great Maya rebellions of the 19th century (Reed, 1964). Semi-professional soldiers of this sort (holcans) were present in Post-Classic Maya society. In Pre-Classic times such professionals, drawn either from the chief's close relatives or the ranks of the most able soldiers, would have comprised a hard corps of military organization, probably differentially rewarded for their services; as such, they constituted a special interest group apart from the traditional web of kinship relations. Insofar as these individuals had interests coinciding with those of the chief, they would effectively have supported the existing politico-economic structure and thus provided a legitimate concentration of force at the chief's disposal which could be turned inward as well as used in inter-group struggles.

If effective concentration of coercive force is taken to be a prime characteristic of the state (Krader, 1968) then the Classic Maya, and perhaps other "primary" states as well, should probably be viewed as incipient states only. This is especially true in the New World where per capita production of surpluses was small, and ruling groups were consequently limited in size and, in addition, enjoyed no technological differential in arnament (e.g., as found in Old World Bronze Age societies. Under these circumstances the "theocratic" flavor of several complex societies, and the Maya in particular, becomes explicable. Lacking an effective grasp of coercive force, emergent elite groups, already enjoying economic advantages in part through successful military expansion, eagerly sought to buttress their positions with religious sanctions. Stover suggested that a similar pattern of culturalogical prestige was an important integrative mechanism in holding together even so advanced an agrarian state as traditional China (1974). Thus, the theocratic quality of Maya society may have been functionally related to both the necessity of maintaining effective organizational centers in a highly competitive political environment and to the aspirations of a small, but dynamic elite class. If this suggestion is correct, there is no reason to maintain, as has frequently been done in the past, that theocratic states are unusually pacific.

Flannery, in discussing the evolution of the state, emphasized the concepts of "system-serving" and "self-serving" functions of components of dynamic cultural systems (1972). The crucial point to be made with regard to the preceeding discussion is that under conditions of chronic warfare, the activities of the hierarchical political structure can be simultaneously system-serving and self-serving. Effective military leadership became an adaptive necessity in some parts of the Maya lowlands. But precisely because of this system-serving dimension, the chief possessed the potential for self-serving accretions of political and economic influence.

The processes of state formation in the Maya lowlands capitalized, paradoxically, on the weaknesses of the competing political units, which prevented any sort of widespread political integration. The internal stresses caused by the emergent state-type institutions were counteracted to a high degree of external competition which

made those very institutions necessary or bearable. During Early-Late Classic times these institutions grew and became permanent fixtures in Maya society, but apparently never reached the same peak of development as in the Mexican highlands.

Warfare must not be seen as any sort of "single cause" in the evolution of the Maya states (or any other, for that matter). Its major evolutionary impact was indirect. Although it facilitated, along with other factors, the emergence and survival of a privileged managerial class at some centers, it was in the long run, an ineffective long-term solution to the problems plaguing the larger lowland system. Insofar as warfare encouraged, at least locally, increased territorial definition and continued population growth it exacerbated these problems. At least as early as the beginnings of the Late Classic (ca. 600 A.D.) the lowland system began to involute in the sense that warfare was no longer a viable solution for land shortages (this does not mean that military activity ceased). But the existence of an effective leadership class made possible a number of new adaptive solutions, especially the adoption of various sorts of agricultural intensification. These in turn provided additional managerial roles which further strengthened the ruling hierarchy. Widespread trade and commerce becomes conspicuous during the Late Classic, reflecting increased control of capital by local ruling groups and providing still another managerial function.

Of course, the production of basic capital resources (improved land) and extensive commerce themselves provided additional incentives for warfare, and the Late Classic was probably characterized by well-developed militarism. I should stress that chronic competition is not incompatible with the obvious interconnections between Maya centers which account for the relative homogeniety of Classic culture. Duran (1964) repeatedly comments on the elite-level connections, even between overtly antagonistic states, which characterized the Valley of Mexico before the establishment of Aztec hegemony.

Late Classic Maya politics should be regarded as only incipiently developed states (and undoubtedly there was a great deal of variation in complexity) which still retained many of the organizational features of advanced chiefdoms (e.g., small size, strong emphasis on kin ties and ancestor worship). State-type institutions existed and were responsible for the impressive facade of Classic Maya civilization, but that these institutions were extremely fragile is demonstrated by the dramatic and sudden, if poorly understood, collapse of Maya society in the 9th-10th centuries A.D. Warfare was undoubtedly one factor in this collapse; the same process which played an important role in the rise of Maya civilization also contributed to its ultimate dissolution.

Conclusion

The model of Maya warfare and cultural evolution outlined above emphasizes many of the components stressed by Carneiro in his study of the origin of the state (1970). These include population growth and pressure, resource limitation, social circumscription, and conflict. More important, however, are the ways in which it differs from Carneiro's scheme. First, strongly delimited environmental circumscription was not a factor. In the Maya lowlands regional variation in productivity and demography produced a very different ecological pattern, with zones of high productivity and population interspersed with marginal zones. This pattern seems more consistent with conditions under which a number of early state arose.

Another major difference is that the development of state-type institutions in

Maya society is seen as largely as internal process facilitated by warfare, whereas for Carneiro the dynamic, incorporative aspects of war are all important--especially territorial expansion and effective subjugation of defeated enemies. In my opinion, the role of warfare is less dramatic but no less fundamental. Warfare is not the active driving force behind the evolution of Maya society, but rather the supportive climate which initially ensures the survival and intensification of political and economic processes, inherent in many ranked societies, which under other circumstances would generate self-destructive stresses. To use a simile, warfare procuded a kind of "hothouse" effect which released the evolutionary potential of some Maya chiefdoms. This effect had several dimensions.

On one level, constant competition created an essential managerial role for the Maya leadership (and I stress that there were other such roles as well). Successful war leadership became an adaptive necessity and much of the internal factionalism characteristic of chiefdoms was suppressed to preserve effective political and economic leadership. People were willing to incur an unusually high social "cost" to ensure internal stability in the face of external threat. Under these circumstances, the Maya leadership enjoyed much greater scope for self-serving activity in accumulation of power and wealth.

Another dimension involves more positive effects of warfare. To the extent that limited expansion incorporated limited amounts of new territory external to the existing society, war leaders acquired a new resource of great value. This resource could be manipulated in the traditional manner (redistribution) to further reduce factionalism and attract supporters, thus augmenting power concentration. More importantly, since it was an external resource, it could be monopolized, again through judicious redistribution, by limiting segments of the society; for example, by the chief's close kinsmen who already enjoyed incipient economic advantages. Because only small amounts of new land were acquired through conquest, economic inequities persisted, and those controlling the new resources could form client-patron relationships (perhaps, but not necessarily, involving defeated groups). Warfare may also have stimulated the appearance of semi-professional soldiers who, if differentially rewarded, formed a source of potential coercive force at the disposal of the chief.

What emerges from this context are a series of economic and political special interest groups potentially independent of the traditional web of kinship relations, setting the stage for a society "....organized on a basic superior to kinship" (Fried, 1970:229)--i.e., the state. Another major difference between my model and Carneiro's is that he emphasizes concentration of power while I emphasize more highly concentration of wealth, from which power is secondarily derived. In terms of socio-political evolution power is often seen as the internal cement which binds up the fragile but all important economic differentials upon which social stratification is based. For the embryonic Maya statelets, power performs the same function, but most of this power is exerted in the form of external threat, providing a solid external matrix encapsulating and preserving evolutionary tendencies toward social stratification already present in ranked societies. Large scale, successful, incorporative warfare, which is difficult to envision for most ranked societies and which in any case would create, through overextension, fatal internal weaknesses, is not of primary evolutionary significance on this level. Precisely because such expansion is structurally impossible, the highly fertile competitive political environment is maintained. But through warfare is partly responsible for generating incipient state-type institutions and largely responsible for preserving them long enough so that they take on a relatively permanent guise (i.e., become "traditional"), their ultimate development

depends upon more far reaching potential—i.e., the acquisition of additional essential managerial functions by rising elites (and the prerogatives which go with them) which have nothing directly to do with warfare. I have suggested that for the Classic Maya, these functions included intensification of agriculture and commerce. It is of great interest to note that the forms of intensive agriculture and commercial activity which seem to typlify the Maya lowlands in Classic times did not require nearly so high a component of wide-ranging political control as they did, say, in Central Mexico or Mesopotamia, and it was perhaps here that the Maya system ultimately failed. Unable to adequately bolster their positions through effective management of economic factors, or to acquire a completely effective monopoly of force, the Maya elite exaggerated their religious strategy which proved destructive in the long run.

The question to what extent the preceeding model can be generally applied is an open one. I certainly believe that the processes of state development varied enormously, and I would hesitate to apply this model to the appearance of early states in the Central Mexican highlands. I think it might properly apply, however, to early state formation in southern Mesopotamia between ca. 3500-2500 B.C., the earliest known example of primary state formation and one which occurred under very difficult ecological conditions.

The following conditions are necessary for the application of the preceeding model of warfare and cultural evolution:

1) The environmental context must be one of closely juxtaposed zones of markedly different productive and demographic potential. The total area must be quite large, allowing the co-existence of many politically autonomous local societies on varying levels of complexity, but there should be no marked natural boundaries which impede interaction of these local groups or fissioning of populations into marginal zones.

2) There must be sufficient agricultural potential so that surpluses may be generated even when extensive agricultural techniques are used, but the possibility of agricultural intensification must also be present.

3) Even within regions of grossly similar overall productive potential there must be considerable local variability in basic productive resources, especially land; this condition encourages economic redistribution and incipient economic stratification.

4) Rapid population growth must be present, well in excess of the Neolithic "average" of 0.1% as calculated by Hassan (1973), and fissioning of excess population into vacant land must be an initial viable solution to population growth, rather than internal controls or intensification. This pattern is especially likely to occur in frontier zones which are colonized by people already possessed of effective agricultural economies.

Given these conditions, which seem to apply to a number of areas where primary states emerged, warfare could have played an important and creative role in the evolution of those institutions fundamental to the state.

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