LATE CLASSIC MAYA POLITICAL STRUCTURE, POLITY SIZE, AND WARFARE ARENAS

Arlen F. CHASE and Diane Z. CHASE
Department of Sociology and Anthropology
University of Central Florida

Studies of the ancient Maya have moved forward at an exceedingly rapid rate. New sites have been discovered and long-term excavations in a series of sites and regions have provided a substantial data base for interpreting ancient Maya civilization. New hieroglyphic texts have been found and greater numbers of texts can be read. These data have amplified our understanding of the relationships among subsistence systems, economy, and settlement to such an extent that ancient Maya social and political organization can no longer be viewed as a simple dichotomous priest-peasant (elite-commoner) model. Likewise, monumental Maya architecture is no longer viewed as being indicative of an unoccupied ceremonial center, but rather is seen as the locus of substantial economic and political activity.

In spite of these advances, substantial discussion still exists concerning the size of Maya polities, whether these polities were centralized or uncentralized, and over the kinds of secular interactions that existed among them. This is especially evident in studies of aggression among Maya political units. The Maya are no longer considered a peaceful people; however, among some modern Maya scholars, the idea still exists that the Maya did not practice real war, that there was little destruction associated with military activity, and that there were no spoils of economic consequence. Instead, the Maya elite are portrayed as engaging predominantly in raids or ritual battles (Freidel 1986; Schele and Mathews 1991). We believe that such a view can no longer be supported by archaeological and epigraphic data (Chase and Chase 1989, n.d.) and, as others have also noted (Culbert 1991:144; Webster 1993:418), is inconsistent with general anthropological theory.

Aggression and political organization are tightly bound. Service (1971) correlated different kinds of aggressive activities with political units of distinctive sizes and densities. Haas (1990:177) has commented that tribal warfare was «relatively simple,» consisting «primarily of small-scale sporadic raiding occurring with limited physical contact» which was oriented towards «wife-stealing, limited

acquisition, and general destruction of an enemy's resources.» This level of warfare is contrasted by Haas (1990:177) «to 'advanced' forms of warfare found in chiefdoms, states, and other complex societies.» Reyna (1994:31) sees major differences associated with violence in «uncentralized» as opposed to «centralized» polities and argues that «the notion of war should be restricted to the violent practices of centralized polities.» Stated in another form, societies exceeding a certain population threshold practiced warfare for territorial gain, tribute, and spoils. «It is the growth of population and the ensuring shortage of arable land that causes war to expand and to become redirected from the avenging of personal wrongs to the acquisition of land and the subjugation of people» (Carneiro 1994:12; see also Reyna's [1992:136-153] model of predatory accumulation).

Webster (1993:440) has suggested that the debate on Maya warfare is based in divergences in anthropological, archaeological, and epigraphic interpretation. He (1993:434, 437) noted that «a sharp conceptual dichotomy is drawn between war as either territorial or as related to prestige and ritual,» arguing that the epigraphic interpretation of Maya warfare «so effectively ritualized conflict that war was virtually eliminated as a form of competition, but paradoxically glorified as a kind of elite drama.» However, perceptions of warfare are not based solely on epigraphic interpretations, but also are tightly bound to reconstructions of polity size and political organization — determinations that have distinct archaeological components. If Maya polities were small and neither densely inhabited nor structurally complex —a view Webster (1992:154) himself espouses for Copan, Honduras— then warfare of lesser consequence, consistent with the epigraphic interpretations (cf. Schele and Mathews 1991:245), could have taken place. If, however, Late Classic Maya polities were quite large and densely inhabited (cf. Chase and Chase 1996b:804-805), then the opposite is presumably true —that warfare affected all of society and the larger political system in some way.

What were polity sizes and population densities in the Maya lowlands? These factors are intricately related to considerations of Maya warfare.

POLITY SIZE IN THE MAYA LOWLANDS: MODELS

Three different models have been advanced for the size of Maya polities; all are premised on different — although in some ways complimentary — data bases. Each places varying emphasis on epigraphy, ethnohistory, and archaeology.

THE CITY-STATE MODEL: A FOREST OF MAYA CAPITALS

The first model for Maya polity size is currently based on emblem glyphs (Mathews 1985) although its initial version predates current glyphic interpretation

(Thompson 1954:81). It has certain analogies to ancient Greek city-states (Marcus 1989). In this model each emblem site is viewed as being independent and as more-or-less of equal status to every other emblem site (Mathews 1991; Schele and Mathews 1991:251). Polity size for Classic states is estimated at between 1,000 and 3,000 km^2 maximum. Mathews (1991:29) postulated that «. . . sixty or seventy autonomous 'city-states,' most with an area of about 2,500 km^2» existed at any one time. Density of settlement or numbers of people per polity has not been addressed in this model.

The Super-State Model: The Few, the Proud, the Overlords

The second model of Maya polity size is also epigraphically based, although some might suggest a similarity to older models characterizing the Maya as having been organized into «Old» and «New Empire»s (Morley 1946). Martin and Grube (1995) have argued that a hierarchy existed in Maya emblem sites, with two centers being supreme capital cities, Tikal and Calakmul. All other sites are viewed as having been in alliance, subjugation, confederation, or some sort of hierarchical relationship with one of these two competing centers. This dual model of lowland Maya political capitals would be seen by some as replacing a quadripartite model offered earlier by Marcus (1973, 1976), which was also based on epigraphic data. Thus, under this second super-state model Classic Maya polities took the form of two giant, amoeba-like organizations «a complex environment of overlords and vassals, kinship ties and obligations, where the strong come to dominate the weak» (Simon and Grube 1995:46). As with the epigraphically-based city-state model, density issues and population numbers are not addressed.

The Regional-State Model: Archaeology and Warfare Arenas

The third model of Maya polity size has arisen largely in response to the two epigraphic models and was initially based predominantly on archaeological data (Adams 1986; Adams and Jones 1981; Turner *et al.* 1981). Its current manifestation is conjunctively based on a concordance of ethnohistoric, archaeological, and epigraphic information (Culbert 1991; Marcus 1993:157-170). As this model is based on diverse, and sometime conflicting, bodies of data, the regional-state model has not been as clearly defined as the preceding two models. Under the regional-state model, maximum Maya polity size has been seen as varying from 2,000 km^2 (Culbert 1991) to over 30,000 km^2 (Adams 1986). Estimates of how many «regional» Maya polities existed have ranged from many to few; Adams (1986:437) argued for the existence of eight sizeable «regional states» in the Classic Maya lowlands. In an attempt to define the regional-state model better, we propose conjoining a consideration of military marching distance, archaeological

data on size and scale of sites, and epigraphic data detailing relationships between sites. We believe that this approach better helps to identify Late Classic regional states as well as examine their dynamic interactions. In this addition to the regional state model, we view the optimum Maya polity size as having been limited by a military marching distance of 60 km (following arguments on logistics and marching made by Hassig [1985, 1988, 1992a, 1992b] for Mesoamerican warfare), meaning that the physical territory directly controlled by a single Maya polity could approach, but was likely not to be much larger than, 11,333 km^2. These data imply that up to two dozen polities, far less than argued for in the city-state model and significantly more than are postulated in the super-state model, existed independently in the Maya lowlands at any one time (Fig. 1). While hegemony is possible under this version of the regional-state model, it was likely much more limited and directed than is implied in the super-state model.

POLITY SIZE IN THE MAYA LOWLANDS: ETHNOHISTORY AND ARCHAEOLOGY

Ethnohistoric data exist for Late Postclassic Maya political organization throughout the Yucatan peninsula (Roys 1957; Marcus 1993). These data can be used to show territorial divisions that averaged about 12,000 km^2 in size. These same data also evince a major concern by the Postclassic Maya with the boundaries of these polities (Andrews and Robles 1985; Chase and Chase 1992:310). Figures available from limited urban settings suggest relatively high population densities (D. Chase 1990:206). These data constitute a useful comparison for earlier polities that existed in the Maya lowlands.

Archaeological data also exist that are relevant to Classic Maya polity size. These data largely come from settlement pattern work. It is in looking at such data that the true crux of the definitional problem emerges (Chase and Chase 1990), for survey and settlement work is extremely time-consuming and difficult in the lowland Maya area. Terrain and vegetation dictate that the total area covered by on-the-ground survey and testing in the lowlands is small. However, Rice and Culbert (1990) have been able to present projected density figures for a number of ancient population centers and surrounding regions. These figures suggest that the lowland Maya had «urban» densities of over 600 people/km^2 and «rural» densities approaching 200 people/km^2 in the vicinity of major Classic Period centers.

Population reconstructions for Classic Period Tikal, Guatemala suggest that approximately 62,000 people lived in a 90 km^2 area and circa 92,000 people in a 314 km^2 area (Culbert *et al.* 1990:116-117). These figures are based on a central 9 km^2 area that contained 2,151 structures (Becker 1982:124-129), an additional central 7 km^2 area that contained 625 structures (Carr and Hazard 1961:11), later corrected to 781 structures (Culbert *et al.* 1990:116), and cardinally-oriented

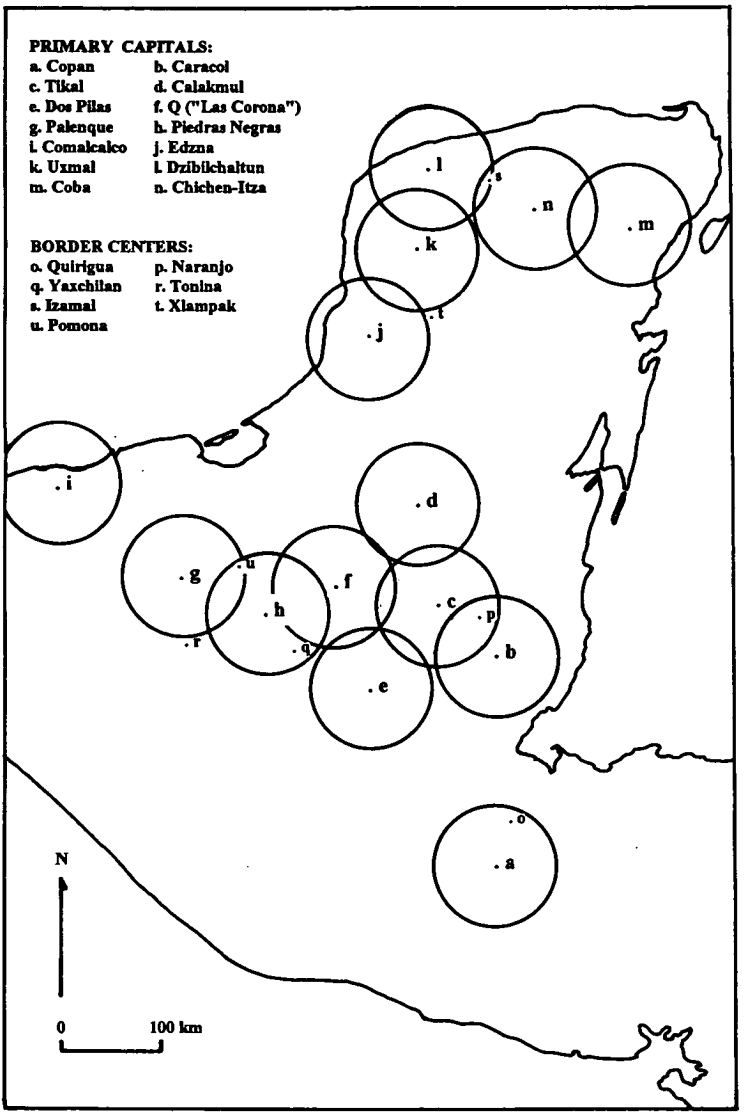

FIG. 1.—Map of the Maya lowlands showing maximal 60 km marching distances from 14 proposed Late Classic primary capitals; also shown are the locations of 7 border centers. Please note that these 60 km circles do *not* represent the shape of these polities; they only represent the maximal marching area for territorial control of each of these capitals; the shape of each polity was variable and dependent on geographic, historic, and social factors. The 60 km marching radius circles are useful in interpreting both intra-polity relationships of dominance (given a less than 60 km distance from a primary capital) and inter-polity conflict (where overlaps in the 60 km circles occur between primary capitals).

survey strips that went into the surrounding region and contained an average of 112 structures/km^2. The Tikal polity is estimated to have controlled and integrated at least 500,000 people at its height and is estimated to have been over 3,000 km^2 in territorial extent (Culbert 1991:137). Interestingly, the Tikal data have been varyingly interpreted to support all three of the polity / territorial models (see below).

Folan and his colleagues (1995:310-311) provide a picture similar to Tikal for the Maya city of Calakmul, Mexico. Based on 30 km^2 of surveyed area, Calakmul is believed to have had over 50,000 people distributed within 70 km^2. The polity administered by Calakmul is estimated to have controlled 8,000 km^2 of territory. The site's settlement density was higher than that of «downtown» Tikal (Fletcher and Gann 1992). Some 6,250 structures were mapped in Calakmul's central 30 km^2, resulting in an uncorrected settlement density of 208 structures/km^2; this compares to an estimated 2,932 structures for Tikal's central 16 km^2, corresponding to an uncorrected settlement density of 183 structures/km^2 at Tikal. Seven causeways are presently noted for Calakmul: the two within the site itself run for only 70 m and 450 m; two other causeways have been visually sighted and run «*ca.* 8 km to the northeast» and «24 km to the southeast;» three others have been defined through remote sensing and run «at least 16 km,» possibly «38.25 km,» and «at least 5.1 km» (Folan et al. 1995:313; Folan, Marcus, and Miller 1995:280-281). The causeway distribution at Calakmul can be seen as supportative of Marcus' (1973) original 34 km radius for Calakmul's secondary centers, implying direct territorial control over an area of minimally 3,633 km^2: «the extent of the road system implies that Calakmul's 'core' political territory extended well beyond the 34-km radius of its secondary centers» and «hieroglyphic texts indicate that Calakmul had some control over allies even farther away» (Folan, Marcus, and Miller 1995:281).

Other large Maya polities existed. During the Late Classic, Coba in the northern lowlands integrated at least 50,000 people in its urban center (Folan *et al.* 1983) and the Coba state —as indicated by its long-distance causeways— stretched its tendrils 100 km to Yaxuna, indicative of a potential polity size of over 20,000 km^2. The earlier Preclassic causeway system of Mirador, Guatemala would indicate that well over 5,000 km^2 of territory were controlled by that site.

Much information on polity size and settlement density can also be derived from Caracol, Belize [1]. Intra-site causeways indicate that Caracol, the city, ex-

[1] The research undertaken by the Caracol Archaeological Project has been assisted by many individuals, institutions, and foundations during its existence. The University of Central Florida and the Government of Belize have been particularly instrumental in ensuring the success of the Project. Over the years major funding for the project has been obtained from numerous sources: private donations to the University of Central Florida (annually, but especially during 1985-1987); the Harry Frank Guggenheim Foundation (1988, 1989); U.S.A.I.D. and the Government of Belize (1989-1992); the Government of Belize (1993); the National Science Foundation (1988, 1994-1996, 1997-1998; Grants BNS-8619996, SBR-9311773, SBR-9708637); the Dart Foundation (1996); and, the Foundation for the Advancement of Mesoamerican Studies, Inc. (1997; Grant No. 96014).

tended out to a distance of 10 km (Chase and Chase 1996b:figs. 1, 2). Some 4,404 structures were mapped within Caracol's central 16 km^2; this translates into an uncorrected settlement density of 275 structures/km^2 for the site. Transects to the north and south show no settlement drop— off at distances of 7 linear kilometers from the epicenter. Intensive mapping of square kilometer blocks reveals a density of approximately 900 people/km^2 at a distance of 5 to 6 km from the epicenter (Chase and Chase 1996b:fig. 4). Some 150,000 people may be postulated to have occupied the 177 km^2 that formed the ancient city of Caracol (Chase and Chase 1996b:805). Landsat identified inter-site causeways run 24 km to Caracol's southeast and northwest, presumably 42 km, to Naranjo, Guatemala, a site known epigraphically to be under Caracol control from A.D. 626 through A.D. 680. Based solely on causeway distance (and a radius of 42 km), Caracol's polity size can be approximated as having been minimally 5,544 km^2. However, lessons from warfare studies significantly increase this estimate (see below) and indicate that Caracol's polity size extended well beyond 12,000 km^2 at its height. Thus, Caracol's settlement expansiveness dwarfs that of Tikal's and is indicative of how heavily occupied the Maya lowlands were in the Late Classic Period. Caracol does not fit either the city-state or the super-state models of Maya political organization, but instead lends support to the regional-state model. Its Late Classic population density and large polity size indicate both that not all Southern lowland Maya polities were equal and that there were major Maya lowland political units besides Calakmul and Tikal.

LESSONS FROM WARFARE STUDIES: THE 60 KILOMETER RULE

Accepting that the Classic Maya engaged in real warfare means that some aspects of general military theory may be useful in attempting to view Classic Maya polity size and may be evaluated using Maya epigraphy. Hassig (1988:64, 1992a:23, 1992b:101, note 3) noted that because of limitations in carrying food (0.95 kg of corn per person per day with 1 porter for every 2 warriors), the Aztec army could «travel about eight days, yielding a combat radius of three days, given one day of combat and the following day for rest.» Assuming that Maya armies had similar logistics, this would mean that a single major capital, without resupply, could most effectively monitor a territory that had a marching or «combat radius of three days or 36 miles» (Hassig 1992b:85). Hassig (1992a:21, 53) points out that «given the scarcity of formal roads, 2.4 kilometers per hour more closely approximates the march rate of Mesoamerican armies,» which implies a total marching distance of «just over nineteen kilometers per eight-hour day;» an 8,000 man army two-abreast «stretched out for over 12,000 meters on the trail, expanding an eight-hour march to thirteen for the entire army» (Hassig 1992a:144). Therefore, it may be estimated that areas of direct territorial dominion based on

the maximal distance of march for warfare approximated a radius of 36 miles or 60 km. This 60 km figure is intriguing as several bodies of evidence —both archaeological and epigraphic— can be brought to bear in the Maya lowlands to suggest that it has some reality.

Houston (1993:137) concluded that there was a «consistent distance between autonomous centers» in the Maya lowlands of about 60 kilometers, as represented by the emblem glyphs: «66.13 kilometers at 9.3.0.0.0 ...; 59.72 kilometers at 9.8.0.0.0 ...; 57.5 kilometers at 9.13.0.0.0 ...; and 52.18 at 9.18.0.0.0.» If one looks at the epigraphic history of Maya war events in the Southern lowlands, however, emblem centers can be sorted out either as *primary capitals* or as *border centers*. Such a subdivision explicitly supports the idea of varying relationships (i.e. «emblem» does not equal «polity») among emblem sites, as discussed by Culbert (1991:140-144).

We suggest that the major centers, or primary capitals, were all located at distances of greater than 60 km from each other and that the ideal distance between Maya primary capitals would be 120 km —the combined marching distance from each capital. Border centers ideally would develop at distances of less than 60 km from primary capitals and more realistically at distances averaging 30 km from the focal city (cf. Marcus 1993:154). In fact, spacing and marching distance may explain the functions and histories of certain sites. In territories contested by two primary capitals, some border centers may have had varied histories, functioning at some times as resupply points for the armies of one or the other primary capitals and at other times as capitals for smaller independent polities. Thus, a consideration of Maya warfare and spatial proxemics helps to shed substantial light on the political landscape of the Late Classic Maya world (cf. Table 1).

Warfare Statements in Maya Epigraphy

Late Classic warfare statements provide a further idea of polity size and relationships among Maya sites. Different hieroglyphic notations for warfare are found in the texts of the Classic Maya: «capture,» «destruction,» «axe-event,» and «star- war» (Fig. 2); other kinds of warfare may also be recorded (Chase and Chase n.d.). Presumably there is a hierarchical or progressive ordering of these warfare events, ranging from «capture» (*chuc'ah*) — probably representative of individual prowess —to «star-war»— probably indicative of a major military undertaking. Somewhere between these two limits are the destruction of specific targets and individuals through *hubi* («destruction») and *ch'ak* («axe» or «decapitation») events.

The various warfare actions recorded by the Maya involved different kinds of tactics, strategies, and individuals — presumably based to some extent on geographic distance. The significance of each of the known epigraphic terms, as

TABLE 1

Known Warfare Events

Date	*Distance-Kilometers*	*Victor*	*Defeated*	*Nature of Warfare*
9.6.2.1.11	76	Tikal	Caracol	axe-event
9.6.8.4.2	76	Caracol	Tikal	star-war
9.6.10.14.15	25	Yaxchilan	Lacanha	capture
9.9.13.4.4	42	Caracol	Naranjo	hubi
9.9.14.3.5	42	Caracol	Naranjo	hubi
9.9.18.16.3	42	Caracol	Naranjo	star-war
9.10.3.2.12	42	Caracol	Naranjo	star-war
9.11.1.16.3	153	Palenque	Site Q	axe-event
9.11.6.16.11	128	Palenque	Yaxchilan	?
9.11.11.9.17	51	Dos Pilas	Machaquila	capture
9.11.17.18.19	111	Dos Pilas	Tikal	star-war
9.12.0.8.3	111	Tikal	Dos Pilas	star-war
9.12.5.10.1	105	Site Q	Tikal	star-war
9.12.7.14.1	42	Naranjo	Caracol	star-war
9.13.1.4.19	30	Naranjo	Ucanal	hubi
9.13.2.16.0	40	Naranjo	Tikal	hubi
9.13.3.7.18	105	Tikal	Site Q	hubi
9.13.13.7.2	111	Dos Pilas	Tikal	star-war
9.13.19.13.3	65	Tonina	Palenque	star-war
9.14.17.15.11	25	Yaxchilan	Lacanha	capture
9.15.4.6.4	24	Dos Pilas	Seibal	star-war
9.15.6.14.6	47	Quirigua	Copan	axe-event
pre-9.15.9.17.17	54	Aguateca	Cancuen	?
pre-9.15.10.0.0	78	Machaquila	Motul S. Jose	?
9.15.12.2.2	30	Tikal	Yaxha	star-war
9.15.12.11.13	36	Tikal	Motul S. Jose	star-war
ca. 9.16.0.0.0	87	Dos Pilas	Yaxchilan	?
ca. 9.17.0.0.0	45	Aguateca	El Chorro	?
9.17.3.5.19	54	La Mar	Pomona	?
9.17.16.14.19	47	Piedras Negras	Pomona	capture
9.18.3.9.12	47	Piedras Negras	Pomona	?
pre-9.18.10.0.0	32	Caracol	Ucanal	capture ?
post-9.19.9.9.15	76	Caracol	Tikal	axe-event

The Table 1 data are derived from:

Grube (1994), Houston (1993), Houston and Mathews (1985), Jones and Satterthwaite (1982), Nahm (1994), Schele (1982, 1991), Schele and Freidel (1990), and Schele and Mathews (1991).

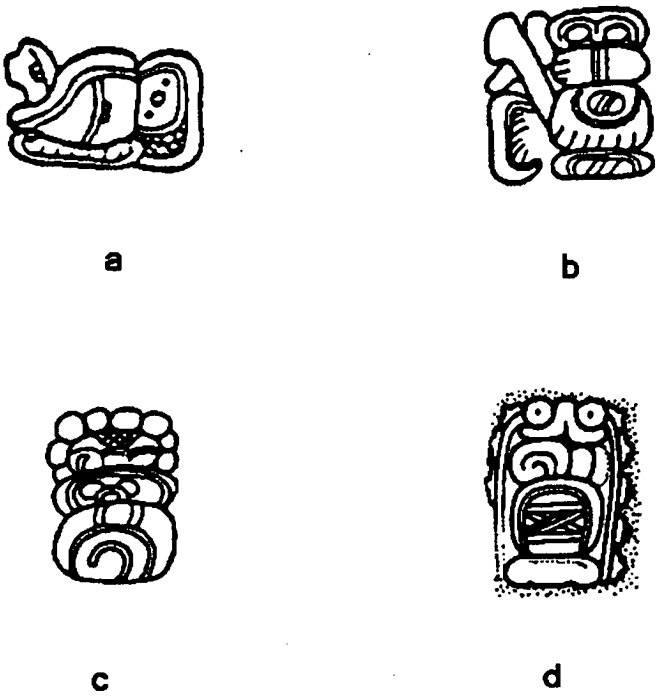

FIG. 2.—Epigraphic examples of Maya verbs referring to warfare. a) *chuc'ah* or capture (Proskouriakoff 1960: 470); b) *ch'ak* , «decapitation» (Schele and Freidel 1990:456, note 17), or *batcaba* or *batelba*, «to wield an axe» or «to do battle» (Marcus 1992:420); c) *hubi* or destruction (Grube 1994:103); d) star-war (Schele 1982:99).

well as the validity of individual statements of aggression, is perhaps best understood by considering them relative to known archaeological data. Axe events (*cha'k* — Schele and Freidel 1990:456; *batcaba* or *batelba* — Marcus 1992:420) could have benefits for the site carrying out this kind of warfare, but little impact on the site that received the action (Marcus 1992:418-420). In the case of Quirigua and Copan, an axe event against the Copan ruler 18-Jog gave Quirigua its independence and great prosperity (Sharer 1978), but appears to have had little direct impact — other than in pride — on Copan (Fash and Stuart 1991:162-163). Axe events are also recorded between Tikal and Caracol and between Palenque and Site Q [2]. Like the Copan and Quirigua example, the Caracol and Tikal axe

[2] There has been much debate over the location of Site Q, an unknown Maya center from which many looted hieroglyphic texts have been recovered (Mathews 1979). Many epigraphers (Marcus 1973, 1976; Martin and Grube 1995; Schele and Freidel 1990: 456-457) have accepted Calakmul, Mexico, as the site with the «Snakehead Emblem» or Site Q, primarily because of its size and the large number of stelae the-

events also appear to have little archaeologically determined impact. Given the 153 km distance between Palenque and Site Q, it is suspected that this kind of war action involved a limited military unit intent on a set goal.

Destruction (*hubi*) events also presumably involved specific objectives with limited military involvement. From a military standpoint, these may have been more symbolic than substantive, involving the desecration of important state icons or buildings. Perhaps the most impressive *hubi* event resulted in the destruction of «the flint and shield» of Jaguar-Paw of Site Q in A.D. 695 and Tikal's Late Classic ascendance after this event.

The capture (*chuc-ah*) of specific «individuals» was also frequently noted both in Maya texts and iconography. The prisoners portrayed in texts and iconography probably represented a combination of both real people and symbolic statements referring to larger political units, such as towns (cf. Marcus 1992:412). While statements of capture may sometimes have been representative of specific military prowess, being incorporated into hieroglyphic titles as «counts of captives» (Stuart 1985), many of these capture events likely resulted in the subjugation of the associated site, especially if the site's leader were the captured party. Thus, superordinate-subordinate relationships were established —at least temporarily— between Yaxchilan and Lancanha in A.D. 564 and again in A.D. 729, between Dos Pilas and Machaquila in A.D. 664, between Piedras Negras and Pomona in A.D. 793, and between Caracol and Ucanal by A.D. 800.

That star-wars involved a «territorial dimension» can be seen epigraphically «by the occasional substitution of the *caban*, «earth» glyph for a specific polity Emblem Glyph in the 'shell- star' compounds» (Hammond 1991:277; also, Mathews 1985:32) and by the archaeological prosperity and geographic expansion that followed the record of such events (Chase and Chase 1989, n.d.); however, star-wars also may have been undertaken for hegemonic control (cf. Hassig 1988:58, 1992b:84-85). Star-wars were used to assert independence, as in the case

---

re. El Peru was also once suggested as a potential Site Q candidate (Graham 1988; Miller 1974; Schele and Mathews 1991: 250), but glyphic relationships on this site's monuments rule it out as a possibility (Schele and Freidel 1990: 457). Recently, the possibility has been raised that the heavily looted site of La Corona on the Río San Pedro Martir in northwestern Guatemala could be Site Q (Graham 1997; Schuster 1997). The site contains at least two direct references to one of the individuals noted on the Site Q looted panels (Schuster 1997: 44). La Corona is also embedded within a matrix of causeways (Graham 1997:46), suggesting —at least to us— that, if it is not Site Q, it is likely linked directly to Site Q. The potential association of codex-style pottery (which often contains reference to Site Q) with this part of the northern Peten, in combination with its general absence at Calakmul (Schuster 1997: 44), also is suggestive of a Site Q location. For the purposes of this paper, La Corona and its vicinity is assumed to be Site Q; this geographic location is consistent both with Site Q's known epigraphic relationships and with the 60 km warfare distance (cf. Fig. 1). The absolute determination of Site Q's location will clearly take more archaeological and epigraphic research, but alternative locations for Site Q do not dramatically change the model presented here; if Site Q were Calakmul, the warfare distance to Palenque would become 246 km and the distance to Tikal would be 100 km (cf. Table 1); these distances would raise the overall average warfare distance to 65.52 km between sites.

of Caracol from Tikal in A.D. 562 and Naranjo from Caracol in A.D. 680. Conversely, star- wars were also used to forcefully stress domination of one site by another, as in the cases of Caracol and Naranjo in A.D. 631, and again in A.D. 631, and Dos Pilas and Seibal in A.D. 736. Tikal used star-wars to reassert its control in the Late Classic era. Yet, in one case, the Tonina-Palenque star-war is not viewed as having had much of an effect on Palenque (Schele and Freidel 1990:469); it may be that Tonina used this star-war event against the Palenque ruler Kan-Xul to assert its independence from that site and establish itself formally as a major capital, given that 65 km separate the two centers. Star-wars also appear to have been used as a form of political rhetoric at Dos Pilas to explain relationships between Dos Pilas, Tikal, and Site Q (Houston 1993:108).

Primary Capitals and Border Centers in the Eastern Lowlands

The Maya eastern lowlands provides a detailed example of inter-linked warfare histories. The linear distance between Caracol and Tikal —both primary capitals in the Late Classic era— is 76 kilometers, exceeding the 60 kilometer marching distance (as would be expected). Although Caracol's early kings were named as vassals or allies of Tikal, territorial incorporation would have been very difficult given the marching distance. Similarly, while Caracol could potentially defeat Tikal in war in A.D. 562, it too was not positioned for territorial incorporation without adopting a new strategy. An intermediate jump-off point was likely necessary for domination. Naranjo is 42 kilometers away from Caracol and well within direct marching distance. Landsat imagery suggests that there may have been a direct causeway link between Caracol and Naranjo (Chase and Chase 1996a:68). Hieroglyphic texts demonstrate that Naranjo was directly incorporated into the Caracol polity by A.D. 631 and only gained some sort of independence in A.D. 680. Thus, control of Naranjo by Caracol put Tikal within direct military striking distance. Given Tikal's lack of monument history between A.D. 562 and A.D. 692, Caracol could have gained effective control of Tikal through Naranjo and, thus, could have approached a polity size of over 18,000 square kilometers *circa* A.D. 650. However, it is expected that such a polity size was not likely to be long-lived. In this light, it is intriguing to note that Tikal's first monument in 130 years is erected in the katun ending (A.D. 692) immediately following Naranjo's war of independence from Caracol in A.D. 680 and that the stela and altar set mimic both Caracol's Giant Ahau altars and the last monument erected at Tikal before this long gap began (Schele and Freidel 1990:205).

Naranjo's history takes a 180 degree turn after its independence from Caracol in A.D. 680. The new Late Classic dynasty at Naranjo returned to the sphere of influence of Site Q, presumably through its connections to Dos Pilas. Lady 6 Sky, a daughter of Flint-Sky-God K, the first ruler of Dos Pilas, went to Naranjo to

produce a royal heir in A.D. 682. A male heir, Smoking Squirrel, was born in A.D. 688 and acceded at age 5 in A.D. 693. He was named as a vassal *y'ahau* of the Site Q ruler; his grandfather, Ruler 1 of Dos Pilas, was similarly named as an *y'ahau* of an earlier Site Q ruler (Houston 1993:108) and the original Ruler 1 of Naranjo was similarly named as an *y'ahau* of a Site Q ruler (Martin and Grube 1995:45) when he acceded to the throne in A.D. 546. Thus, Naranjo effectively left the Caracol sphere and returned its allegiance to Dos Pilas and Site Q after A.D. 680. In seeking this outside protection, Naranjo's history is typical of a secondary center or border city. Naranjo felt secure enough to taunt Tikal with a *hubi* event in A.D. 695 and to encourage other centers within the Tikal and Caracol shared border area —most notably Ucanal— to align themselves with the newly independent Naranjo polity (cf. Schele and Freidel 1990:189-195). But like any border center, Naranjo's fortunes and allegiances shifted yet again in the Late Classic. Its inscriptions suffered a 50-year hiatus after A.D. 727 and it was surely no longer independent in A.D. 743 when Tikal subjugated Yaxha, a site only 12 kilometers distant from Naranjo and with which Naranjo had previously obtained captives.

Tikal's Late Classic history also chronicles its use of warfare to re-establish itself politically. First, Tikal asserted itself in A.D. 672 against the break-away Dos Pilas, regaining some lost prestige and setting the stage for the accession of Ruler A in A.D. 682. Next, Tikal decisively took Site Q out of the political picture by destroying its king, Jaguar-Paw, in A.D. 695, which served both to retaliate against a previous star-war in A.D. 677 and to remove support for the rival Dos Pilas lineage. Tikal then consolidated its territorial dominion through star-wars at Yaxha (31 km distant from Tikal) and Motul de San Jose (36 km distant from Tikal) in A.D. 743. At this time it may be inferred that Tikal reached its maximum Late Classic territorial extent —presumably up to five times the 1,081 to 1,963 km^2 «realm» suggested for Tikal based on Thiessen polygons and the city-state model (Culbert et al. 1990:117; Marcus 1993:161; Mathews 1985), less than half of the 21,095 km^2 allowed under an earlier regional-state model (Adams and Jones 1981; Marcus 1993:161), and less than one-tenth of the more than 100,000 km^2 that would be permitted under various versions of a super-state model (Adams and Jones 1981:318; Marcus 1993:162; Martin and Grube 1995).

Geographic Distance and Maya Warfare

If one looks at the Late Classic landscape and the conflicts recorded in the epigraphic record, overlaps in the 60 km marching radius cast much of Classic era warfare as conflict over and for territorial control (Fig. 1). Tikal and Caracol are 76 km apart. Site Q and Tikal are approximately 105 km apart. Tikal and Dos Pilas are some 111 km apart. In the Northern lowlands, Chichen Itza and Coba —

presumed to be antagonists of long-standing (Andrews and Robles 1985)— are approximately 100 km apart. All are regional capitals in their own right. Most attempted warfare with each other, probably because of shared border areas, given a 60 km potential marching radius from any one center. Only two conflicts exceeded the combined marching distance of 120 km (the optimal spacing between 2 primary centers); both were carried out by Palenque and neither was a star-war.

Shared border regions are prime areas for shifting allegiances. In the area between Tikal and Caracol are the sites of Naranjo, Yaxha, and Ucanal. In spite of Naranjo's epigraphic notoriety, all three sites were secondary border centers in the Late Classic era with an alternating history of independence and control by other sites. Like Naranjo, the epigraphic history of Yaxchilan, Mexico chronicles the trajectory of another border city through bouts of independence and incorporation — specifically relative to Piedras Negras, Guatemala, a primary capital. Much like Caracol and Naranjo or Tikal and Naranjo, the distance between Yaxchilan and Piedras Negras is only about 45 kilometers. Given a 60 km marching distance, it is likely that only one of these two sites could be militarily dominant at any one time. As Martin and Grube (1995:44) have noted, «the iconographic and hieroglyphic record suggests that Piedras Negras held a number of other states in somewhat unruly submission, including for a time its upstream neighbor, Yaxchilan.» But domination by a primary capital did not mean that a border city could not have its own dependencies. The epigraphic record makes it abundantly clear that Bonampak and Lacanha were often subservient to Yaxchilan.

Following the 60 km marching scenario, other territorial conflicts and shifts also make sense. Dos Pilas, Aguateca, and Seibal are so close that only one polity could be a capital at a time, as indeed the epigraphy indicates. Quirigua and Copan are some 47 km apart, as are Piedras Negras and Pomona; Palenque and Tonina are 65 km apart; all have major war events. In fact, the shortest recorded conflicts are in contested border areas at distances of 24 to 30 km (Yaxchilan and Lacanha at 9.6.10.14.15 and 9.14.17.15.11; Naranjo and Ucanal at 9.13.1.4.19; Dos Pilas and Seibal at 9.15.4.6.4; and Tikal and Yaxha at 9.15.12.2.2). And Dos Pilas exhibits perfect warfare strategy: first, establish prestige and intimidate your neighbors (cf. the Torch-Macaw of Machaquila capture); then, consolidate internally (cf. through local marriages and the Seibal star-war); finally, expand one's borders externally (cf. the Yaxchilan conflict 10 or 15 years later).

Most Maya warfare may be grouped into wars between primary centers and wars for border control. That the 60 km marching distance has reality and is reflected in Maya polity size can be seen through the distance at which the various conflicts take place. For the 33 examples where the two sites involved in the conflict are known (Table 1), the average distance between centers is 63 km. If the 12 known star-wars are factored out of this sample, the average distance between the two sites participating in a star-war is 66.25 km. Further breaking the star-wars down into «border center conflicts» as opposed to «primary capital con-

flicts» reveals that the average distance of a border star-war was 36 km (n=6) and of a star-war between primary centers was 96.5 km (n=6). From these figures, it may be extrapolated that average Maya polity size in the lowlands during the Late Classic Period was far greater than 4,000 km^2 territorially, potentially encompassing the 11,333 km^2 of territory permitted by the 60 km marching distance and in line with the size of Late Postclassic Maya territories (cf. Chase 1986:351-352; Marcus 1993:157-163). Given the average distance for star-wars between primary sites, these same data can also be used to suggest that hegemonic control (cf. Hassig 1992a:58) and/or tribute collection could extend beyond the territorial limit and that a successful polity could collect tribute from an area approaching 30,000 km^2.

CONCLUSION

Combining archaeological and epigraphic information with practical logistic considerations leads to a much more complete interpretation of the ancient Maya political landscape than do considerations of a single data base. This conjoined approach not only supports the regional state model and differentiation of emblem glyph sites into primary capitals and border centers, but also provides additional information for considerations of the number and size of Maya political units.

Based on the 60 km marching distance (Hassig 1992b:85) one would expect successful independent Maya polities to have capitals located greater than 60 km from each other. It is in fact possible to discern from the combined archaeological and epigraphic records that certain sites were always focal centers and were generally separated from each other by a distance greater than 60 km. Other sites with their own emblem glyphs, which were located between the focal centers, were often placed in a hierarchical situation to one of these focal sites; these border sites exhibit variable histories —at times dependent to a nearby focal center, at times independent, and at times even engaging in star-wars with other border sites.

Using war events recorded between major Maya cities of the Late Classic era, it is possible to extrapolate an average polity size as having been in the neighborhood of 8,000 to 9,000 km^2 The spatial proxemics involved indicate that there must have been a limited number of potential Classic Maya polities in existence at any one time —estimated at no more than two dozen independent major polities for the entire Maya lowlands. Because of the military distance involved, it is unlikely that any of these polities ever directly controlled a territorial area 120 km distant or a territorial extent of 45,000 km^2 —twice the potential military marching distance of any single capital. It is also likely that this 120 km distance was the maximum distance permitted for *effective* collection of tribute in the Classic Maya world. Thus, the landscape of Late Classic Period polities was probably analogous to that known ethnohistorically from the Late Postclassic Northern low-

lands —at least in terms of relative polity size and relative spatial distribution. If and how larger political units emerged in the Late Classic lowlands remains a matter for future research. Before proceeding to such considerations, however, we need first to re-think our distinctions between alliance, hegemony, and territorial control as well as the mechanisms that would be necessary to ensure a long-term polity size that was greater than the 60 km marching distance.

Acknowledgements: An early version of this paper (entitled «Pugnacious Polities») was presented at the 61st Annual Meeting of the Society for American Archaeology in New Orleans on April 14, 1996. We would like to thank Ross Hassig for comments on an intermediate version of the current work.

REFERENCES

ADAMS, R. E. W. (1986). Río Azul. *National Geographic* 169: 420-451.

ADAMS, R. E. W. and R. C. JONES (1981). Spatial Patterns and Regional Growth Among Classic Maya Cities. *American Antiquity* 46: 301-322.

ANDREWS, A. P. and F. Robles C. (1985).Chichen Itza and Coba: An Itza-Maya Standoff in Early Postclassic Yucatan. In *The Lowland Maya Postclassic*. Eds. A. F. Chase and P. M. Rice, pp. 62-72. University of Texas Press. Austin.

BECKER, M. J. (1982). Ancient Maya Houses and Their Identification: An Evaluation of Architectural Groups at Tikal and Inferences Regarding Their Functions. *Revista Española de Antropología Americana* 12: 111-129.

CARNEIRO, R. L. (1994). War and Peace: Alternating Realities in Human History. In *Studying War: Anthropological Perspectives*. Eds. S. P. Reyna and R. E. Downs, pp. 3-27. Gordon and Breach Publishers (Overseas Publishers Association). Amsterdam.

CARR, R. F. and J. E. HAZARD (1961). *Map of the Ruins of Tikal, El Peten, Guatemala*. Tikal Report N°. 11. The University Museum. University of Pennsylvania. Philadelphia.

CHASE, A. F. and D. Z. CHASE (1989). The Investigation of Classic Period Maya Warfare at Caracol, Belize. *Mayab* 5: 5-18.

—— (1990). Los Sistemas Mayas de Subsistencia y Patrón de Asentamiento: Pasado y Futuro. In *Los Mayas: El Esplendor de una Civilización*. Ed. A. Ciudad Ruiz, pp. 38-48. Sociedad Estatal Quinto Centenario, Turner Libros, S. A. Madrid.

—— (1996a). More Than Kin and King: Centralized Political Organization Among the Ancient Maya. *Current Anthropology* 37 (5): 803-810.

—— (1996b). A Mighty Maya Nation: How Caracol Built an Empire by Cultivating Its «Middle Class». *Archaeology* 49 (5): 66-72.

—— (n.d.). La Guerra Clásica Maya Vista por Caracol, Belize. Paper presented at the Primera Mesa Redonda de Palenque, Palenque, Mexico (1995).

CHASE, D. Z. (1986). Social and Political Organization in the Land of Cacao and Honey: Correlating the Archaeology and Ethnohistory of the Postclassic Lowland Maya. In *Late Lowland Maya Civilization*. Eds. J. A. Sabloff and E. W. Andrews V, pp. 347-377. University of New Mexico Press. Albuquerque.

—— (1990). The Invisible Maya: Population History and Archaeology at Santa Rita Corozal. In *Precolumbian Population History in the Maya Lowlands*. Eds. T. P. Culbert and D. S. Rice, pp. 199-213. University of New Mexico Press. Albuquerque.

CHASE, D. Z. and A. F. CHASE (1992). An Archaeological Assessment of Mesoamerican Elites. In *Mesoamerican Elites: An Archaeological Assessment*. Eds. D. Z. Chase and A. F. Chase, pp. 303-317. University of Oklahoma Press. Norman.

CULBERT, T. P. (1991). Polities in the Northeast Peten, Guatemala. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*. Ed. T. P. Culbert, pp. 128-146. Cambridge University Press. Cambridge.

CULBERT, T. P., L. J. KOSAKOWSKY, R. E. FRY, and W. A. HAVILAND (1990). The Population of Tikal, Guatemala. In *Precolumbian Population History in the Maya Lowlands*. Eds. T.P. Culbert and D. S. Rice, pp. 103-121. University of New Mexico Press. Albuquerque.

FASH, W. L. and D. S. STUART (1991). Dynastic History and Cultural Evolution at Copan, Honduras. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*. Ed. T. P. Culbert, pp. 147-179. Cambridge University Press. Cambridge.

FLETCHER, L. A. and J. A. GANN (1992). *Calakmul, Campeche: Patrón de Asentamiento y Demografía*. Antropológicas. Nueva Epoca, n.º 2. I.I.A. U.N.A.M. México D. F.

FREIDEL, D.A. (1986). Maya Warfare: An Example of Peer Polity Interaction. In *Peer Polity Interaction and the Development of Socio-Political Change*. Eds. C. Renfrew and J. F. Cherry, pp. 93-108. Cambridge University Press. Cambridge.

FOLAN, W. J., E. R. KINTZ, and L. A. FLETCHER (1983). *Coba: An Ancient Maya Metropolis*. Academic Press. San Francisco.

FOLAN, W. J., J. MARCUS, S. PINCEMIN, M. del Rosario DOMÍNGUEZ CARRASCO, L. FLETCHER, and A. MORALES LÓPEZ (1995). Calakmul: New Data from an Ancient Maya Capital in Campeche, Mexico. *Latin American Antiquity* 6 (4): 310- 334.

FOLAN, W. J., J. MARCUS, and W. F. MILLER (1995). Verification of a Maya Settlement Model through Remote Sensing. *Cambridge Archaeological Journal* 5 (2): 277- 301.

GRAHAM, I. (1988). Homeless Hieroglyphs. *Antiquity* 62: 122-125.

—— (1997). Mission to La Corona. *Archaeology* 50 (5): 46.

GRUBE, N. (1994). Epigraphic Research at Caracol, Belize. In *Studies in the Archaeology of Caracol, Belize*. Eds. D. Z. Chase and A. F. Chase, pp. 83-122. Monograph 7. Pre-Columbian Art Research Institute. San Francisco.

HAAS, J. (1990). Warfare and the Evolution of Tribal Polities in the Prehistoric Southwest. In *The Anthropology of War*. Ed. J. Haas, pp. 171-189. Cambridge University Press. Cambridge.

HAMMOND, N. (1991). Inside the Black Box: Defining Maya Polity. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*. Ed. T. P. Culbert, pp. 253- 284. Cambridge University Press. Cambridge.

HASSIG, R. (1985). *Trade, Tribute, and Transportation: The Sixteenth-Century Political Economy of the Valley of Mexico*. University of Oklahoma Press. Norman.

—— (1988). *Aztec Warfare: Imperial Expansion and Political Control*. University of Oklahoma Press. Norman.

—— (1992a). *War and Society in Ancient Mesoamerica*. University of California Press. Berkeley.

—— (1992b). Aztec and Spanish Conquest in Mesoamerica. In *War in the Tribal Zone: Expanding States and Indigenous Warfare*. Eds. R. B. Ferguson and N. L. Whitehead, pp. 83-102. School of American Research Press. Santa Fe.

HOUSTON, S. D. (1993). *Hieroglyphs and History at Dos Pilas: Dynastic Politics of the Classic Maya*. University of Texas Press. Austin.
HOUSTON, S. D. and P. MATHEWS (1985). *The Dynastic Sequence of Dos Pilas, Guatemala*. Monograph 1. Pre-Columbian Art Research Institute. San Francisco.
JONES, C. and L. SATTERTHWAITE (1982). *The Monuments and Inscription of Tikal: The Carved Monuments*. Tikal Report No. 33, Part A. The University Museum. University of Pennsylvania. Philadelphia.
MARCUS, J. (1973). Territorial Organization of the Lowland Classic Maya. *Science* 180: 911-916.
—— (1976). *Emblem and State in the Classic Maya Lowlands: An Epigraphic Approach to Territorial Organization*. Dumbarton Oaks. Washington, D.C.
—— (1989). From Centralized Systems to City States: Possible Models for the Epiclassic. In *Mesoamerica after the Decline of Teotihuacan: A.D. 700-900*. Eds. R. A. Diehl and J. C. Berlo, pp. 201-208. Dumbarton Oaks.
Washington, D.C.
—— (1992). *Mesoamerican Writing Systems: Propaganda, Myth, and History in Four Ancient Civilizations*. Princeton University Press. Princeton.
—— (1993). Ancient Maya Political Organization. In *Lowland Maya Civilization in the Eighth Century A.D.* Eds. J. A. Sabloff and J. S. Henderson, pp. 111-183. Dumbarton Oaks. Washington, D.C.
MARTIN, S. and N. GRUBE (1995). Maya Superstates. *Archaeology* 48 (6): 41-46.
MATHEWS, P. (1979). Notes on the Inscriptions of «Site Q.» Unpublished manuscript on file in Department of Archaeology, University of Calgary.
—— (1985). Maya Early Classic Monuments and Inscriptions. In *A Consideration of the Early Classic Period in the Maya Lowlands*. Eds. G. R. Willey and P. Mathews, pp. 5-54. Institute for Mesoamerican Studies Publication N° 10. SUNY. Albany.
—— (1991). Classic Maya Emblem Glyphs. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*. Ed. T. P. Culbert, pp. 19-29. Cambridge University Press. Cambridge.
MILLER, J. H. (1974). Notes on a Stelae Pair Probably from Calakmul, Campeche, Mexico. In *Primera Mesa Redonda de Palenque, Part I*. Ed. M. G. Robertson, pp. 149-161. The Robert Louis Stevenson School. Pebble Beach.
MORLEY, S. G. (1946). *The Ancient Maya*. Stanford University Press. Stanford.
NAHM, W. (1994). Maya warfare and the Venus Year. *Mexicon* 16 (1): 6-10.
PROSKOURIAKOFF, T. 1960 Historical Implications of a Pattern of Dates at Piedras Negras, Guatemala. *American Antiquity* 25 (4): 454-475.
REYNA, S. P. (1994). A Mode of Domination Approach to Organized Violence. In *Studying War: Anthropological Perspectives*. Eds. S.P. Reyna and R.E. Downs, pp. 29-65. Gordon and Breach Publishers (Overseas Publishers Association). Amsterdam.
RICE, D. S. and T. P. CULBERT (1990). Historical Contexts for Population Reconstruction in the Maya Lowlands. In *Precolumbian Population History in the Maya Lowlands*. Eds. T. P. Culbert and D. S. Rice, pp. 1-36. University of New Mexico Press. Albuquerque.
ROYS, R. L. (1957). *The Political Geography of the Yucatan Maya*. Carnegie Institution of Washington. Publ. 548. Washington, D.C.
SCHELE, L. (1982). *Maya Glyphs: The Verbs*. University of Texas Press. Austin.
—— (1991). An Epigraphic History of the Western Maya Region. In *Classic Maya Political*

History: Hieroglyphic and Archaeological Evidence. Ed. T.P. Culbert, pp. 72-101. Cambridge University Press. Cambridge.

SCHELE, L. and D. FREIDEL (1990). *A Forest of Kings: The Untold Story of the Ancient Maya*. William Morrow. New York.

SCHELE, L. and P. MATHEWS (1991). Royal Visits and Other Intersite Relationships Among the Classic Maya. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*. Ed. T. P. Culbert, pp. 226-252. Cambridge University Press. Cambridge.

SCHUSTER, A. M. H. (1997). The Search for Site Q. *Archaeology* 50 (5): 42-45.

SERVICE, E. (1971). *Primitive Social Organization: An Evolutionary Perspective*. Random House. New York.

SHARER, R. J. (1978). Archaeology and History of Quirigua, Guatemala. *Journal of Field Archaeology* 5: 51-70.

STUART, D. (1985). The 'Count-of-Captives' Epithet in Classic Maya Writing. In *Fifth Palenque Round Table, 1983: Vol. VII*. Eds. M. G. Robertson and V. M. Fields, pp. 97-101. Pre-Columbian Art Research Institute. San Francisco.

THOMPSON, J. E. S. (1954). *The Rise and Fall of Maya Civilization*. University of Oklahoma Press. Norman.

TURNER, E. S., N. I. TURNER, and R. E. W. ADAMS (1981). Volumetric Assessment, Rank Ordering, and Maya Civic Centers. In *Lowland Maya Settlement Patterns*. Ed. W. Ashmore, pp. 71-88. University of New Mexico Press. Albuquerque.

WEBSTER, D. (1992). Epilogue. In *The House of the Bacabs, Copan, Honduras*. Ed. D. Webster, pp. 106-107. Dumbarton Oaks. Washington, D.C.

—— (1993). The Study of Maya Warfare: What It Tells Us about the Maya and What It Tells Us about Maya Archaeology. In *Lowland Maya Civilization in the Eighth Century A.D.* Eds. J. A. Sabloff and J. S. Henderson, pp. 415-444. Dumbarton Oaks. Washington, D.C.