

# Classic Maya Warfare and Settlement Archaeology at Caracol, Belize

Diane Z. Chase and Arlen F. Chase

Department of Sociology and Anthropology, University of Central Florida

**ABSTRACT:** It has become increasingly evident that the Classic Maya were not an utopian peaceful people and that, in fact, the overall cultural trajectory of the Maya was directly related to warfare. Changes in frequency, techniques, and goals of war over time both parallel and impact Maya cultural development. Investigations at the archaeological site of Caracol, Belize provide specific historical examples of aggression that can be compared with artifacts, settlement patterns, and depictions on stone, pottery and stucco. Analysis of this information indicates the widespread impact of war within the Caracol polity and the increased frequency of aggressive activity by Caracol on neighboring polities and rulers over time. The Caracol data in combination with other lowland regional patterns, point toward the significance of changes in Classic Maya warfare by the end of the Classic Period and the major role that war played in Maya society throughout the Late Classic era. To examine the impact of warfare on the Classic Maya of Caracol and the Maya in general, warfare must be defined and placed into a wider cultural perspective. The ethnohistoric and general archaeological data relevant to Maya aggression needs to be outlined and evaluated for relevance. And, the archaeological data for warfare at Caracol needs to be compared with these bodies of general and specific literature. From these data the relationship between Maya society, its collapse, and warfare can be examined.

**RESUMEN:** Se ha hecho cada vez más evidente que los mayas del periodo Clásico nunca fueron un pueblo utópicamente pacífico y que, de hecho, toda su trayectoria estuvo relacionada con la guerra. Las variaciones en la frecuencia, técnicas y propósitos de sus guerras fueron paralelas, a través del tiempo, e influyeron en su desarrollo cultural. Las investigaciones en el sitio arqueológico de Caracol, Belice, proporcionan ejemplos históricos específicos de agresiones que pueden ser comprobadas con los artefactos, patrones de asentamiento y representaciones en piedra, cerámica y estuco. El análisis de tal información muestra el amplio impacto de la guerra dentro del territorio controlado por Caracol y la creciente frecuencia de las actividades agresivas de Caracol sobre los estados y gobernantes vecinos a través del tiempo. La información proveniente del sitio, en combinación con otros patrones regionales de las Tierras Bajas Mayas, apunta hacia la importancia de los cambios bélicos para el final del periodo Clásico y el sobresaliente papel que la guerra jugó para la sociedad maya a través del Clásico Tardío. Para examinar el impacto de la guerra entre los mayas de Caracol y los mayas en general, durante el Clásico, las actividades bélicas deben ser definidas y ubicadas dentro de una perspectiva cultural más amplia. La información etnohistórica y arqueológica relativa a la agresividad maya necesita ser delineada y evaluada por su importancia. Así, las evidencias arqueológicas de la guerra en Caracol necesitan ser comparadas con esta literatura general y específica. A partir de esta información se examina la relación existente entre la guerra y el colapso de la sociedad maya.

It has become increasingly evident that the Classic Maya were not an utopian peaceful people and that, in fact, the overall cultural trajectory of the Maya was

directly related to warfare. Changes in the frequency, techniques, and goals of war over time both parallel and impact Maya cultural development.



Investigations at the archaeological site of Caracol, Belize, provide specific historical examples of aggression that can be compared with artifacts, settlement patterns, and depictions on stone, pottery, and stucco. Analysis of this information indicates the widespread impact of war within the Caracol polity and the increased frequency of aggressive activity by Caracol on neighboring polities and rulers over time. The Caracol data (A. Chase 1987b, 1989, 1996a, 1996b, 1998a; D. Chase and A. Chase 1994), in combination with other lowland regional patterns (D. Chase and A. Chase 1982, n. d. b; Demarest 1997; Miller 1993; Schele and Mathews 1991; Stuart 1993; Suhler and Freidel 1998), point toward the significance of the changes in Classic Maya warfare by the end of the Classic Period and the major role that war played in Maya society throughout the Late Classic era.

To examine the impact of warfare on the Classic Maya of Caracol and the Maya in general, warfare must be defined and placed into a wider cultural perspective. The ethnohistoric and general archaeological data relevant to Maya aggression needs to be outlined and evaluated for relevance. And, the archaeological data for warfare at Caracol needs to be compared with these bodies of general and specific literature. From these data the relationship between Maya society, its collapse, and warfare can be examined.

### Warfare: Basic Definitions and Considerations

War is generally defined as armed aggression between politically independent groups (McCauley 1990: 1; Malinowski 1941: 522; Naroll 1964: 286; Otterbein 1973: 923-924; Schneider 1950: 777). This inter-political unit war is distinct from both armed aggression within a political community, such as that involved in feuding (Otterbein 1973: 923-924), and from the armed aggression between military groups within a political unit, such as that involved in a civil war (Otterbein 1970: 3). Not all war between independent political units need be of identical scope. In particular,

the distinction between internal and external war may be significant: **internal war** has been defined as "warfare between political communities within the same cultural unit" while **external war** has been defined as "warfare between culturally different political communities" (Otterbein 1973: 924, citing his earlier work in 1968). Internal and external wars may vary substantially; while people of similar cultural background may be more likely to fight rule-bound wars, people from different cultural backgrounds may ignore culture-specific rules for warfare (Otterbein 1973: 924). Thus, external war has the potential to be extremely violent.

Strategies, techniques, weaponry, and arenas in which warfare is played out all bear on the success and failure of war, sometimes foretelling the kind of war that must take place. For instance, the most efficient and sophisticated warfare occurs when **shock weapons** are in evidence (Otterbein 1970: 44). Such weapons are designed for fighting in close quarters and for killing, rather than capturing, one's enemy. Their very use implies certain military strategies and techniques, just as the use of **projectile weapons** implies others.

The composition of any given society is also closely related to war. General studies of warfare have demonstrated that political centralization, professional military organization, military sophistication, and territorial change are all functionally interrelated (Oldfield Hayes 1975: 355). At the same time, however, for successful warfare it is important for a given society to be adaptable in its techniques, strategies, arenas, and weaponry. A military organization or system that becomes institutionalized and unchanging often leads to the drastic defeat of the unfortunate unbending society (Melko 1975: 555). Thus, the structure of warfare and any given society often parallel each other in their historical trajectories.

### Warfare and Aggression: Ethnohistoric Evidence from The Maya Lowlands

Evidence concerning Maya warfare comes from a variety of sources. Ethnohistoric manuscripts provide in-



sights for war at the point of Spanish contact in Central America (Hassig 1992; Marcus 1992; Roys 1972: 65; Webster 1993). These documents, however, are much more useful when they can be used in conjunction with archaeological evidence.

For many years the Postclassic era (roughly A.D. 900 to 1550) of Maya prehistory has been characterized as militaristic in contrast to earlier periods (*e. g.* Chase and Rice 1985). Militarism late in Maya prehistory has been supported by a number of lines of research; key among them has been ethnohistoric description of wars—particularly between territorial units. There is also, however, relevant archaeological information—such as the recording of walled cities on the east coast of Yucatan (*e. g.* Tulum and Xcaret) and in the interior of Yucatan (*e. g.* Cuca and Ake) and evidence from excavation for the introduction and widespread occurrence of small points for the bow and arrow (*e. g.* D. Chase 1992: 123-124 and Proskouriakoff 1962)—that have also been taken to indicate militarism on this late time horizon.

At first European contact, the independent states or territories in northern Yucatan were frequently at war. It is possible that the frequency of war may have been increased by contact itself (*e. g.* Ferguson and Farragher 1988: iv). Information on these wars is available from a number of sources (Repetto Tio 1985; Tozzer 1941) and has been capably researched by individuals such as Ralph Roys in the context of larger works on the Maya (Roys 1957, 1965, 1972: 65-70; see also Chamberlain 1948). Wars were conducted primarily between territories, often for economic reasons. Among the causes of war were disputes over territory and access to salt beds on the coast (Andrews 1983: 3, 49-50) as well as a desire to obtain captives—primarily for use or sale as slaves (Roys 1972: 68), but also for sacrifice (Roys 1972: 65).

Some information is known about the structure and conduct of Maya warfare. The conquest era Maya of Yucatan used a number of specialized individuals in their war efforts and planning (Roys 1972: 67). There was a *nacom* or warchief who was assisted by part-time

specialist warriors called *holcans*; the fighting force could also be supplemented by other men from the community. Defenses, generally constructed of perishable materials, were erected for ambushing the enemy (Roys 1972: 68). Ethnohistoric descriptions of warriors and weapons largely conform with pre-conquest iconographic depictions (*e. g.* D. Chase and A. Chase 1988: fig 33). Protection was provided in the form of wooden shields and helmets in conjunction with cotton armor (Roys 1972: 66). Weapons included the bow and arrow, dart and spear-thrower, spear, sword, and dagger (Roys 1972: 65-66). These tools of war included an inventory of both projectile and shock weapons that support the notion of specialized warriors. There is no conclusive evidence in either the Classic or Postclassic archaeological data, however, for either the presence of the sword, described as made either of sharp pieces of flint set into a hardwood stick, or the existence of the fire-hardened wooden dagger; both would represent specialized shock weapons and their use in war would go against the general Maya goals of taking healthy captives for use as slaves or in sacrifices (although the Aztec used this form of weapon for taking captives: Hassig 1988: 130).

Fighting during the early Historic epoch frequently took place in the period of time between October and January when there was little work to be done in the agricultural fields (Roys 1972: 67). In accord with the ethnohistoric data, there is a general belief that most Classic era Maya warfare also correlated with the “dry season” between November and May (Marcus 1992: 432) and was connected with auspicious times relative to the position of Venus (Schele and Miller 1986: 214). Nahm (1994: 8), however, has demonstrated through hieroglyphic dating that Classic era Maya warfare (both “star wars” and “capture”) occurred throughout the entire year. Such a distribution suggests that Maya polities may have been able to support “standing armies” that were independent of the planting cycle.

The contrast drawn between the militaristic characterization of the Postclassic Maya as compared to their earlier Classic Period ancestors has been almost en-



tirely overturned. However, the nature of Classic Period war(s) and the amount of similarity to those conducted by the later Postclassic Maya is still in dispute. In the ethnohistory, late Lowland Maya warfare is most often portrayed as inter-political unit war between one or more linguistically and culturally similar Maya territories, or **internal warfare**. While the relatively frequent internal wars between territories described for the Historic Maya might also describe the Classic Maya, we have argued (A. Chase et al. 1991; A. Chase and D. Chase 1992; see also Miller 1977) that the Maya of the Terminal Classic era also participated in **external warfare** with both linguistically different Maya and non-Maya peoples.

### Maya Warfare Before Contact: The Evidence

Apart from the ethnohistory, the Maya of the Southern lowlands provide us with their own epigraphic history of warfare during the Classic Period. Glyphs have been correlated with a series of aggressive activities related to war (*e. g.* Chase and Chase 1998a: fig. 1): capture (*chucab*), decapitation or battle ("ax event"/*ch=ak*), destruction (*hubi*), and defeat ("shell-star," also interpreted as Venus-related warfare). Other hieroglyphs, such as reference to his flint-and-shield (*u tok' pakal*), are also clearly war-related. These recorded events are not all of equal magnitude, and variation may be found within each of these distinct aggressive activities. Some take place against specific people or places, while others affect all people and probably entire polities; some are undertaken by specific individuals, while others are attributed to general titles. By conjoining hieroglyphic information with iconographic analysis, however, it is clear that the "shell-star" event is the culmination of the Maya hierarchy of warfare acts (Miller 1993: 402).

Hieroglyphs make numerous political statements about warfare that need to be assessed in light of other data (*e.g.* Marcus 1992; Webster 1993: 440). Patterns in monument erection may sometimes be utilized to

see the effect of warfare on a given site (*e. g.* Caracol and Tikal, Guatemala-A. Chase 1991; and, Caracol and Naranjo, Guatemala-Houston 1991). In some cases walls, ripped-up buildings, and *in situ* debris permits archaeological insight relevant to the hieroglyphic record (*e. g.* Dos Pilas-Demarest 1997; Houston 1993; and, Aguateca-Inomata 1997). Settlement pattern archaeology can also shed light on site histories and past events. In point of fact, it is only the archaeological evidence that permits a full assessment of the affects and effects of politically-inspired and recorded aggressive activity (*e.g.* Quirigua and Copan-Sharer 1978:67-68 conjoined with Fash and Stuart 1991 and Fash 1991; *e.g.* Caracol and Tikal-A. Chase 1991, A. Chase and D. Chase 1987b, 1989, 1998a; D. Chase and A. Chase 1994 conjoined with Jones 1991; Puleston 1974, 1983; and Haviland 1994).

Non-written iconographic indications of Maya war and aggression are found carved on stone, painted in murals, and modeled and painted on pottery. Rulers are portrayed standing on captives or pulling at their hair. Prisoners are shown bound (Dillon 1982). It is unclear whether these captives represent only specific individuals (*e.g.* Stuart 1993: 333) or broader political units (*e.g.* Marcus 1992: 412). Weapons, congregations of warriors, and scenes of battles are also depicted (Barrera Rubio 1980; A. Miller 1977; M. Miller 1986). When combined with other evidence, these iconographic representations aid in the interpretation of relationships over time.

Material remains of weapons and defensive systems are also sometimes recovered. Permanent fortifications, while rare, do occur (Demarest *et al.* 1997; Puleston and Callender 1967; Rice and Rice 1981; Webster 1976). Assuming they can be accurately dated, fortifications often imply a pre-existing outside threat. Weapons (lithic points and stone mace heads) are also frequently found in the archaeological record. Assuming that there is a distinction between weapons used in war and those used in hunting, it may even be possible to suggest the existence of a specialized military (*e.g.* Otterbein 1970: 44).



Other archaeological data may permit the extrapolation of changing population numbers and their location(s) at a given site or even the determination of changes in the degree of prosperity; such data may then be useful in assessing historical statements of aggression (A. Chase and D. Chase 1989). While population increase or large building efforts do not directly reflect warfare and aggression, if tightly dated, these data may be correlated with known warfare events and aid in revealing the scope of war and the effects on the local population.

Differences of opinion exist as to the nature of Classic era Maya war, specifically with regard to its participants and impact. Some see Maya war as an elite-dominated activity with little impact on day-to-day life or territorial control (Freidel 1986 [but see 1992]; Schele and Mathews 1991: 245-248). Others view Maya war as a prime factor in the rise and fall of Classic Maya culture (Webster 1977), as an important factor in establishing the size of Maya polities (A. Chase and D. Chase 1998a), and as congruent with practices known worldwide (Webster 1993; Cowgill 1979; A. Chase and D. Chase 1989, 1992). Some have taken an intermediate position (Demarest 1978, 1993). A difference of opinion exists among epigraphers concerning the Classic Maya political order. One predominant view characterizes the Classic Maya as constrained to small city-state-like polities, each defined by an emblem glyph (*e.g.* Mathews 1991: 29); another view portrays gigantic hegemonic empires (Martin and Grube 1995). Culbert (1991a: 140ff; 1991b: 325) has pointed to problems in the perception of emblem glyphs and specifically rebutted the assumption that emblem glyphs repre-

sented autonomous polities that correlated precisely with political units. Other archaeologists have argued that Classic Maya polities were large (regional) entities (Adams 1986; A. Chase and D. Chase 1996a, 1998a; Marcus 1976).

Agreement generally exists that the nature of Maya war changed over time. Innovations in both weapons and techniques of war are evident throughout Maya prehistory (Hassig 1992: 172). Epigraphic references to Maya warfare increased throughout the Late Classic Period (*e.g.* Schele and Miller 1986: 209ff). Stuart (1993: 334) has argued that the explosion in Late Classic narrative exposition related to warfare represents a profound shift between the Early and Late Classic Periods. And, the most recognized and significant glyph for Maya war is that referring to the "shell-star" event, which is seen by most epigraphers as representing the defeat of one site by another (Schele and Mathews 1991: 246). The earliest known shell-star event involves Caracol's defeat of Tikal in A.D. 562 (Houston 1991) and it is to the site of Caracol that we now turn.

## Caracol

Once considered to be a small, unimportant site on the periphery of the Maya world, Caracol is now recognized as one of the regional powers of the Southern lowlands. Caracol, in fact, was politically dominant over a large part of the Southern lowlands during the Late Classic era.

Prior to the formal start of the University of Central Florida Caracol Project<sup>1</sup> in 1985, Caracol had been re-

<sup>1</sup> One of the specific goals of the University of Central Florida Caracol Archaeological Project has been the archaeological investigation of Maya warfare at Caracol. Initial research supported through private donors resulted in the pivotal discovery of Caracol Altar 21 in early 1986 and major epicentral excavation. Grants from the Harry Frank Guggenheim Foundation in 1988 and 1989 permitted outlying settlement investigation geared toward the goal of elucidating the effects of Late Classic warfare on Caracol's population. Investigations sponsored by the Government of Belize and the United States Agency for International Development from 1989 through 1994 produced much more epicentral data relevant to Caracol's final abandonment. Further work designed to examine the effects of warfare in Caracol's settlement was again carried out from 1994 through 1996 with support from the National Science Foundation (SBR-9311773). This paper summarizes much of this data and builds on material originally presented at the 47th International Congress of Americanists in 1991 and at the Primera Mesa Redonda de Palenque in 1995.



searched by the University of Pennsylvania. This project recorded the site's monuments and carried out three field seasons in the early 1950s; it also produced a map of the site's epicenter showing 78 structures (Beetz and Satterthwaite 1981). Subsequent work did not revise this epicentral map (Healy *et al.* 1983). Caracol therefore entered the general literature as being relatively unimportant, interpreted as a second tier site under the sway of a presumed larger center. This incorrect categorization is reflected in some of the more recent hierarchical schemes for the Maya (Adams 1991:196; Adams and Jones 1981).

As presently understood, Caracol is a gigantic Maya metropolis (A. Chase and D. Chase 1996b). Over 70 kilometers of intra-site causeways are known; these radiate out from the site epicenter and incorporate an area up to 10 kilometers distant into Caracol's urban core (Figure 1). Based on Landsat interpretation and ground-checks, two inter-site causeways run to the southeast of Caracol for distances of 18 and 24 kilometers; one intersite causeway possibly runs to the northwest, potentially linking Caracol and Naranjo, a distance of 42 kilometers.<sup>2</sup> The site is estimated to cover 177 km<sup>2</sup>, contains more than 36,000 structures, and to have had a population of at least 115,000 people (A. Chase and D. Chase 1994a: 5); more than likely the site housed 150,000 people in A.D. 670. The mapped central core area of Caracol contains, on average, just over 300 structures per km<sup>2</sup> (D. Chase, A. Chase, and Haviland 1990). A square kilometer of settlement intensively mapped for both terraces and settlement at a distance of 5 kilometers from the epicenter, and not located near either a causeway or terminus, yielded a corrected Late Classic population density of 972 people per km<sup>2</sup> (based on 243 structures mapped in a single square kilometer; A. Chase and D. Chase 1998b). Settlement transects mapped from 1994 through 1999 produced no settlement drop-off; these transects in-

clude 200 meter wide segments running 7 kilometers to the north and 7 kilometers to the south of central Caracol as well as a 500 meter wide by 3.5 kilometer long east-west transect some 6 kilometers north of the Caracol epicenter.<sup>3</sup> Besides being territorially larger than Tikal (120 versus 177 km<sup>2</sup>), Caracol is also at least 35% more densely settled (62,000 people as compared to 115,000).

Given the immensity of this settlement, our research has necessarily focused on how and why the site grew so large during the Late Classic era. One putative answer was found in the warfare recorded in Caracol's hieroglyphic texts. Before current work at Caracol, its texts had been interpreted to suggest that Caracol had carried out successful warfare against Naranjo between A.D. 626 and 631 (Sosa and Reents 1980; Stone *et al.* 1985: 273-274). New epigraphic and archaeological finds have amplified these events. This Naranjo-Caracol warfare link is confirmed by a series of shared dates, by the naming of the Caracol ruler at Naranjo in iconographically dominant contexts, and by the occurrence of the "Naranjo Rulership Title" at both Caracol and Naranjo (Grube 1994: 89). Additionally, Naranjo undertook a war of independence from Caracol in A.D. 680 (D. Chase and A. Chase n.d.a).

Caracol has proved an excellent place to test the relationships between hieroglyphic statements of war and settlement. Other warfare events, both prior to and following the Naranjo wars, are also known from the hieroglyphic texts. A monument found at Caracol in 1986 exhibits the earliest known shell-star event (Houston 1991: 40). One of the events recorded on Altar 21 is a (shell-star) defeat of Tikal in A.D. 562, presumably by Caracol. Between A.D. 626 and 631 three *hubi* events and one shell-star event are recorded between Caracol and Naranjo on the stone and stucco texts of Caracol; an additional shell-star event is recorded on a carved stone monument at Naranjo in A.D. 636. In

<sup>2</sup> These long-distance causeways have been identified from satellite imagery by Jim Rose of Dallas, Texas. The Caracol Archaeological Project has been involved in providing ground checks of these images.

<sup>3</sup> The east-west transect 6 kilometers north of the Caracol epicenter is under investigation for its agricultural potential as part of Ph.D. work by Timothy Murtha of Pennsylvania State University.

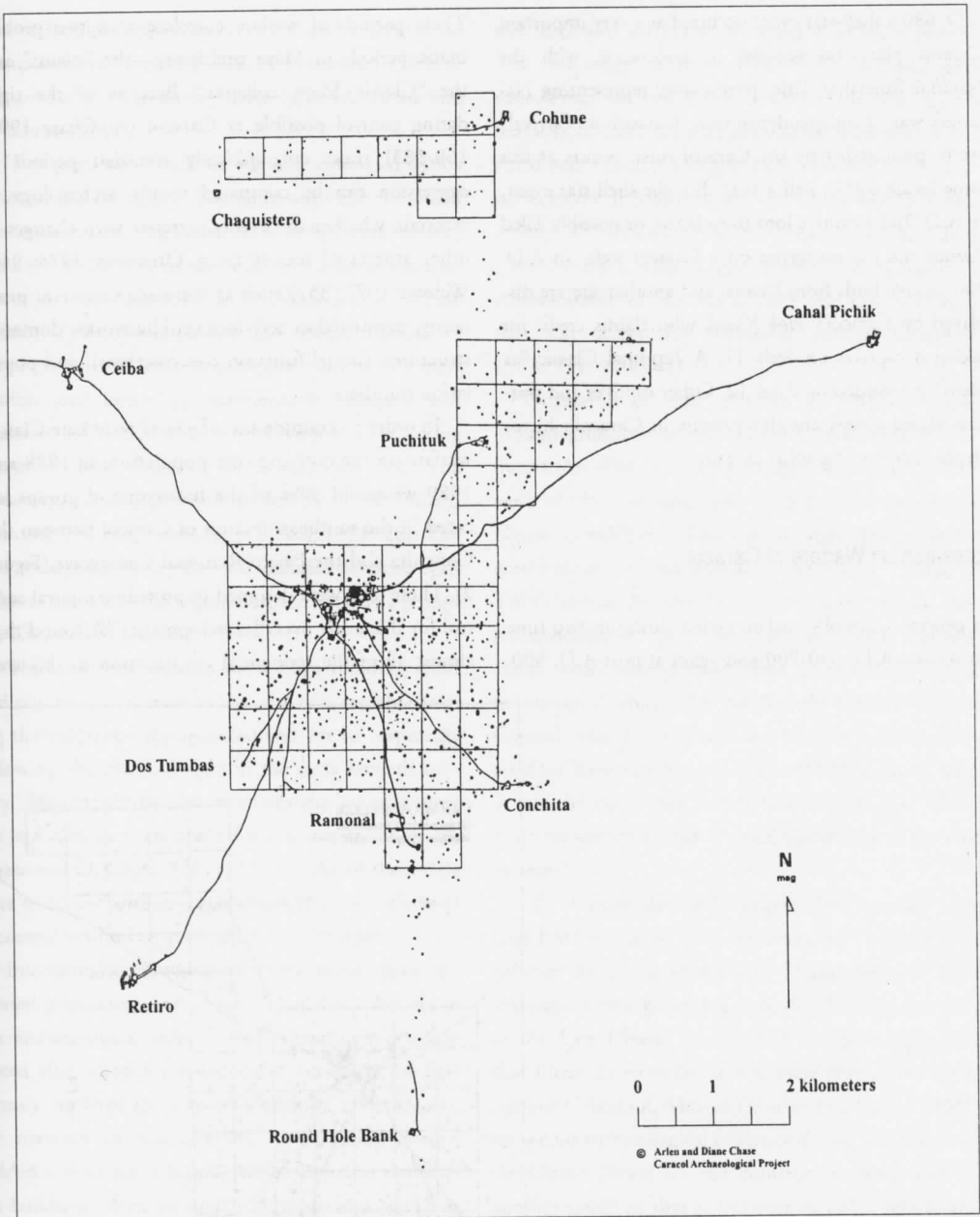


Figure 1. Map of Caracol settlement as of 1999. The site is characterized by a radial causeway system and two rings of causeway termini (e. g. Chase and Chase 1996b). The first ring of termini consists of three known administrative plazas (Conchita, Puchituk, and Ramonal), all 2.6 to 3 kilometers distant from the site epicenter, and one residential termini (Dos Tumbas), 2.3 kilometers distant from the site epicenter. The outer ring of termini consists of four converted administrative termini (Cahal Pichik, Ceiba, Cohune, and Retiro) and apparently two residential plazas (Chaquistero, Round Hole Bank), which range from 4.7 to 7.8 kilometers distant from the site epicenter.



A.D. 680 a shell-star event occurred at a very important Caracol place (*ox-witz-ha*) in association with the Naranjo Rulership Title, presumably representing Naranjo's war of independence from Caracol; an "arrival" event, presumably by the Caracol ruler, occurs at this same locale within half a year after the shell-star event. In A.D. 702 a captive lord from Ixkun or possibly Tikal (Grube n.d.) is portrayed on a Caracol stela. In A.D. 800 captive lords from Ucanal and another site are displayed by Caracol's *Hok Kawil*, who claims credit for taking 8 captives on Stela 11. A Terminal Classic "ax event" is recorded on Altar 12. Other captives and warfare-related events are also present in Caracol's hieroglyphic and iconographic corpus.

### Research on Warfare at Caracol

In general, Caracol's warfare events cluster in two time horizons—A.D. 550-700 and again at post A.D. 800.

These periods of warfare correlate with two problematic periods in Maya prehistory—the "hiatus" and the "Classic Maya collapse." Because of the tight dating control possible at Caracol (A. Chase 1994: 160-163) these epigraphically recorded periods of aggression can be compared to the archaeology to ascertain whether the events correlate with changes in other aspects of society (*e. g.* Otterbein 1973: 940; Webster 1977: 357) such as increased cohesion, prosperity, construction activities (public works, domestic structures, special function constructions), and population numbers.

In order to examine the effects of early Late Classic warfare on the outlying core population, in 1988 and 1989 we tested 30% of the housemound groups located in the southeast section of Caracol between the Conchita and the Pájaro-Ramonal Causeways (Figure 2). These tests were designed to provide temporal control for this area's overall development. We found that almost all of the residential construction in this area

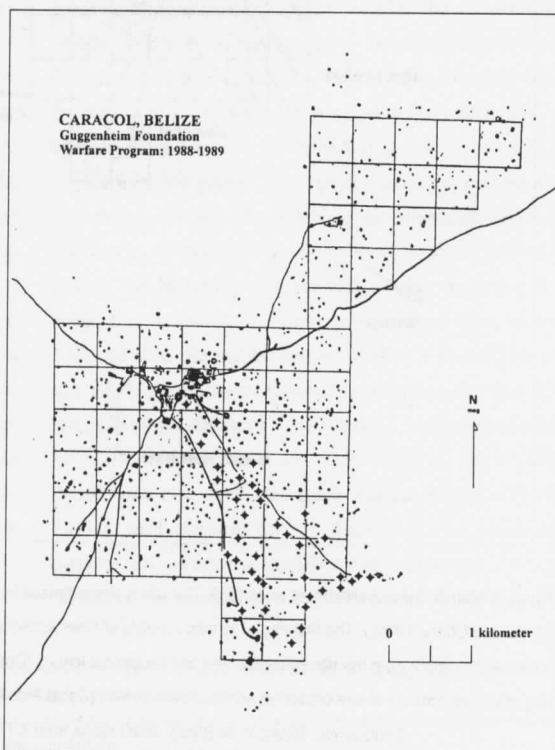


Figure 2. Map showing residential groups (diamonds) in the southeastern portion of central Caracol (which includes the first ring of causeway termini); these groups were investigated as part of the 1988-1989 warfare program sponsored by the Harry Frank Guggenheim Foundation.





was undertaken following the Tikal and Naranjo war events and that the population had increased 325% in this part of the site during these times (A. Chase and D. Chase 1989).

This population increase was also associated with a series of public works. The causeways that bounded the research area were constructed at this time, as were the huge plaza termini that functioned as administrative nodes (A. Chase 1998; A. Chase and D. Chase 1996b). Thus, the causeways and termini themselves may have formed important mechanisms for site integration and boundary maintenance (Kurjack and Andrews 1976: 323), in accord with models noting greater societal cohesion after successful war. The causeways are also probably indicative of "centralized planning and execution" (*e. g.* Hassig 1991: 26). Coeval constructions in this area included terraced agricultural fields and the regularly spaced plazuela groups (A. Chase and D. Chase 1998b).

Thus, we were able to see a huge building spurt and population increase in the core of Caracol following the epigraphically recorded war events—especially following the Naranjo wars in the early seventh century. Major construction activities during this same era had already been noted for the site epicenter (A. Chase and D. Chase 1987a, 1987b). All of these data were in accord with anthropologically-noted effects of successful warfare (*e. g.* Otterbein 1973: 934).

Interestingly, however, patterns other than increased population and construction also appeared in the archaeological record. And, these patterns suggested that Caracol's social order was also simultaneously undergoing a transformation. In particular, the majority of the outlying housemound groups yielded one or more formal tombs, often in the eastern buildings. A cache subcomplex was also found in these housemound groups that involved the extensive use of effigy-faced lidded vessels and, sometimes, obsidian eccentrics. Effigy hourglass and cylindrical cen-

ters were also associated with many of these groups. The frequency of such occurrences increased over time. Thus, we were also able to demonstrate that the majority of Caracol's core population participated in a ritual realm usually thought to be reserved for the upper echelon of Maya society (A. Chase and D. Chase 1994b; D. Chase 1998; D. Chase and A. Chase 1998). Such a social transformation could again be representative of the social cohesion and prosperity that may accompany successful warfare (Otterbein 1973: 934, 940-941).

Occupants of some of Caracol's outlying housemound groups even erected their own stone monuments. An elite residential group 5 kilometers northwest of the site epicenter (called Chaquistero, see Figure 1) exhibits a Giant Ahau altar. The recorded date indicates its dedication in the Katun 7 Ahau of Tikal's defeat. By the Terminal Classic, at least two housemound groups (Plaza of the Two Stelae and Machete) used hieroglyphic texts and carved figural monuments which did NOT refer to the current Caracol ruler. In fact, on one of the monuments (Altar 22; Chase, Grube, and Chase 1991), a person who is not the ruler used a full Caracol emblem. Thus, again we see the spread of ritual knowledge in Caracol society.

All of these data help suggest how warfare may have been a catalyst both for changing Caracol's society over the course of the Late Classic Period and for making Caracol become one of the dominant polities of the Late Classic era. Despite a recent suggestion that Caracol's successes in war were due to the oversight of Calakmul, Mexico (Martin and Grube 1995), we see no archaeological evidence during the height of the Classic Period for the domination of Caracol by another polity or that it was ever included within another polity. While political alliances were always a possibility, there is in fact no archaeological support for any Calakmul impact on Caracol.<sup>4</sup> Geographical

<sup>4</sup> These relationships have been suggested by Simon Martin and Nikolai Grube who posit the existence of Calakmul and Tikal as competing superpowers. While it is gratifying that epigraphers have broken with the "one emblem equals one political



factors of distance alone make it extremely unlikely that Calakmul and Caracol could have been included within the same controlled political unit (*e. g.* A. Chase and D. Chase 1998a).

During its hegemony over Naranjo, Caracol controlled an area of at least 5,544 km<sup>2</sup>. This data may in fact offer some insight into the optimal size of Classic Maya polities. Based on the epigraphic data, Caracol incorporated Naranjo into its territory (see also A. Chase and D. Chase 1996b). Such direct incorporation is not in evidence for Caracol's "defeat" of Tikal. From these data, it could be concluded that the Caracol polity could directly control centers 42 kilometers distant, but not ones 76 kilometers away. This accords well with Hassig's (1992: 85) estimate of areas of direct territorial domination by the Aztec military based on distance of march for warfare, approximately 60 kilometers. Houston's (1993: 137) conclusion that there was a "consistent distance between autonomous centers" of about 60 kilometers (as represented by emblem glyphs: "66.43 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 kilometers at 9.18.0.0.0") in the Classic lowland Maya political landscape agrees remarkably well with Hassig's 60 kilometer militarily-derived figure of territorial domination. Similarly Adams (1991: 174) has argued that Tikal directly controlled Rio Azul, some 45 kilometers to its northeast; these figures again agree with Hassig's estimate. Based on Naranjo's intermediate position between Tikal and Caracol, Caracol's domination of Naranjo may have been an attempt to bring Tikal within direct military striking distance. Given Tikal's lack of monumental history between A.D. 562 and 692, Caracol may have been largely successful in this attempt. Should this have been the case, it would indicate that Caracol was attempting to build an empire over a polity that would have approached at least 18,153 km<sup>2</sup> at its height (A. Chase and D. Chase 1996b, 1998a).

A second settlement program geared to seeing the effects of warfare in the archaeological record was undertaken from 1994 through 1996 in the northeastern sector of the site (Figure 3). The program, sponsored by the U.S. National Science Foundation, attempted to analyze the impact of Caracol's warfare on the outlying populace during both the early part of the Late Classic era and the Terminal Classic Period. The northeast sector of Caracol, defined by the Puchituk and Cahal Pichik Causeways, was selected for investigation because of indications that long-term occupation existed in this zone throughout Caracol's history. Both Cohune, at the end of the north transect, and Cahal Pichik, at the end of a 7.6 kilometer long causeway, appear to have been pre-existing minor centers that were engulfed in the urban spread of Caracol (Figure 1); looters' material recovered at both termini dates their inceptions to the Preclassic era. And two Terminal Classic monuments are known from the Hatzcap Ceel terminus to the southeast of Cahal Pichik (Grube n.d.; Thompson 1931:261-267). Another Terminal Classic altar portraying prisoners (A. Chase *et al.* 1991:11-12) is also located within this sector. Thus, even before mapping and excavation, archaeological data were suggestive of both early and late occupations that were not in evidence in the settlement work undertaken in the southeastern part of Caracol.

In combination with the early Guggenheim warfare program (Figure 2) and other core investigations undertaken over the use of the UCF Caracol Project (Figure 4), the results of the settlement research undertaken from 1994 through 1996 support the findings of settlement studies conducted in the southeast part of the site. After the Tikal and Naranjo conflicts, population in this northeastern part of Caracol increases substantially. And, as in the southeastern sector, a new causeway terminus—the Puchituk terminus—was established in this part of the site. Similar caching and burial practices were also encountered. As also ex-

unit" mentality, this hierarchical model of Maya political organization is very unlikely for several reasons, not the least of which is the monolithic and literal interpretation of political texts involving the reading of *u kabi* ("under the auspices of" [Schele 1982:104]) without recourse to the relevant archaeological data.

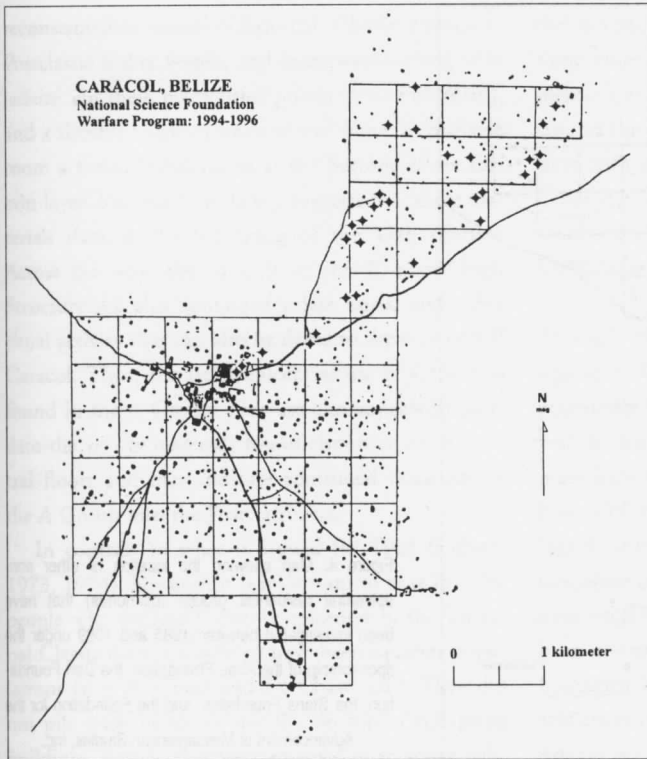


Figure 3. Map showing residential groups (diamonds) in the northeast portion of central Caracol; these groups were investigated as part of the 1994-1996 warfare program sponsored by the U.S. National Science Foundation.

pected, however, the excavation data show substantially earlier occupation for this area (back to 600-900 B.C.) and a corresponding heavier use of this section of Caracol during the Preclassic Period. The later part of the Classic Period also saw heightened use of this region as well in terms of both settlement and agricultural terrace construction (A. Chase and D. Chase 1998b). And, the archaeological data may be interpreted to suggest that much of the population in this agricultural area continued to occupy this portion of the site well past the projected epicentral collapse of Caracol.

#### Caracol and the Classic Maya Collapse

The collapse did occur at Caracol. It was, however, a very late occurrence (A. Chase and D. Chase 1996a). That warfare played a role is evident on several levels.

First, late monuments exhibit a high frequency of bound prisoners. Second, prisoner presentation scenes and warriors with atlatls occurs on the modelled-carved pottery of this era at Caracol. Third, there are a large number of tapered stone points in the archaeological record of this time. Fourth, we have evidence for the quick abandonment of many structures and rooms at Caracol with items being left *in situ* on floors (A. Chase and D. Chase n.d.). One of these was the body of a 5-year old child. Fifth, many of these epicentral floors are covered with a layer of carbon. Radiocarbon dates obtained on these materials from a variety of buildings cluster between A.D. 890 and 895, possibly suggestive of a single final epicentral conflagration.

The collapse at Caracol was complicated. After an era of great prosperity that is little known epigraphically (A.D. 702 through 798), the site virtually exploded into the Terminal Classic era under *Hok*

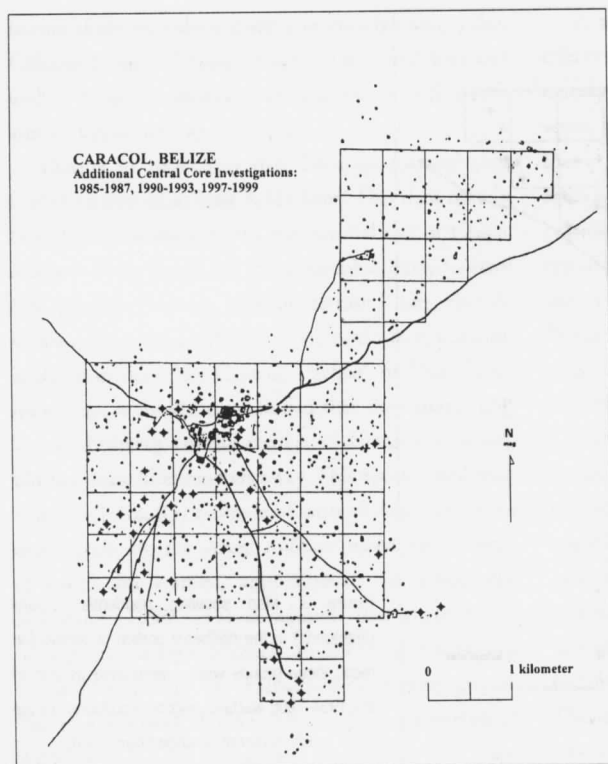


Figure 4. Map showing the location of other non-epicentral residential groups (diamonds) that have been investigated between 1985 and 1999 under the sponsorship of the Ahau Foundation, the Dart Foundation, the Stans Foundation, and the Foundation for the Advancement of Mesoamerican Studies, Inc.

*K'awil*, who was the subject of an aggressive iconographic campaign to preserve in stone his warrior and, presumably, cult status. Caracol Altar 23, dating to A.D. 800, presumably records two of *Hok's* claimed eight captives—one from an unknown site and another from Ucanal. A later Caracol ruler recorded the decapitation of another important lord 10 to 20 years later on Altar 12. Caracol's latest monumental record also reveals Yucatec ties in dress and language (A. Chase 1985; A. Chase *et al.* 1991; Grube 1994: 97).

Archaeologically, there was a great deal of epicentral activity during the Terminal Classic era at Caracol and an immense amount of building—possibly suggestive of large amounts of captive labor—in and around the B Plaza. The facade of Caana was entirely remodeled, a massive undertaking. Even later, large low structures ringed the fringe of the B Plaza, leaving open only the central access routes to Caana and its facing pyramid, Structure B5. New ceramic forms ap-

peared in the epicentral “palaces” associated with intense household living activity. Important commodities must have also been placed in bulk storage on the summit of Caana in one of the more private rear plazas, where access was difficult. The remains of these huge ceramic containers litter the room floors of two summit suites.

The A Group exhibits some of the latest occupation found at Caracol and the function of the plaza area—the locus of most of Caracol's Classic era monuments—also likely changed in the Terminal Classic. Whereas the buildings in this group are mostly temples and pyramids, specialized architecture ill-suited for domestic purposes, the area evidences both a ritual and domestic aspect during Caracol's final years. Debris and a thick layer of carbon-blackened soil covered the latest plaster floor of perhaps the most important temple in the A Group—the Temple of the Wooden Lintel. Intermixed in this debris were many



reconstructible vessels—Terminal Classic finewares, Postclassic utility vessels, and censerware—along with jadeite, cut shell, many lithic points (one of obsidian), and a sizeable horde of small animal bone. In one side room a flexed burial rested at the bottom of the carbon layer. Radiocarbon dating suggests that these materials date to the beginning of the 11th century. Across the way, the summit of the 25-meter high Structure A2 also contained a late burial and other ritual activity that can also be dated to the very end of Caracol. Thus, the latest epicentral use of Caracol is found in the A Group. This use also appears to post-date the *in situ* materials found elsewhere on epicentral floors and may indicate continued ritual use of the A Group into the Postclassic era.

In contrast to what is argued for Tikal (Culbert 1973, 1974), however, it is important to note that the people who utilized Caracol's epicenter in the Terminal Classic do not appear to have been squatter populations (*e. g.* A. Chase and D. Chase n.d.). They did not pile trash in rooms nor live on top of collapsing buildings. Rather, they were engaged in an active public building and construction program, were able to obtain a great variety of foreign objects, and carried on the ritual traditions that bridged the gap between the Classic and Postclassic eras. What trash is left on Caracol's floors appears to be due to either sudden abandonment or incomplete garbage collection and disposal over only a very short time. Thus, continuity with the earlier populations is seen at Caracol right up to the Postclassic era. At this very point, however, the site epicenter is abandoned. The suddenness of this epicentral abandonment, when considered in conjunction with the extensive burning that is found on the floors of many buildings, strongly suggests that Caracol's epicentral demise lay in destructive warfare. Complicating the situation, however, is evidence for continued ritual use of the A Group and continued household occupation in outlying areas of Caracol well past the abandonment of the central precinct's stone palaces. The rich agricultural fields of Caracol appear to have been used for several generations past

the abandonment, and presumably destruction (in some cases), of Caracol's central architectural complexes. The late ritual activities documented in and around the epicentral A Group are presumably correlated with these non-epicentral remnant populations.

## Conclusion

Throughout most of its history, Caracol was the aggressor. Archaeologically, epigraphically, and iconographically, Caracol had a very militaristic background and, to have survived and grown as it did, the site must have been on the cutting edge of warfare. The timing of at least one of its Classic era wars without regard for the agricultural cycle may suggest that some specialization of warriors and farmers was present. We have suggested elsewhere that Caracol may not have been constrained by any rule-bound warfare in the Southern lowlands because of a Yucatec ethnic affiliation (A. Chase *et al.* 1991). This may partially explain both its early and late success in war. While fortifications usually result from at least one but of unsuccessful warfare, none are in evidence at Caracol. Instead, archaeological data relative to prosperity, cohesion, and building activities can be used in conjunction with epigraphic texts to infer that Caracol's wars were not mere political propaganda and that the site benefitted greatly from these activities.

The Caracol data also suggest that not all Maya wars and aggression were equivalent. Certain of Caracol's wars appear to have been more significant than others in terms of both the site and regional history. The defeat of Tikal, while arguably having a substantial impact on Tikal (at least in terms of that sites monuments and the richness of its interments), did not immediately change life at Caracol, presumably because of the difficulty in maintaining direct control of Tikal because of the distance between the two centers. The defeat of the closer Naranjo, however, was followed by rapid and dramatic changes in Caracol; construction boomed, population increased, and pros-



perity followed. It is assumed that some of this growth was possible due to the input of additional labor from the defeated area, aided no doubt by the suggested territorial incorporation of Naranjo by Caracol. We (1998a) have also suggested that Caracol's use of Naranjo as a second capital facilitated control over Tikal by Caracol for exploitative purposes for approximately 50 years (from A.D. 631 until A.D. 680). Both Tikal and Naranjo gained some semblance of independence after A.D. 680, presumably to the detriment of the broader Caracol polity, but not to the detriment of the site itself.

Terminal Classic Caracol focused its aggressions on closer, neighboring polities. Monuments from this time commemorate not only captives taken by the ruler, but also those taken by other members of the royal dynasty. Unlike the situation at Dos Pilas, where buildings were torn down to build fortifications because that site was apparently besieged for a lengthy period of time before its abandonment in A.D. 761 (Demarest 1993, 1997), at least some of Caracol's occupants continued their prosperous lifestyles until the abandonment of the epicenter *circa* A.D. 895. These data reinforce the idea that the Maya collapse was not a single uniform event.

The archaeological data gathered within Caracol's settlement area suggest that successful Maya war had a pervasive impact on all society. Caracol's society probably functioned as a highly integrated unit that involved a variety of important administrators besides the ruler. During the course of the Classic Period, the settlement data from Caracol exhibit a trend toward greater access to "elite" goods by an increasingly larger sector of the population. Importantly, Caracol's settlement archaeology reveals no clear-cut dichotomy between commoner and elite, but rather gradations and continuities suggestive of a society with a large and prosperous middle group (A. Chase 1992). These same data also suggest that, during the Late Classic, all of Caracol society benefitted from the spoils of successful war. Thus, the collapse here cannot be seen as primarily motivated by social differences, and the

Classic era distributions of elite and ritual items at Caracol already suggest patterns that form the basis of later Postclassic Maya culture.

All evidence points toward increasingly destructive warfare as the Classic Period progressed. It has been suggested by ourselves and others that these increasing levels of destruction were to some degree the result of the Maya adapting external warfare techniques that involved new weapons, greater military sophistication, and new patterns of large-scale human sacrifice in internal warfare arenas. While Caracol may have been more adaptable and, thus, survived longer than many of its Maya neighbors, it too ultimately was left abandoned—likely a victim of the lifestyle it had helped to create.

## References

- ADAMS, RICHARD E. W.  
1986 "Rio Azul," *National Geographic* 169: 420-451.
- 1991 *Prehistoric Mesoamerica*, Revised Edition, University of Oklahoma Press, Norman.
- ADAMS, RICHARD E. W. and R. D. JONES  
1981 "Spatial Patterns and Regional Growth among Maya Cities," *American Antiquity* 46: 301-322.
- ANDREWS, ANTHONY P.  
1983 *Maya Salt Production and Trade*, University of Arizona Press, Tucson.
- BEETZ, CARL AND LINTON SATTERTHWAITE  
1981 *The Monuments and Inscriptions of Caracol, Belize*, University Museum Monograph 45, The University Museum, Philadelphia.
- BARRERA RUBIO, ALFREDO  
1980 "Mural Paintings of the Puuc Region in Yucatan," in M.G. Robertson, Ed., *Third Palenque Round Table, 1978: Part 2*, pp. 173-182, University of Texas Press, Austin.
- CHAMBERLAIN, ROBERT S.  
1948 *The Conquest and Colonization of Yucatan: 1517-1550*, Publication 582, Carnegie Institution of Washington, Washington, D. C.
- CHASE, ARLEN E.  
1985 "Troubled Times: The Archaeology and Ico-



- nography of the Terminal Classic Southern Lowland Maya," in M.G. Robertson and V. Fields, Eds., *Fifth Palenque Round Table, 1983*, Vol. 7, pp. 103-114, Pre-Columbian Art Research Institute, San Francisco.
- 1991 "Cycles of Time: Caracol in the Maya Realm," in M.G. Robertson and V.G. Fields, Eds., *Sixth Palenque Round Table, 1986*, pp. 32-42, University of Oklahoma Press, Oklahoma.
- 1992 "Elites and the Changing Organization of Classic Maya Society," in D.Z. Chase and A.F. Chase, Eds., *Mesoamerican Elites: An Archaeological Assessment*, pp. 30-49, University of Oklahoma Press, Norman.
- 1994 "A Contextual Approach to the Ceramics of Caracol, Belize," in D.Z. Chase and A.F. Chase, Eds., *Studies in the Archaeology of Caracol, Belize*, pp. 157-182, Monograph 7, Pre-Columbian Art Research Institute, San Francisco.
- 1998 "Planeación cívica e integración de sitio en Caracol, Belice: Definiendo una economía administrada del periodo Clásico Maya," *Los investigadores de la cultura maya* 6(1): 26-42, Universidad Autónoma de Campeche, Campeche.
- CHASE, ARLEN F. and DIANE Z. CHASE
- 1987a *Glimmers of a Forgotten Realm: Maya Archaeology at Caracol, Belize*, University of Central Florida, Orlando.
- 1987b *Investigations at the Classic Maya City of Caracol, Belize: 1985-1987*, Monograph 3, Pre-Columbian Art Research Institute, San Francisco.
- 1989 "The Investigation of Classic Period Warfare at Caracol, Belize," *Mayab* 5: 5-18.
- 1992 "El norte y el sur: política, dominios, y evolución cultural maya," *Mayab* 8: 134-149.
- 1994a "Details in the Archaeology of Caracol, Belize: An Introduction," in D.Z. Chase and A.F. Chase, Eds., *Studies in the Archaeology of Caracol, Belize*, pp. 1-11, Monograph 7, Pre-Columbian Art Research Institute, San Francisco.
- 1994b "Maya Veneration of the Dead at Caracol, Belize," in M. Robertson and V. Fields, Eds., *Seventh Palenque Round Table, 1989*, pp. 55-62, Pre-Columbian Art Research Institute, San Francisco.
- 1996a "A Mighty Maya Nation: How Caracol Built an Empire by Cultivating Its 'Middle Class'," *Archaeology* 49(5): 66-72.
- 1996b "More Than Kin and King: Centralized Political Organization Among the Ancient Maya," *Current Anthropology* 37(5): 803-810.
- 1998a "Late Classic Maya Political Structure, Polity Size, and Warfare Arenas," in A. Ciudad Ruiz et al., Eds., *Asentamiento, estructura política y ritual en la civilización maya*, pp. 11-29, Sociedad Española de Estudios Mayas, Madrid.
- 1998b "Scale and Intensity in classic Period Maya Agriculture: Terracing and Settlement at the 'Garden City' of Caracol, Belize," *Culture and Agriculture* 20 (2/3): 60-77.
- n.d. "Terminal Classic Status-Linked Ceramics and the Maya 'Collapse': De Facto Refuse at Caracol, Belize," in D. Rice, P. Rice, and A. Demarest, Eds., *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*, Westview Press, Boulder.
- CHASE, ARLEN F., NIKOLAI GRUBE, and DIANE Z. CHASE
- 1991 "Three Terminal Classic Monuments from Caracol, Belize," *Research Reports on Ancient Maya Writing*, No. 36, Center for Maya Research, Washington, D.C.
- CHASE, ARLEN F. and PRUDENCE M. RICE
- 1985 Eds., *The Lowland Maya Postclassic*, University of Texas Press, Austin.
- CHASE, DIANE Z.
- 1992 "Postclassic Maya Elites: Ethnohistory and Archaeology," in D.Z. Chase and A.F. Chase, Eds., *Mesoamerican Elites: An Archaeological Assessment*, pp. 118-134, University of Oklahoma Press, Norman.
- 1998 "Albergando a los muertos en Caracol, Belice," *Los investigadores de la cultura maya* 6(1): 9-25, Universidad Autónoma de Campeche, Campeche.
- CHASE, DIANE Z. and ARLEN F. CHASE
- 1982 "Yucatec Influence in Terminal Classic Northern Belize," *American Antiquity* 47: 596-614.
- 1988 *A Postclassic Perspective: Excavations at the Maya Site of Santa Rita Corozal, Belize*,

- Monograph 4, Pre-Columbian Art Research Institute, San Francisco.
- 1994 Eds., *Studies in the Archaeology of Caracol, Belize*, Monograph 7, Pre-Columbian Art Research Institute, San Francisco.
- 1998 "The Architectural Context of Caches, Burials, and Other Ritual Activities for the Classic Period Maya (as Reflected at Caracol, Belize)," in Stephen D. Houston, Ed., *Function and Meaning in Classic Maya Architecture*, pp. 299-332, Dumbarton Oaks, Washington, D. C.
- n.d. a "Changing Perspectives on Caracol, Belize: Long-Term Archaeological Research and the Northeast Sector Settlement Program," in J. L. Bonor and H. W. Topsey, Eds., *Maya Archaeology of Belize and Surrounding Areas*, pp. 44-51, D. O. A., Belmopan.
- n.d. b "Hermeneutics, Transitions, and Transformations in Classic to Postclassic Maya Society," in D. Rice, P. Rice, and A. Demarest, Eds., *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*, Westview Press, Boulder.
- CHASE, DIANE Z., ARLEN F. CHASE, and WILLIAM A. HAVILAND
- 1990 "The Classic Maya City: Reconsidering 'The Mesoamerican Urban Tradition,'" *American Anthropologist* 92(2): 499-506.
- COWGILL, GEORGE
- 1979 "Teotihuacan, Internal Militaristic Competition, and the Fall of the Classic Maya," in N. Hammond and G. Willey, Eds., *Maya Archaeology and Ethnohistory*, pp. 51-62, University of Texas Press, Austin.
- CULBERT, T. PATRICK
- 1973 "The Maya Downfall at Tikal," in T. P. Culbert, Ed., *The Classic Maya Collapse*, University of New Mexico Press, Albuquerque.
- 1974 *The Lost Civilization: The Story of the Classic Maya*, Harper and Row, New York.
- 1991a "Politics in the Northeast Peten, Guatemala," in T.P. Culbert, Ed., *Classic Maya Political History*, pp. 128-146, Cambridge University Press, Cambridge.
- 1991b "Maya Political History and Elite Interaction: A Summary View," in T.P. Culbert, Ed., *Classic Maya Political History*, pp. 311-346, Cambridge University Press, Cambridge.
- DEMAREST, ARTHUR A.
- 1978 "Interregional Conflict and 'Situation Ethics' in Classic Maya Warfare," in M. Giardino, B. Edmonson, and W. Creamer, Eds., *Codex Wauchope: A Tribute Roll*, pp. 101-111, Human Mosaic, Tulane University, New Orleans.
- 1993 "The Violent Saga of a Maya Kingdom," *National Geographic* 183(2): 94-111.
- 1997 "The Vanderbilt Petexbatun Regional Archaeological Project: 1989-1994," *Ancient Mesoamerica* 8(2): 209-227.
- DEMAREST, ARTHUR A., MATT O'MANSKY, CLAUDIA WOLLEY, DIRK VAN TURENHOUT, TAKESHI INOMATA, JOEL PALKA, and HECTOR ESCOBEDO
- 1997 "Classic Maya Defensive Systems and Warfare in the Petexbatun Region," *Ancient Mesoamerica* 8(2): 259-273.
- DILLON, BRIAN D.
- 1982 "Bound Prisoners in Maya Art," *Journal of New World Archaeology* 5(1): 24-45.
- FASH, WILLIAM
- 1991 *Scribes, Warriors, and Kings: The City of Copan and the Ancient Maya*, Thames and Hudson Ltd., London.
- FASH, WILLIAM and DAVID STUART
- 1991 "Dynastic History and Cultural Evolution at Copan, Honduras," in T.P. Culbert, Ed., *Classic Maya Political History*, pp. 147-179, Cambridge University Press, Cambridge.
- FERGUSON, R. B. and L. E. FARRAGHER
- 1988 *The Anthropology of War: A Bibliography*, Occasional Papers of the Harry Frank Guggenheim Foundation Number One, Harry Frank Guggenheim Foundation, New York.
- FREIDEL, DAVID A.
- 1986 "Maya Warfare: An Example of Peer Polity Interaction," in C. Renfrew and J. Cherry, Eds., *Peer Polity Interaction and Socio-Political Change*, pp. 93-108, Cambridge University Press, Cambridge.
- 1992 "Children of First Father's Skull: Terminal Classic Warfare in the Northern Maya Lowlands and the Transformation of Kingship and Elite Hierarchies," in D.Z. Chase and





- A.F. Chase, Eds., *Mesoamerican Elites: An Archaeological Assessment*, pp. 99-117, University of Oklahoma Press, Norman.
- GRUBE, NIKOLAI  
1994 "Epigraphic Research at Caracol, Belize," in D.Z. Chase and A.F. Chase, Eds., *Studies in the Archaeology of Caracol, Belize*, pp. 83-122, Monograph 7, Pre-Columbian Art Research Institute, San Francisco.
- n.d. "Epigraphic Research at Caracol, Belize: An Update," in A.F. Chase and D.Z. Chase, *Archaeological Investigations at Caracol, Belize: 1988-1996*, Monograph 9, Pre-Columbian Art Research Institute, San Francisco.
- HASSIG, ROSS  
1988 *Aztec Warfare: Imperial Expansion and Political Control*, University of Oklahoma Press, Norman.
- 1991 "Roads, Routes, and Ties that Bind," in C.D. Trombold, *Ancient Road Networks and Settlement Hierarchies in the New World*, pp. 17-27, Cambridge University Press, Cambridge.
- 1992 *War and Society in Ancient Mesoamerica*, University of Oklahoma Press, Norman.
- HAVILAND, WILLIAM A.  
1994 "Star Wars at Tikal or Did Caracol Do What the Glyphs Say They Did?," in W. Haviland, *Anthropology*, 7th Ed., pp. 266-270, Holt, Reinhart, and Winston, New York.
- HEALY, PAUL F., J. D. H. LAMBERT, J. T. ARNASON, and R. J. HEBDA  
1983 "Caracol, Belize: Evidence of Ancient Maya Agricultural Terraces," *Journal of Field Archaeology* 10: 397-410.
- HOUSTON, STEPHEN D.  
1991 "Appendix: Caracol Altar 21," in M.G. Robertson and V.M. Fields, Eds., *Sixth Palenque Round Table, 1986*, pp. 38-41, University of Oklahoma Press, Norman.
- 1993 *Hieroglyphs and History at Dos Pilas: Dynastic Politics of the Classic Maya*, University of Texas Press, Austin.
- INOMATA, TAKESHI  
1997 "The Last Day of a Fortified Classic Maya Center: Archaeological Investigations at Aguateca, Guatemala," *Ancient Mesoamerica* 8(2): 337-351.
- JONES, CHRISTOPHER  
1991 "Cycles of Growth at Tikal," in T. P. Culbert, Ed., *Classic Maya Political History*, pp. 102-127, Cambridge University Press, Cambridge.
- MATHEWS, PETER  
1991 "Classic Maya Emblem Glyphs," in T. P. Culbert, Ed., *Classic Maya Political History*, pp. 19-29, Cambridge University Press, Cambridge.
- MCCAULEY, C.  
1990 "Conference Overview," in J. Haas, Ed., *The Anthropology of War*, pp. 1-25, Cambridge University Press, Cambridge.
- 1941 "An Anthropological Analysis of War," *American Journal of Sociology* 46: 521-550.
- MARCUS, JOYCE  
1976 *Emblem and State in the Classic Maya Lowlands: An Epigraphic Approach to Territorial Organization*, Dumbarton Oaks, Washington, D. C.
- 1992 *Mesoamerican Writing Systems: Propaganda, Myth, and History in Four Ancient Civilizations*, Princeton University Press, Princeton.
- MELKO, M.  
1975 "The Termination of Peace as a Consequence of Institutionalization," in M. A. Nettlehip, R. Dalegivens, and A. Nettlehip, Eds., *War, Its Causes and Correlates*, pp. 549-558, Mouton Publishers, La Haya.
- MILLER, ARTHUR G.  
1977 "'Captains of the Itza': Unpublished Mural Evidence from Chichen Itza," in N. Hammond, Ed., *Social Process in Maya Prehistory: Studies in Honour of Sir Eric Thompson*, pp. 197-225, Academic Press, London.
- MILLER, MARY E.  
1986 *The Murals of Bonampak*, Princeton University Press, Princeton.
- 1993 "On the Eve of the Collapse: Maya Art of the Eighth Century," in J. Sabloff and J. Henderson, Eds., *Lowland Maya Civilization in the Eighth Century A.D.*, pp. 355-413, Dumbarton Oaks, Washington, D.C.
- NAHM, WERNER  
1994 "Maya Warfare and the Venus Year," *Mexicon* 16(1): 6-10.
- NAROLL, R.  
1964 "On Ethnic Unit Classification," *Current Anthropology* 5: 283-312.

- OLDFIELD, HAYES  
1975 "Warfare and the Disappearance of Meroe: A Preliminary Application of Cross-Cultural Findings to Nile Archaeology," in M. A. Nettlehip, R. Dalegivens, and A. Nettlehip, Eds., *War, Its Causes and Correlates*, pp. 345-357, Mouton Publishers, La Haya.
- OTTERBEIN, K. F.  
1968 "Internal War: A Cross-Cultural Study," *American Anthropologist* 70: 277-289.  
1970 *The Evolution of War: A Cross-Cultural Study*, HRAF Press, New Haven.  
1973 "The Anthropology of War," in J. Honigmann, Ed., *Handbook of Social and Cultural Anthropology*, pp. 923-958, Rand McNally and Company, Chicago.
- PROSKOURIAKOFF, TATIANA  
1962 "The Artifacts of Mayapan," in H.E.D. Pollock et al., Eds., *Mayapan, Yucatan, Mexico*, pp. 321-549, Publication 619, Carnegie Institution of Washington, Washington, D.C.
- PULESTON, DENNIS E.  
1974 "Intersite Areas in the Vicinity of Tikal and Uaxactun," in N. Hammond, Ed., *Mesoamerican Archaeology: New Approaches*, pp. 303-311, University of Texas Press, Austin.  
1983 *The Settlement Survey of Tikal*, Tikal Reports No. 13, University Museum Monograph 48, University of Pennsylvania, Philadelphia
- PULESTON, DENNIS E. and D. CALLENDER  
1967 "Defensive Earthworks at Tikal," *Expedition* 9(3): 40-48.
- REPETTO TIÓ, B.  
1985 *Desarrollo militar entre los mayas*, Maldonado Editores, INAH-SEP, Yucatán, México.
- RICE, DON S. and PRUDENCE M. RICE  
1981 "Muralla de León: A lowland Maya Fortification," *Journal of Field Archaeology* 8:273-288.
- ROYS, RALPH L.  
1957 *The Political Geography of the Yucatan Maya*, Publication 613, Carnegie Institution of Washington, Washington, D.C.  
1965 "Lowland Maya Society at Spanish Contact," In R. Wauchope and G. R. Willey, Eds., *Handbook of Middle American Indians*, Vol. 3, pp. 659-678, University of Texas Press, Austin.
- 1972 *The Indian Background of Colonial Yucatan*, reprint of Carnegie Institution of Washington Publication 548 (1943), University of Oklahoma Press, Norman.
- SCHELE, LINDA  
1982 *Maya Glyphs: The Verbs*, University of Texas Press, Austin.
- SCHELE, LINDA and PETER MATHEWS  
1991 "Royal Visits and Other Intersite Relationships Among the Classic Maya," in T. P. Culbert, Ed., *Classic Maya Political History*, pp. 226-252, Cambridge University Press, Cambridge.
- SCHELE, LINDA and MARY E. MILLER  
1986 *The Blood of Kings: Dynasty and Ritual in Maya Art*, Kimball Art Museum, Fort Worth.
- SCHNEIDER, J.  
1950 "Primitive Warfare: A Methodological Note," *American Sociological Review* 15: 772-777.
- SHARER, ROBERT J.  
1978 "Archaeology and History at Quirigua, Guatemala," *Journal of Field Archaeology* 5(1): 51-70.
- SOSA, J. and D. REENTS  
1980 "Glyphic Evidence for Classic Maya Militarism," *Belizean Studies* 8(3): 2-11.
- STONE, ANDREA, D. REENTS, and R. COFFMAN  
1985 "Genealogical Documentation of the Middle Classic Dynasty of Caracol, El Cayo, Belize," in M.G. Robertson and E. Benson, Eds., *Fourth Palenque Round Table, 1980*, pp. 267-275, Pre-Columbian Art Research Institute, San Francisco.
- STUART, DAVID  
1993 "Historical Inscriptions and the Maya Collapse," in J. Sabloff and J. Henderson, Eds., *Lowland Maya Civilization in the Eighth Century A.D.*, pp. 321-354, Dumbarton Oaks, Washington, D.C.
- SUHLER, CHARLES and DAVID FREIDEL  
1998 "Life and Death in a Maya War Zone," *Archaeology* 51(3): 28-34.
- THOMPSON, J. ERIC S.  
1931 *Archaeological Investigations in the Southern Cayo District, British Honduras*, Field Museum of Natural History Publication 301,



- Anthropological Series, Vol. 17, No. 3, Chicago. 1977
- TOZZER, ALFRED M. "Warfare and the Evolution of Maya Civilization," in R.E.W. Adams, Ed., *The Origins of Maya Civilization*, pp. 335-372, University of New Mexico Press, Albuquerque.
- 1941 *Landa's Relación de las cosas de Yucatán*, Peabody Museum of Archaeology and Ethnology Paper No. 28, Harvard University, Cambridge. 1993
- WEBSTER, DAVID L. "The Study of Maya Warfare: What It Tells Us about the Maya and What It Tells Us about Maya Archaeology," in J. Sabloff and J. Henderson, Eds., *Lowland Maya Civilization in the Eighth Century A.D.*, pp. 415-444, Dumbarton Oaks, Washington, D. C.
- 1976 *Defensive Earthworks at Becan, Campeche, Mexico: Implications for Maya Warfare*, Publication 41, Middle American Research Institute, Tulane University, New Orleans.