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Recent Advances in Maya Archaeology

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This paper focuses on the discoveries of the last decade in Maya archaeology, and assesses their impact on previous models and synthetic frameworks. Although the bibliography includes 700 items published during the last 10 years, it is not exhaustive; on the contrary, a frustratingly large number of discoveries had to be omitted. Two areas exploding with new research are (1) the elicitation of a greater variety of data from hieroglyphic texts, and (2) a series of chemical and biological breakthroughs in the analysis of human burials. The former make it easier to assess the role of elite actors or "agents" in processes of sociopolitical change. The latter hold out the hope of documenting warfare (through skeletal trauma), migration (by tracing tooth enamel isotopes to ground water), status or gender differences in diet (through bone chemistry), and biological connections of individuals to each other and to earlier populations (through DNA). By combining these new data, we are on our way to integrating humanism and science, and to treating Maya polities as case studies in primary or secondary state formation.

KEY WORDS: Maya; sociopolitical evolution; state formation and collapse; warfare; drought; trauma; diet.

INTRODUCTION

For a previous overview I chose the title *Where is Lowland Maya Archaeology Headed?* (Marcus, 1995a). It seemed a reasonable question, because at that moment it was unclear whether Maya archaeology would go scientific or humanistic. So strong was the tug of war between these approaches in anthropology that at least one department, that of Stanford, actually split into two programs.

We now know the answer to my question: during the last decade, Mayanists headed off in three directions. Some redoubled their interest in traditional anthropological topics such as the nature of political economies, the emergence of

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sociopolitical hierarchies, the identification of primary and secondary state formation, the everyday life of commoners, and the evolutionary impact of warfare. Others chose hard-science questions of wetland management, tropical deforestation, climate change, the DNA profiles of long-dead Maya, and the use of isotopic analyses to reconstruct both ancient diet and region of origin. Still a third group found the trendy themes of the 1980s postmodernist anthropology irresistible, seeking to make a contribution to agency, practice theory, performance, resistance, gender, and power.

Fortunately, these divergent approaches did not split Maya archaeology into separate programs. Indeed, many scholars continue to integrate scientific and humanistic data (Bell *et al.*, 2003; Brady and Ashmore, 1999; Braswell, 2003; Dunning *et al.*, 1999; Fash, 1994, 2001; Fash and Andrews, in press; Fash and Sharer, 1991; Hammond, 1991, 1999; Sabloff, 1990, 2003; Scarborough, 1998; Sharer, 1994, 1996; Sheets, 1992, 2002). This integration of science and humanism has deep roots in Mesoamerican research. One could point to many holistic attempts to combine archaeology, cultural geography, epigraphy, ethnography, ethnohistory, ethnoscience, geoscience, iconography, and/or linguistics (Atran, 1999; Atran *et al.*, 1999, 2002; Atran and Ukan Ek', 1999; Berlin *et al.*, 1974; Berlin and Berlin, 1996, 1998; Bricker and Vail, 1997; Feinman, 1997; Hunn, 1977; Kepecs, 1997a,b; Marcus, 1982; Marcus and Flannery, 1996; Puleston, 1977; Reichel-Dolmatoff, 1976; Vogt, 1964, 1994; Willey, 1980; Williams, 1980, 1981).

As for some of the newest approaches to Maya archaeology, the critical question is whether or not the archaeological record really provides enough data to apply them. While examples of resistance, power, and gender relations can certainly be gleaned from historical texts, it is not clear that they can be deduced from the average archaeological site without injecting a great deal of imagination.

The situation is somewhat different when it comes to hard-science approaches involving bone apatite, tooth enamel, collagen, and isotopic analysis. Here there are very impressive physical and chemical data provided by specialists. The question is whether an archaeologist, usually untrained in those disciplines, can fully assess what the range of results mean, or can truly collect a representative sample of individuals for each time period. Regardless of the potential problems, however, an exciting new line of evidence is emerging. Many of the biochemical approaches complement the studies of the plant and animal remains; they are showing us differences in diet between men and women, and between elite and commoners (Ambrose and Katzenberg, 2000; Gerry, 1993; Gerry and Chesson, 2000; Lentz, 1991; Powis *et al.*, 1999; White, 1999; White *et al.*, 2001; Whittington and Reed, 1997a,b). Many of the same human skeletons sampled for trace elements are also revealing unexpected evidence of trauma and violence, making clearer the nature and frequency of warfare in Maya society (Buikstra *et al.*, 2003; Massey and Steele, 1997, pp. 76–77; Saul and Saul, 1991, pp. 148–152; 1997, pp. 43–44).

Armed with new lines of evidence and alternative theoretical approaches, many Mayanists have increased the sophistication of their research on more traditional topics: the origins of agriculture, the rise and collapse of states, the emergence and nature of social stratification. The resulting improvement of our models ensures that the Maya will figure prominently in any list of socioevolutionary case studies. Mayanists now seem more interested than ever before in causation, both *proximate* and *ultimate*. They are concerned, not only with the *specific* evolution of Maya civilization, but also with the ways in which the Maya are similar to and different from other civilizations (*general* evolution). This interest in causation, including efforts to determine who the actors and decision makers were, what form their decisions took, and the sequence of strategies they implemented, has been advocated by many (Bailey, 1969; Lewis, 1974, 1981; Marcus and Flannery, 1996; Robin, 1999, 2001; Sherratt, 1992; Sztompka, 1994; Walker and Lucero, 2000; Zagarell, 1986).

Now let us turn to some of the results of recent Maya research.

THE PALEOINDIAN AND ARCHAIC PERIODS: FROM 10,000 B.C. TO THE FIRST POTTERY

The Paleoindian period in the Maya region (c. 10,000–8000 B.C.) continues to be known from just a handful of sites. Data on the Archaic period (8000–2000 B.C.) are accumulating, however, particularly in Belize (see Fig. 1), where seven new Preceramic sites have been reported (Rosenswig and Masson, 2001).

Three of these sites are in upland locations (Strath Bogue, Patt Work Site, and Test Program Subop 7); two are on islands (Laguna de On and Caye Coco); and the remaining two are on the shores of lagoons (Fred Smith Site and Doubloon Bank). Five of the sites are believed to date to the Late Preceramic, based on the presence of constricted unifaces (see below). The other two sites are assigned to the Preceramic, based on the presence of patinated chipped stone found in a distinctive orange soil horizon. It is also worth noting that at the previously known Ladyville 1 site, Preceramic Lowe points also were found in an orange stratum (Kelly, 1993, p. 215).

The Preceramic component at Caye Coco covers an estimated 150 m^2; among the discoveries there were a posthole, two hammerstones, and a worked oyster shell. It seems that Preceramic settlers were attracted to the Freshwater Creek drainage and preferred to camp near water.

Despite these new discoveries, the lowlands of Mesoamerica have yet to host the kind of intensive and long-term regional study conducted in the highland Mexican valleys of Tehuacán and Oaxaca (Voorhies *et al.*, 2002, p. 181). The lowland projects that come closest are those directed by (1) MacNeish in Belize (MacNeish, 1983; Zeitlin and Zeitlin, 2000), and (2) Voorhies on the Pacific

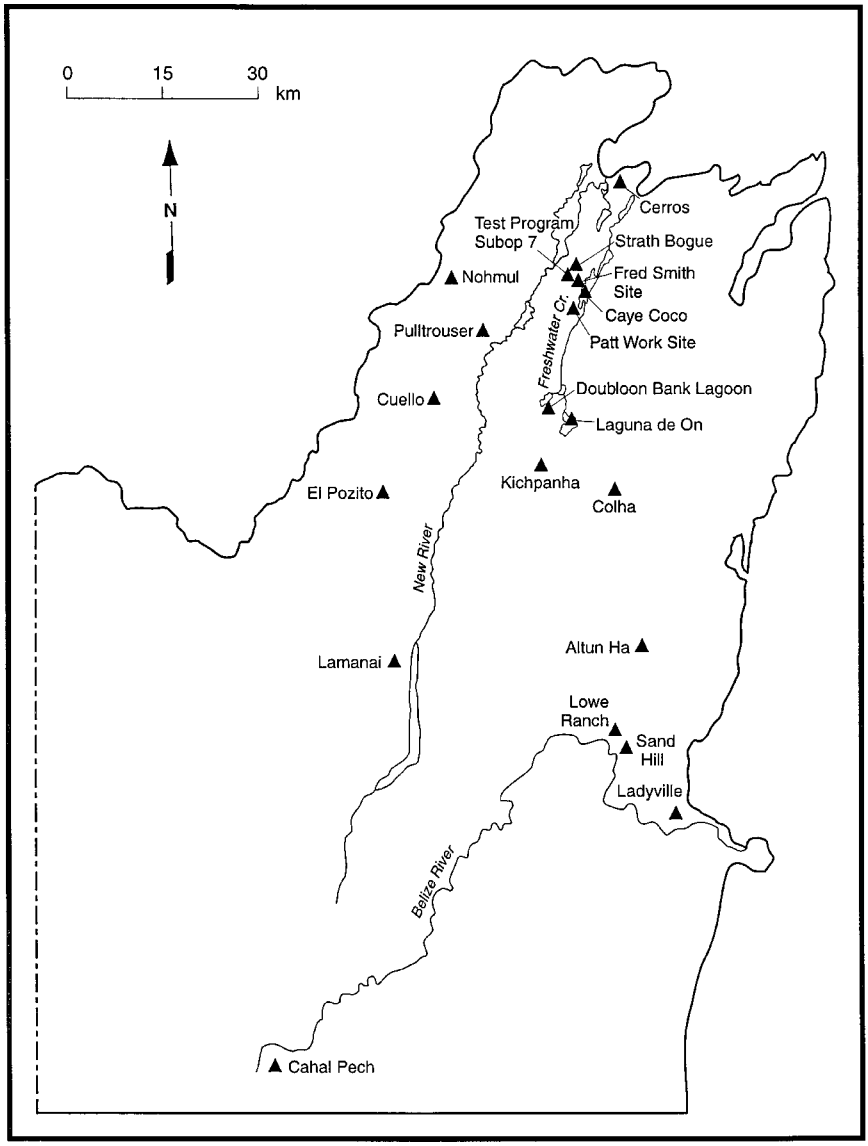

Fig. 1. Northern Belize is an area where a number of important Preceramic and Preclassic sites have been located. Shown here are some of those that have been tested or excavated (redrawn from Rosenswig and Masson, 2001, Fig. 7; Shafer and Hester, 1991, Fig. 1).

coast of Chiapas (Voorhies, 1976, 1996; Voorhies *et al.*, 2002; Voorhies and Kennett, 1995). Excavations at the Chiapas coast site of Cerro de las Conchas indicate that Middle Archaic foragers (c. 5500–3500 B.C.) were clambakers who frequented the site year-round (especially during the dry season, when inland resources were scarce and the adjacent lagoons were teeming with shrimp and clams). Artifacts recovered at this shell mound include "cooking stones" (possibly heated, then placed in gourds to boil food) and ark shells that served as cutting and scraping tools (Voorhies *et al.*, 2002, p. 198). To the west of Cerro de las Conchas are Late Archaic shell mounds (Chantuto, Campón, Tlacuachero, El Chorro, and Zapotillo) that show evidence of successive stratified clambakes (see Fig. 2).

Adaptations in Belize seem different, but the contrast may reflect where archaeologists have chosen to excavate. Most excavated Archaic sites in Belize are inland, close to rivers or prime chert-bearing zones, rather than on the coast.

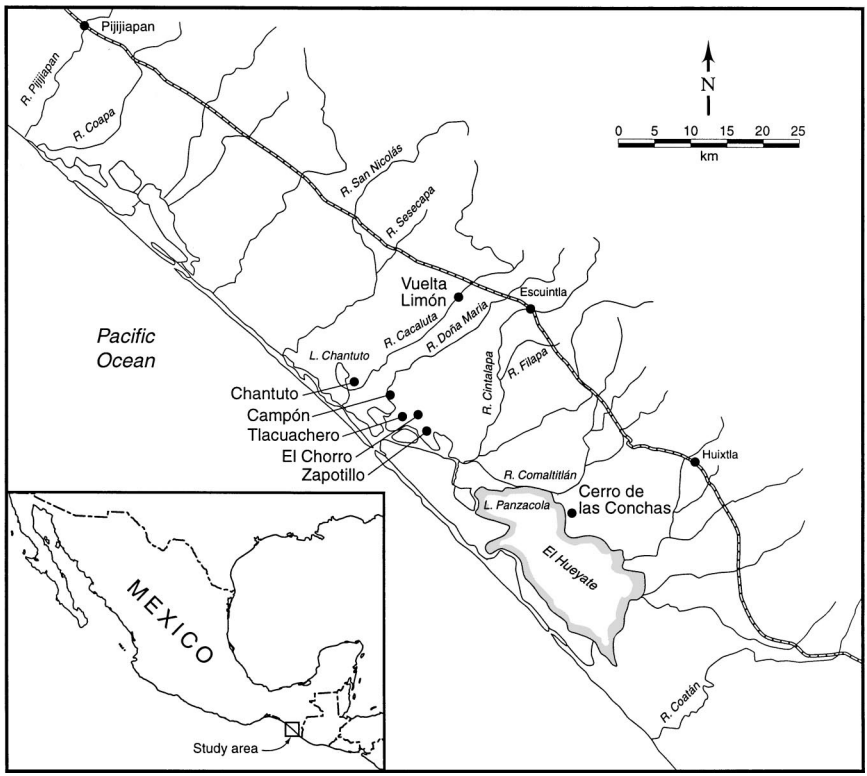

Fig. 2. Several key Preceramic sites are located on the Pacific coast of Chiapas, Mexico, not far from the Guatemalan border (redrawn from Voorhies *et al.*, 2002, Fig. 1).

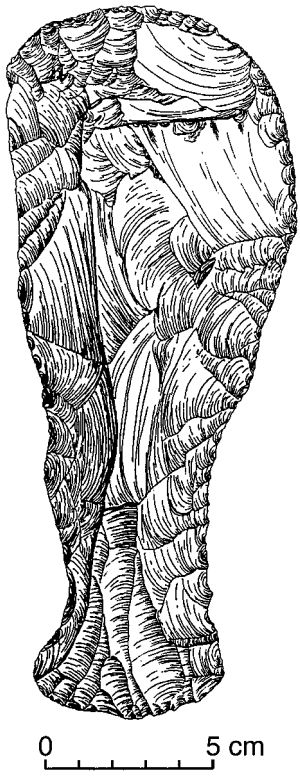

Fig. 3. A constricted uniface, or chipped stone adze, such as that shown here, is considered to be a diagnostic tool of the Preceramic era in northern Belize (redrawn from Shafer *et al.*, 1980, Fig. 6).

Excavations at Colha, the Kelly site, and Cobweb Swamp suggest occupational continuity from c. 3000–800 B.C. (Hester *et al.*, 1980; Hester and Shafer, 1991; Iceland, 1997, 2001; Jacob, 1995; Jones, 1994; Shafer and Hester, 1991). Thick clay sediments in northern Guatemalan lakes also date to that time span, and they are thought to be the result of land clearance and deforestation (Rosenmeier *et al.*, 2002). That 2200-year period covers the transition from the Preceramic to the era of Middle Preclassic pottery.

Use-wear studies suggest that one of the diagnostic Late Archaic tools in northern Belize—the "constricted uniface" or unifacial adze—may have been used for ditch digging, woodworking, and forest clearance (Gibson, 1991; Shafer *et al.*, 1980; see Fig. 3). Despite this evidence for continuity in domestic tasks over two millennia, Iceland (1997, 2001) suggests that a true Early Preclassic is absent in northern Belize. He sees the shift from Preceramic to pottery making occurring around 1000 B.C., much later than its occurrence in the Mexican highlands or the Chiapas and Guatemalan coasts. Other investigators, however, argue that there is indeed Early Preclassic material in Belize, citing ceramics, houses, and

middens found at Blackman Eddy and Cahal Pech (Awe, 1992; Cheetham, in press; Garber *et al.*, 2002). Different questions are also being asked: Were the Preceramic populations ethnically Maya? When pottery first appears, was it a technology borrowed from neighbors, or was it introduced by pottery-making immigrants who were absorbed into Belize?

Northern Honduras also has yielded evidence of Early Preclassic villages. One of these—Puerto Escondido, northwest of Playa de los Muertos—is a site with four earthen mounds, situated on a tributary of the Chamelecón River. Having excavated stratified deposits 3.5 m deep, Joyce and Henderson (2001) argue that Puerto Escondido was settled prior to 1600 B.C. and that sophisticated pottery appeared there by that date. They are convinced that the fertile riverine setting of Puerto Escondido should yield other villages just as early (Joyce and Henderson, 2001, p. 21; Rue, 1989). At the same time, they are aware that such sites might be deeply buried below alluvial deposits.

Even in well-surveyed areas such as the Copan Valley, where we know that the Early Preclassic existed, it has been difficult to find villages of that period. In 1896, George Byron Gordon (1898, Pl. 1) found Preclassic pottery while excavating a series of caves in Honduras. However, it was not until 1978, when Fash was excavating 600 m east of Copan's Principal Group, that anyone encountered material as old as that found by Gordon. Finally, in 1981, Fash found even earlier material just 10 m away (Fash, 1991, p. 65). These materials include the earliest house known so far from the Copan Valley, dating to c. 1300 B.C., and ceramics showing connections to coastal and highland Guatemala. The next phase, 1000–850 B.C., has distinctive burial vessels with shapes and pan-Mesoamerican motifs that are particularly well known from the highlands of Mexico (Fash, 2001, p. 69; Flannery and Marcus, 1994, 2000; Niederberger, 1976, 1987).

Our glimpses into Early and Middle Preclassic life in the Copan Valley are tantalizing but limited (Rue *et al.*, 1989; Viel, 1999). Why is it so difficult to find Early Preclassic villages? Hall and Viel (2003) suggest that the course of the Copan River has changed a number of times, with seasonal flooding burying earlier hamlets (Fash, 2001, p. 67). It may also be that some excavations were simply not deep enough to reach Preclassic levels. Some of Hall and Viel's own excavations revealed thick sterile levels covering artifact-bearing levels.

Excavations in Guatemala suggest that the highlands were a geographic and temporal bridge between Early Preclassic villages of the Chiapas coast and later lowland cities. Recent excavations in the Antigua Valley, at Urías and Rucal, have yielded stratified materials for the Early and Middle Preclassic (Garnica *et al.*, 2001; Robinson and Pye, 1996). Garnica *et al.* note that the first pottery in the Antigua Valley is very well made and not simply a copy of either coastal or piedmont types. Their paste analyses, however, indicate that the vessels were made on clays from different environmental zones, suggesting to them that these were people from the Pacific coast who expanded into the Antigua Valley.

THE ORIGINS OF AGRICULTURE AND PRECLASSIC SUBSISTENCE STRATEGIES

Any discussion of early village life inevitably raises questions about the origins of agriculture. Renewed study by plant geneticists (Bennetzen *et al.*, 2001) supports George Beadle's 1939 hypothesis, which proposed that teosinte (*Zea mexicana*) was the wild ancestor of maize. Our oldest AMS dates for domestic maize come from the Valley of Oaxaca and are calibrated to 4350 B.C. (Benz, 2001; Piperno and Flannery, 2001). Maize occurs in the Tehuacán Valley by 3500 B.C. (Long *et al.*, 1989), and by 3000 B.C. had spread to the coast of Chiapas (Kennett and Voorhies, 1996), Belize (Pohl *et al.*, 1996), and Lake Yojoa, Honduras (Rue, 1989, p. 177). It thus appears that tropical lowlanders, just like Mexican highlanders, were clearing forests and experimenting with corn agriculture long before they made pottery and lived in permanent villages (Pope *et al.*, 2001).

Although an earlier generation of scholars linked the origins of sociopolitical complexity to maize agriculture, it is clear that many millennia and considerable increase in cob length and kernel size had to take place before sociopolitical complexity arose in the Maya area. Because corn is known to comprise as much as 75% of the modern Maya diet, earlier scholars also imagined that corn might have constituted 75% of the ancient Maya diet. New evidence, however, indicates that lower maize percentages characterized the ancient Maya diet, particularly during the Preclassic era when human population density was lower and wild animals more plentiful. It also appears that even within the same village, maize consumption could vary. For example, at the site of Cahal Pech (Belize), stable isotope and nitrogen isotope ratios of human bone collagen reveal that lower status Middle Preclassic occupants residing on the periphery of the site were consuming less maize and more fish than the (apparently) higher status occupants in the center of the site (Powis *et al.*, 1999, p. 373). At Cuello (Belize), similar analyses suggest that maize may have provided less than 30% of the Preclassic diet (van der Merwe *et al.*, 2000, p. 29).

While these studies of maize consumption were being conducted, others were focused on animal protein and meat intake (Carr, 1996; Emery, 1999; Moholy-Nagy, 1998; Pohl, 1994; Shaw, 1999). At Cuello, it appears that three animals dominated the Preclassic meat supply. White-tailed deer (*Odocoileus virginianus*) was the prime source of meat, representing more than 50% of the minimum number of individuals and potential meat intake in kilos. Freshwater turtles (especially *Kinosternon* sp. and *Staurotypus* sp.) and domestic dogs (*Canis familiaris*) were in second and third place (Wing and Scudder, 1991). On the basis of age data from bones and teeth, Clutton-Brock and Hammond (1994) suggest that most domesticated dogs were killed at one year of age. Since the weight of individual dogs at Cuello may have been 20–35 pounds, this domestic species could have contributed a substantial amount of meat. As Clutton-Brock and Hammond (1994, p. 825) note, "In a society where hunting was the major means of acquiring protein, the

availability of domesticated dogs requiring low energy expenditure to breed, feed, and slaughter, formed a useful reliable counterbalance to the vagaries of the chase."

The Maya data, however, indicate that there was considerable variability from site to site in the consumption of domesticated dog. Dog bones comprise less than 1% of the Preclassic faunal assemblage at Cahal Pech, but 7% at Cuello, and an impressive 34% at Dzibilchaltun (Powis *et al.*, 1999, p. 374; Wing, 1975, p. 381; Wing and Scudder, 1991, pp. 88–95). An additional line of evidence, one that I hope will be pursued in the future, would be to compare the faunal assemblages from each individual household within the site.

Not surprisingly, our new data show that Middle Preclassic Maya villages had a mixed economy—cultivated plants (e.g., corn, beans, and squash), wild plants (including tubers and roots), wild animals (e.g., turtles, armadillo, white-tailed and brocket deer, peccary, agouti, and marine and freshwater fish), and at least one domesticated animal (the dog). It would appear that the Preclassic populations of Belize had a more diversified diet than the Maya living in Guatemala and Honduras, although we cannot rule out sampling bias (Reed, 1994; Tykot *et al.*, 1996; van der Merwe *et al.*, 2000, p. 35; White *et al.*, 2001, pp. 381–382).

NEW RESEARCH ON MAYA CHIEFDOMS

As in other parts of Mesoamerica, researchers have discovered that a long period of rank-based societies preceded the rise of Maya states. Both the scale and the rate at which they developed vary from region to region within the Maya area. In part, differences in scale reflect the ability of local leaders to create larger societies by overcoming the autonomy of neighboring villages. The resulting multivillage societies, under the centralized control of a paramount leader, were first called "chiefdoms" by Oberg (1955).

For Carneiro (1991, 1998), the chiefdom represents the first moment in human history that village autonomy is transcended and a supravillage polity established. There are various ways in which this loss of autonomy can be detected in the archaeological record (e.g., Marcus and Flannery, 1996, pp. 108–110; Redmond, 1994, 1998). Often it takes military action to produce a chiefdom, since villages rarely relinquish their autonomy voluntarily (Carneiro, 1998, p. 21). This gives archaeologists several lines of evidence to recover. One is the identification of multivillage units (satellite villages as well as paramount centers). The other is the search for military activity or its results: burned buildings, defensive ditches or moats, ramparts, palisades, skeletal trauma, and mass burials. Even for the best-known Maya chiefdoms—headed by Kaminaljuyú, Nakbe, El Mirador, Tikal, and Calakmul—we still need to determine their territorial extent, figure out how each paramount center incorporated subordinate centers to form a chiefdom, and identify the mechanisms and leadership strategies that led to the rise of chiefs in those paramount centers.

Evolutionary Effects of Warfare and Incorporation in Maya Chiefdoms

During the Middle and Late Preclassic, when several impressive chiefdoms appeared on the Maya landscape, we find evidence for raiding, violence, and trauma, as well as palisades, roads, and control of a large labor force. It is ironic that Maya society, once considered so peaceful and theocratic, is now recognized as actively engaged in violence long before the state formed. Scholars who once would have been satisfied with simply determining whether warfare was present or not are now engaged in determining its effect on political evolution, specifically state formation.

The destruction and burning of buildings as early as the Middle Preclassic is one line of evidence. For example, excavations at Blackman Eddy (Belize) have revealed that a sculptured mask was pulled from the front of a Middle Preclassic platform, and that the platform was then intentionally burned (Garber *et al.*, 2001, 2002); similar data have been recovered from Cuello for the Late Preclassic (see below).

The earliest constructions at Nakbe (1000–800 B.C.) consist of packed earth floors and postholes in bedrock. The site started to take off at the end of that period, and by 800 B.C. Nakbe might have been a 50-ha town (Hansen, 1998, p. 56). Its architecture included stone platforms .50–2.0 m in height and composed of flat rectangular stones, evidently supporting perishable superstructures. Some of the latter show pole construction; others have wattle and daub, with vines holding the wattle together. Some platforms were covered with crude mortar, and thick plaster floors appeared by 600 B.C.

Between 600 and 400 B.C., major platforms in the Mirador Basin reached heights of 3–8 m, and some covered 40,000 m^2. In the East Group at Nakbe, some structures reached 18 m in height (Hansen, 1998, p. 63). Toward the end of the Middle Preclassic the first ballcourt was constructed at Nakbe, and by Late Preclassic times ballcourts were known from various sites in Belize, including Cerros, Pacbitun, Buenavista del Cayo, and Colha. Middle and Late Preclassic architectural complexes (called "E Groups" because they resemble Group E at Uaxactun) are made up of a large pyramid on the west side of a plaza and an elongated platform supporting three structures on the east side. In 1924 Frans Blom speculated that these E-group plazas had astronomical significance, and such an interpretation continues to find support (Chase and Chase, 1995; Fialko, 1988; Folan *et al.*, 1995b, pp. 314–315; Morales López, 1989). E Groups are known from Nakbe, Tikal, El Mirador, Uaxactun, and Wakna.

Wetland Management

Thirty years ago, Siemens and Puleston (1972) noted channels, canals, and raised fields along the Candelaria and Hondo Rivers. Prior to that discovery, most

Maya archaeologists had assumed that ancient Maya agriculture entailed little more than swidden cultivation. Not long after the Siemens and Puleston article, Hammond (1978) referred to the death of the swidden paradigm as the "myth of the milpa." It turned out that raised fields occurred not only on rivers, but also in swamps and *bajos*, where they covered hundreds of square kilometers (Adams, 1993; Adams *et al.*, 1990; Harrison, 1996; Harrison and Fry, 2000; Pope and Dahlin, 1989, 1993). Ultimately, raised fields proved to be much less extensive than we imagined in the 1970s, but they were clearly important Late Preclassic strategies that converted alleged "wastelands" into highly productive wetlands (Pohl and Bloom, 1996; Pope *et al.*, 1996; cf. Siemens *et al.*, 2002). Questions still remain, however, about what was grown and for whom, and whether elites or common villagers directed such activities (Marcus, 1982, p. 269).

The wetlands of the southern lowlands have received the lion's share of attention since the 1980s, but recent work has included the northern lowlands. Investigations in the El Edén wetland, in the northeast corner of the Yucatan Peninsula, provide evidence for wetland use that may be as early as Late Preclassic (Fedick *et al.*, 2000). Such a date would make use of the northern wetlands contemporaneous with known cases of southern wetland management (Harrison, 1996; Harrison and Fry, 2000; Pohl and Bloom, 1996).

Over the last few decades we have learned that the ancient Maya practiced strategies as diverse as terracing, drained fields, raised fields, canals, arboriculture, and swidden—all geared to the conditions of specific locales, creating what Fedick (1996) has called a "managed mosaic." What we still do not know is the temporal and geographic extent of each subsistence technology, nor do we know how climatic conditions affected each region's strategy at different moments in prehistory (Dunning, 1996; Leyden, 2002; Leyden *et al.*, 1996). Moreover, we should not underestimate the role that sociopolitical and economic goals played in the selection of agricultural strategies.

From Chiefdom to State

The transition from chiefdom to state may have occurred during the Late Preclassic, but we do not have enough evidence to be sure. The Late Preclassic was a time of increased raiding, chiefly competition and flamboyance, diverse subsistence technologies (both extensive and intensive), increased population size and density, and greater control of labor and investment in monumental public building (especially immense platforms with triadic temples, and the construction of roads that linked towns). Villages of the Late Preclassic in the Copan Valley, such as Los Achiotes and Cerro Chino, were located on hilltops, either for defensive reasons or to avoid seasonal flooding on the alluvium below (Canuto, 2002; Carballo, 1997).

Mass burials of males that were butchered or show healed fractures suggest that various sites were actively involved in raiding and captive taking. Such mass

burials are known from Late Preclasic Cuello (Robin, 1989; Robin and Hammond, 1991; Saul and Saul, 1991, 1997), the Salamá Valley (Sharer and Sedat, 1987), and Chalchuapa (Fowler, 1984). Of the 103 Late Preclassic burials from Cuello, nearly half were found in two mass burials. One such burial—containing the skeletons of at least 26 males, with most of the bodies showing evidence of having been butchered—was interred into a patio, after the façades of the surrounding buildings had been ripped off and the perishable superstructures had been burned (Hammond *et al.*, 1991, pp. 41–42; Saul and Saul, 1991, pp. 157–158). Healed fractures were found only in males—one had malaligned parry or "nightstick" fractures of the left radius and ulna; another had a "Colles" fracture of the distal left radius and well-healed fractures of two left wrist bones (capitate and lunate); another had a fractured toe. As Saul and Saul (1997, p. 43) note, "the presence of fractures only in males, combined with the high incidence of healed fractures in the mass burial population (five fractures in at least three individuals) suggests that males, and particularly those within the mass burials, were in some way more 'exposed' to such trauma, perhaps through combat or 'sports.'"

Northern Guatemala and southern Campeche have particularly high densities of Late Preclassic sites, including Calakmul, Naachtun, El Mirador, Porvenir, Pacaya, La Muralla, Nakbe, Tintal, Wakna (formerly Güiro), Uaxactun, and Tikal (see Fig. 4). Of these, El Mirador, Calakmul, Tikal, Nakbe, Tintal, and Wakna are quite large. Such size was manifested not only in the extent of the site, but also in mound volume or monumentality, especially in the construction of immense platforms to support temples. For example, multiple huge Late Preclassic platforms have recently been found at Champotón, Campeche; one of these, measuring 54 m on a side, was excavated by Folan *et al.* (2002) (see Fig. 5). Such use of labor suggests that these sites had leaders who could attract large numbers of followers and command them to build immense public works.

A number of Preclassic centers were also building both intrasite and intersite roads. The earliest such road may be the intrasite *sacbe* at Nakbe, built during the late Middle Preclassic (Hansen, 1998, p. 75; Suasnávar, 1994). By the Late Preclassic, the causeways at Nakbe had parapets on both sides, were set 4 m above the terrain, had a width of 24 m, and were paved with thick layers of white *sascab* up to 1 m thick. Intersite roads linked Calakmul to El Mirador, El Mirador to Nakbe, and Nakbe to Tintal (Folan *et al.*, 1995a, 2001b; Hansen, 1998, 2001). Because place names or emblem glyphs are lacking in the Preclassic, we consider these roads a godsend, as they also have the potential of revealing political links and alliances.

It is interesting that the occupants of the biggest sites—Calakmul, Nakbe, El Mirador, Naachtun, and Tikal—preferred to settle near *bajos* or depressions (Adams, 1980, 1983, pp. 326–327; Adams *et al.*, 1981; Adams and Jones, 1981; Folan *et al.*, 1995b, pp. 311–312; Hansen, 1998; Harrison, 1986, pp. 49, 57). This preference for swamp-side settlement is the opposite of what earlier scholars

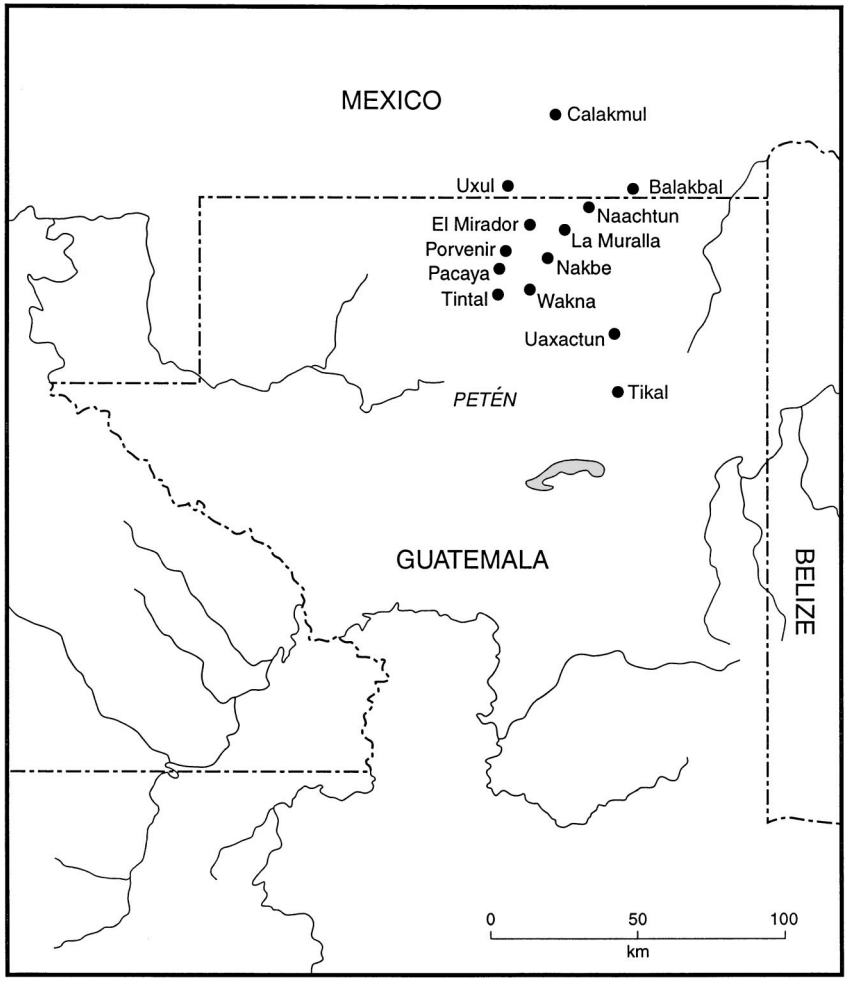

Fig. 4. Map of northern Guatemala and southern Campeche, Mexico, showing some of the key sites located in the Mirador Basin (redrawn from Hansen, 1998, Fig. 2).

expected. The latter often assumed that ancient settlers wanted to avoid such "wasteland," but it now appears that the ancient Maya valued it.

Monumentality in the Late Preclassic Period

The paramount centers in the Mirador Basin seem particularly flamboyant and monumental relative to others in the Maya region. At present, we do not know

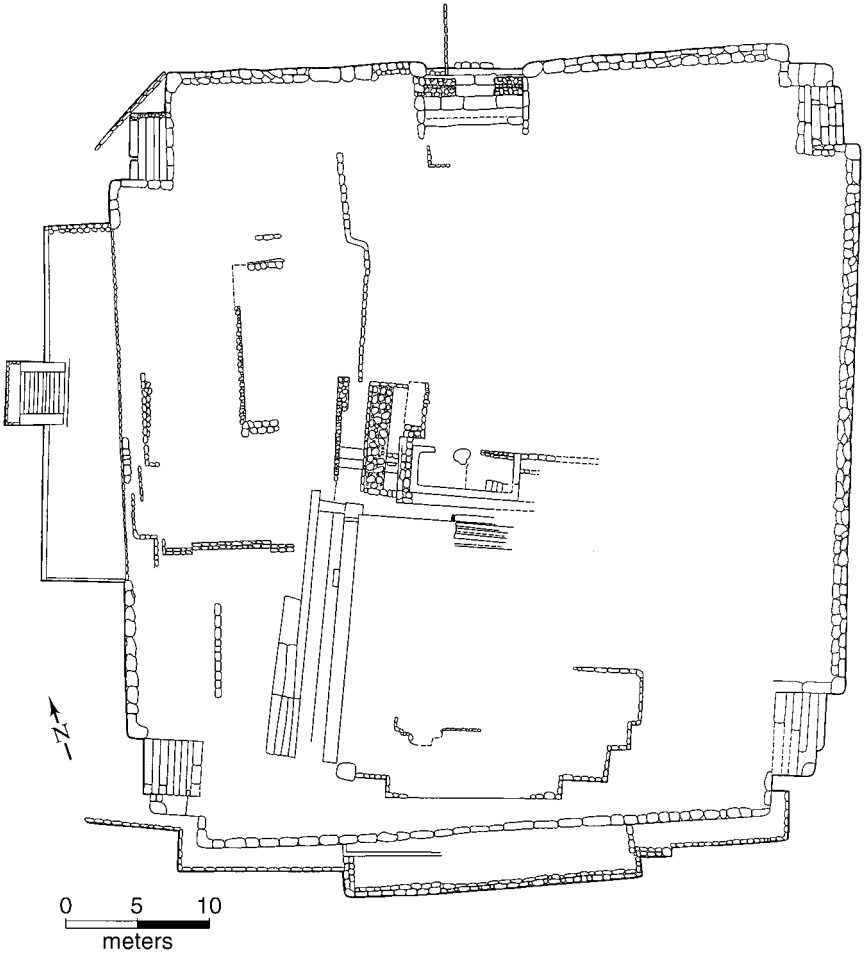

Fig. 5. Structure 1, a Late Preclassic platform, at Champotón, Campeche. This platform, recently excavated by William J. Folan *et al.* (2002), displays a number of interesting features. Included are very large (250–1000-kg) tight-fitting stone blocks, rounded corners, and recessed staircases in each corner (redrawn by K. Clahassey from unpublished drawings made by R. González H. and J. J. Cosgaya).

enough about these sites to provide a good explanation. The fact that all lay in the same basin may have led to their being in competition with each other, especially for manpower. The lavish use of manpower to produce monumental structures is characteristic of competing chiefdoms, who seek to attract followers by outdoing each other, but also typical of emerging states that need to display their control over labor (Marcus, 1992a, 2003).

We cannot simply measure "power" through monumentality, of course, because the archaeological record is full of societies that invested in impressive monuments precisely because they lacked the institutional and military power of later polities. Indeed, some of the most spectacular later Maya tombs and monuments were erected by usurpers from outside the direct line of succession, who sought extra legitimization or sanctification from public works. Given the immense size of the Late Preclassic public buildings at El Mirador, Lamanai, Calakmul, and Nakbe, one could infer that these were the paramount centers of impressive chiefdoms or that they were capitals of emerging states. Yet some of these centers, like El Mirador, may have collapsed before achieving statehood, while others, like Calakmul, went on to become the capitals of major states. Why did this happen? Was El Mirador defeated by Calakmul? Currently there is some evidence to suggest that centers like Calakmul and Tikal founded states by subjugating and incorporating previously autonomous rival chiefdoms (Folan *et al.*, 1995a,b; Harrison, 1999; Marcus, 1995a, 1998a).

El Mirador's demise is all the more interesting because that site seems to have invested more effort than any other in creating monumental platforms to support its temples. The structure called El Tigre reached 55 m and covered 19,600 m^2, while the Danta pyramid reached 72 m in height. Calakmul commissioned an equally monumental building (Structure II) during the Late Preclassic, a pyramid that reached 55 m in height (Folan *et al.*, 1995b, p. 316).

Many sites of this era display monumental masks for the first time (Cerros, Uaxactun, El Mirador, Tikal, Nakbe, and Lamanai). These masks often seem to depict powerful natural forces such as Sun and Earth (Freidel *et al.*, 1993). We would like to know if the process of honoring Earth, and nature in general, might be related to large-scale modifications of the environment during the Late Preclassic, such as the construction of raised fields, canals, and terraces.

The Political Context

An impediment to our understanding of how Maya sociopolitical, economic, and agricultural systems were integrated is the tenacity of outmoded ways of thinking about the Maya. This is a point made by Pyburn (1996; 1997, p. 156), who refers to a "set of peculiar, almost magical qualities" that continue to "imbue descriptions of the Maya." One such view is that the ancient Maya had "no economy beyond patrilineal kin relations"; another is that they had "the ability to maintain a kinship and cosmological system over thousands of kilometers and through thousands of years despite conquest and domination."

One recent attempt to understand the building blocks of Maya society is that of Gillespie (2000a,b), who—drawing on Levi-Strauss's concept of "house societies"—suggests that we replace the term "lineage" with "house." The house can be thought of as a corporate group that has economic, political, and landholding

functions, and such houses "are often manifest in the upper levels of society, while commoners may lack the wherewithal to maintain an estate and to attract new members to perpetuate it" (Gillespie, 2000b, p. 477). "Understanding the operation of Maya noble houses will allow for a closer integration of social organization with political, economic, and religious configurations within the Maya civilization" (Gillespie, 2000b, p. 478).

Did elite houses control access to particular tracts of wetlands or raised fields? Did they control the items grown on them, and direct the labor to construct them? We do not yet know, but understanding the links between land, labor, and tribute will be important work for future research.

It seems to have taken more than 1000 years for lowland Maya Preclassic societies to become complex enough to serve as precursors for states. By the middle of the second millennium B.C., agricultural villages occurred over the whole area from the Basin of Mexico to the Pacific coast of Guatemala and the Caribbean coast of Honduras. About 150 years before the beginning of the Christian era, several sets of chiefdoms had been reorganized into states in the highlands of Mexico. The lowland Maya area had some very large chiefdoms at this time and may have witnessed the emergence of its first state.

ISSUES OF PRIMARY AND SECONDARY STATE FORMATION

The centuries from A.D. 100 to 500 witnessed the rise of states in several parts of the Maya region. Not all of these transformations, however, qualify as cases of *primary* state formation. That term is usually reserved for states that form from chiefly societies, in the absence of a preexisting state that could serve as a model. Once the first state has formed in a region, *secondary* states based on that preexisting model can arise through a number of processes. In some cases, neighboring chiefly centers may join forces and reorganize themselves to avoid being absorbed into an expanding primary state. In other cases, a chiefdom desiring greater power might ask an established state to send it a prince from the latter's royal house. A well-known example occurred when the Mexica of Tenochtitlan asked the more blue-blooded ruler of Culhuacan to send them their first true "king"; he sent Acamapichtli, who came to be the founder of a new dynasty. Significantly, although the Mexica began as a secondary state, they went on to be much more powerful than Culhuacan.

Primary State Formation in the Maya Area

Since few signatures of the state have so far been documented at El Mirador, scholars still disagree as to whether it headed a paramount chiefdom or an emerging

state that abruptly collapsed. The fact that El Mirador collapsed at about the same time that Tikal rose to political prominence suggests that any attempts El Mirador may have made to consolidate its region ultimately failed. Time will tell whether it was a case of incipient state formation that was destined to be short-lived. Perhaps other polities learned from El Mirador's demise, because during Early Classic times (A.D. 250–500) Tikal and Calakmul were successful at forming enduring states. It is important that the El Mirador case be fully analyzed, because it bears directly on the question of whether or not lowland Maya state formation lagged behind the Mexican highlands.

The first convincing clues for primary state formation in the Maya area come from the monumental sites of Tikal and Calakmul (Coe, 1990; Folan *et al.*, 1995b; Harrison, 1970, 1999; Matheny, 1980, 1986, 1987; Sharer, 1992, 1994); if, in the future, convincing evidence does show that El Mirador did achieve statehood earlier, that would mean Tikal and Calakmul were second-generation states. Although large buildings alone are not evidence of a state, the huge pyramids at El Mirador and Calakmul at least show us that the early leaders of both sites could attract large numbers of laborers and command them to build immense public works.

The Early Classic witnessed the founding of dynasties at several key sites, including Tikal and Calakmul (see Fig. 6). By looking at two cases of primary state formation (Tikal and Calakmul) and two cases of secondary state formation (Copan and Dos Pilas), we can begin the important task of outlining some of the similarities and differences between primary and secondary Maya states.

Two Cases of Primary State Formation in the Maya Area

The Tikal Case

Extensive work at Tikal has been conducted by the University of Pennsylvania (Coe, 1990; Jones *et al.*, 1981) and the Instituto de Antropología e Historia of Guatemala (Laporte and Fialko, 1990, 1995). The result is that Tikal is one of the few places in the Maya lowlands where primary state formation can be studied. The recovery of stone monuments with hieroglyphic texts (Jones and Satterthwaite, 1982), detailed stratigraphic sequences of public architecture (Coe, 1990; Harrison, 1970), and new data on some of Tikal's subordinate towns, such as Uaxactun, El Encanto, Bejucal, and Uolantun (Fahsen, 1998; Valdés, 1992; Valdés *et al.*, 1997, 1999; Vidal *et al*., 1996) have given us insight into the formation of the Tikal state.

Current data suggest that the agent who can be credited with founding the Tikal state was lord Yax Eb Xok, who probably ruled sometime between A.D. 50 and 150. Although we know very little about Yax Eb Xok, we know even less about the nine rulers who reigned during the subsequent 150 years. The problem is that we have no contemporaneous monuments for the first 200 years of "dynastic history" at Tikal, only occasional retrospective references to earlier lords. With

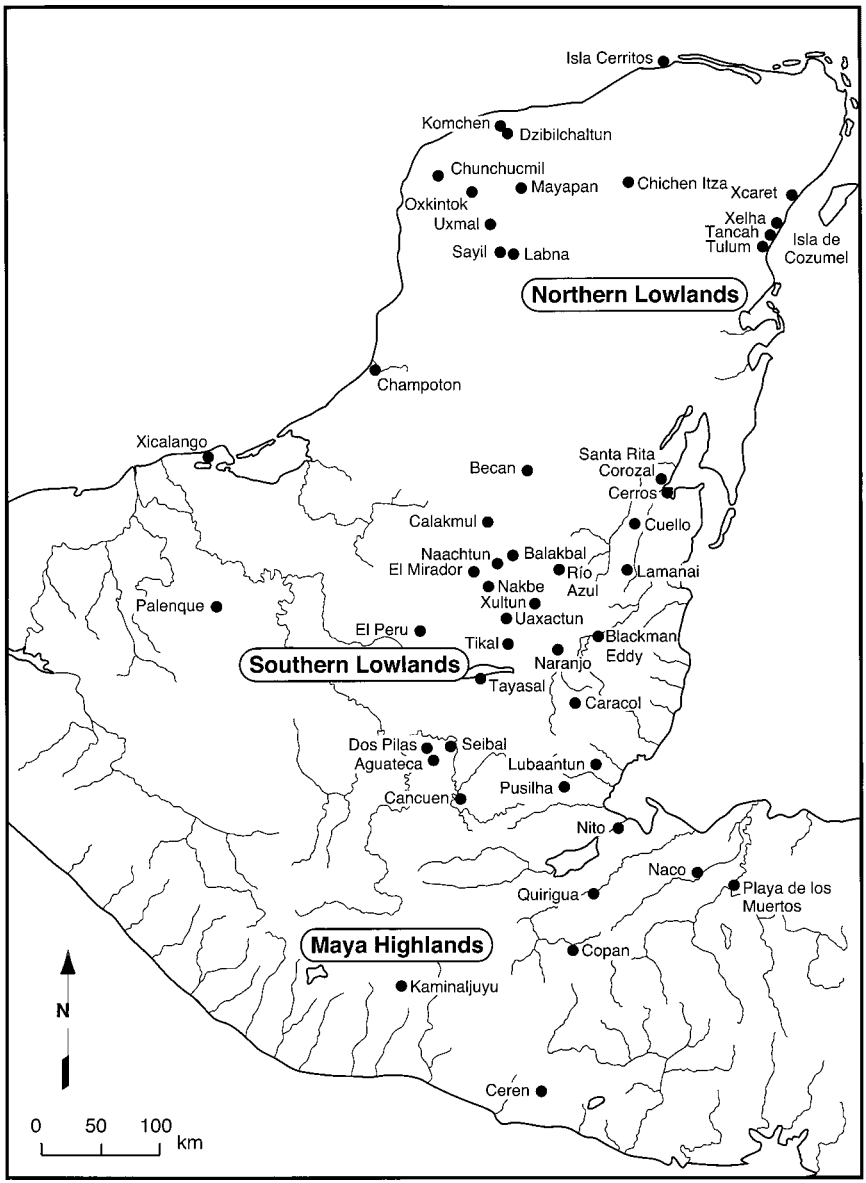

Fig. 6. Many cities flourished throughout the Maya highlands and lowlands during the Late Preclassic (300 B.C. to A.D. 250) and Classic (A.D. 250–900), and some of them are shown here (redrawn from Sharer, 1994, Fig. 1.1).

more excavation, however, it is possible that monuments carved during the reigns of the first 10 rulers will be recovered.

Even though Yax Eb Xok is credited with creating the first Tikal state, it may have quickly cycled back into a paramount chiefdom for a while as a series of new leaders emerged, each attempting to complete the necessary consolidation and expansion. Such "cycling" (Anderson, 1996a,b; Marcus, 1993, 1998a; Spencer, 1993; Stein and Rothman, 1994) is typical of emerging states and may one day prove to have happened at El Mirador as well.

At present, our oldest nonretrospective date for the Maya region is A.D. 292, which appears on Tikal's Stela 29. By the time of Tikal's 11th and 13th rulers, mentioned on stelae at towns subordinate to Tikal, we begin to see the network of lesser communities incorporated into the Tikal polity. The appearance of three additional administrative levels below the capital suggests a state society.

Other evidence for statehood is present, but fragmentary. Little is known about when the first royal palace was built, because the sequence of early palaces was largely razed in antiquity (Harrison, 1999, p. 114). The first well-preserved palace is that of the 14th ruler, Great Paw or Chak Tok Ich'aak, and was probably built around A.D. 360. This ruler's reign ended abruptly on the same day that "strangers" or "foreigners" arrived.

Proskouriakoff was the first to note that the death of Great Paw coincided with the arrival of foreigners on January 16, A.D. 378; she suggested that the nearby subordinate town of Uaxactun "either in league with foreigners or using the foreigners as mercenaries, was responsible for the incident that led to the demise of Great Paw" (Proskouriakoff, 1993, p. 8). The likelihood that warfare between Tikal and Uaxactun was involved is suggested not only by hieroglyphic texts, but also by the construction of earthworks and ditches that separated Tikal from Uaxactun. The Tikal fortifications delimit an area of about 120 km^2 and end at major swamps that lie to the west and east (Puleston and Callender, 1967).

The Tikal text referring to the arrival of strangers has been the subject of considerable debate over the years and remains controversial. Who were these foreigners? Were they allied to a rival Maya city? It has been speculated that they might have come from Kaminaljuyú, or even from some place in the Mexican highlands, like Teotihuacan. What impact did their arrival have? Did they remove the Tikal ruler and place a foreigner on the Tikal throne, interrupting the dynastic line? Some have suggested that an actual Teotihuacan prince was placed on the throne (Stuart, 2000), while others suggest that Mexican allies might have aided a Maya usurper from a rival city (Braswell, 2003; Coggins, 1975; Proskouriakoff, 1993). Hieroglyphic texts indicate that more than a year and a half passed before a new Tikal ruler was inaugurated (see Fig. 7).

The foreigner question will certainly continue to provoke debate for the next few decades, so let us look at the current body of evidence. Few scholars doubt

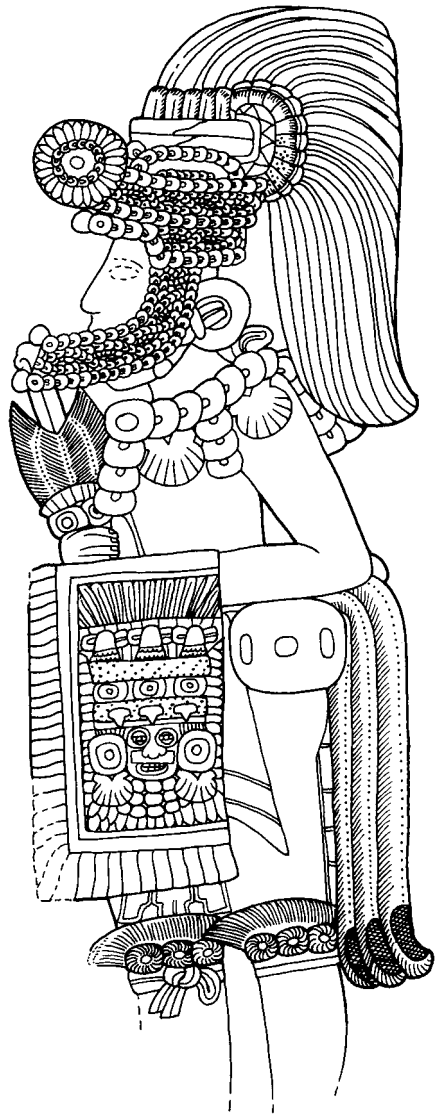

Fig. 7. Depiction of a Tikal ruler named Yax Nuun Ayiin, who was inaugurated on September 12, A.D. 379, some 20 months after "foreigners" had arrived at that site. Many scholars have remarked that this Maya ruler is shown wearing "Mexican garb," including a plated helmet and square shield adorned with "the goggle-eyed deity" usually associated with Teotihuacan (drawn by J. Klausmeyer from Stela 31, Tikal).

that the lowland Maya were in contact with the Mexican highlands, since there is abundant evidence for trade in obsidian, cylindrical tripod vessels, and other goods. Furthermore, excavations in the Mundo Perdido section of Tikal have exposed buildings in "Mexican-influenced" *talud-tablero* style (Laporte, 1989; Laporte and Fialko, 1990, 1995). The earliest examples of such architecture, however, appear 100–200 years *before* the arrival of "foreigners" in A.D. 378. Moreover, although that architectural style was once considered a hallmark of Teotihuacan, more recent excavations show that it occurred at sites in Puebla and Tlaxcala even earlier than it was used at Teotihuacan (García Cook, 1981; Gendrop, 1984; Plunket and Uruñuela, 1998, 2000). It also has been found much closer to Tikal, for example at sites in Campeche and Guatemala. Laporte (1989) argues that the architectural style is so varied, and occurs over such a substantial period of time, that it cannot be traced to a single source.

Such new data require a rethinking of Teotihuacan "influence" in the formation of the Maya state. A quarter century ago, Sanders (1974) suggested that Teotihuacan immigrants played an important role in moving Kaminaljuyú from chiefdom to state. Sanders argued that Teotihuacan was interested in gaining a foothold in the Guatemalan highlands in order to establish a monopoly over Mesoamerican obsidian. Key tombs in Mounds A and B at Kaminaljuyú (Kidder *et al.*, 1946) included hundreds of vessels, as well as obsidian and bone artifacts, that were presumed to be imports from Teotihuacan. The high-status people in these tombs were presumed to be Teotihuacanos, whose marriage to the local elites transformed Kaminaljuyú (Sanders, 1974). Brainerd (1954, p. 23), however, had already noted that the styles of the tomb objects reflected contact with multiple regions, not just Teotihuacan but also Veracruz and the Maya lowlands. Brainerd suggested that such a "cosmopolitan exchange of goods and ideas" was characteristic of Mesoamerican elite.

Indeed, few of the artifacts from the Kaminaljuyú tombs have proved to be actual imports from the Mexican highlands; among the latter are 16 Thin Orange vessels probably made in Puebla (Demarest and Foias, 1993, pp. 156–157). It is even possible that future paste analyses may demonstrate that more of the tomb vessels were imported from lowland regions (Veracruz, Tabasco, and northern Guatemala) than from highland Mexico. After all, even the cylindrical tripod—once considered a hallmark of Teotihuacan—is now thought to have originated in the lowlands of Veracruz (Rattray, 1977, 1983). As for the elites in the Kaminaljuyú tombs, recent isotopic analyses reveal that the principal skeletons in the Mound A tombs were *not* from Teotihuacan. At the same time, some of the retainers accompanying the principal tomb occupants seem to be nonlocal (White *et al.*, 2000).

Another twist to the story is new evidence showing that the Maya had their own impact on Teotihuacan. Yes, the Maya were receiving Mexican goods and influences, but they were in turn influencing Teotihuacan's art, ceramics, and economy,

and perhaps even visiting Teotihuacan itself. Fash and Fash (2000) have made the case that such visits would have enabled the Maya to bring foreign goods, styles, and strategies back to their homeland.

Over the years, scholars have oscillated between assigning Teotihuacan a major role in the formation of the Maya state and denying it any role at all (see discussions in Braswell, 2003). Current evidence indicates that neither extreme position seems tenable. While the Maya were certainly in contact with the Mexican highlands, that contact alone is insufficient to explain the origins of the state at Tikal or Calakmul. Moreover, the influence of contact with the Mexican highlands almost certainly varied from site to site and decade to decade. Schele and Mathews (1998, p. 337), for example, suggest that the adoption of some *talud-tablero* architecture and Mexican iconography "does not signal the domination of Teotihuacan politically or militarily, but rather the growth of a system of affiliations through trade, religion, and perhaps alliance." They argue that the Maya appropriated and adapted Teotihuacan iconography to fit Maya needs.

We also must consider the possibility that usurpers and invaders from rival Maya sites may have emulated highland Mexican elements and icons, bolstering their authority by showing themselves to be tied to exotic and powerful places. This is the kind of framework advocated years ago by Coggins (1975) and Stone (1989). Thus, even though an outsider may be portrayed on a stone monument as a "Teotihuacan warrior," he may have come from another Maya site, such as Kaminaljuyú, whose ties to Teotihuacan are evident (Braswell, 2003; Coggins, 1975; Demarest and Foias, 1993; Kidder *et al.*, 1946). Recovering the skeletons of these "foreigners" at Tikal should shed more light on their actual geographic origin.

It seems unlikely that Teotihuacan could have controlled any lowland Maya state for a significant period of time. The distances involved are more than 1000 km, and even the powerful Aztec had problems holding on to colonies that distant from the Basin of Mexico. Powerful states could move against their neighbors if the latter were organized at a level below that of a state, but their relationship with powerful distant states usually took the form of diplomacy. They might bring offerings to the funerals of rulers residing in other polities, provide gifts to be included in dedicatory caches below important structures, or send royal women to marry into the ruling houses of states with whom they wanted profitable relations. My own suspicion, based on currently available data, is that the Teotihuacanos were interested in *large* Maya sites precisely because the latter already approximated Teotihuacan's level of sociopolitical complexity.

The Calakmul Case

From surveys and excavations directed by Folan *et al.* (1995b, 2001a) and Carrasco (1996, 1999, 2000), we have learned a great deal about Calakmul and

its far-flung relations. Although Tikal can claim the stela with the earliest contemporaneous date (A.D. 292), Calakmul had the largest number of stelae (currently 117).

Calakmul and El Mirador were linked by a road that appears to have been constructed during the Late Preclassic. Once El Mirador was abandoned at the end of the Preclassic, it appears that Calakmul constructed a network of roads linking it to a series of equidistantly spaced subordinate sites, such as Naachtun, Oxpemul, Balakbal, and Uxul. The precise dating of these roads (at their earliest stages) will one day shed light on state formation in the Calakmul region. At the moment, there appears to be a good fit between the actual location of Calakmul's subordinate centers and the predictions of central place theory (Folan *et al.*, 1995a). In models derived from this theory, the most efficient way to administer subordinate sites is to have them spaced equidistantly from each other and from the capital. Most efficient of all is when subordinate centers are spaced one day's travel from the capital (c. 30 km), which appears to have been the case around Calakmul (Marcus, 1973).

At present, the earliest hieroglyphic dates at Calakmul occur on Stela 114, dedicated in A.D. 435 (Marcus and Folan, 1994). However, a series of 11 vessels that may have been painted in the Nakbe region are thought to describe the accession of still earlier Calakmul rulers, some of whom may be legendary (Martin and Grube, 2000, p. 102). During the fifth century, texts begin to be carved at Calakmul's subordinate towns, and during the sixth century, some assert that Calakmul lords presided over the installation of rulers at other sites.

At this time, Calakmul also began to lure away some of Tikal's allies (Marcus and Folan, 1994). A text at Caracol asserts that Tikal suffered a military defeat in A.D. 562. For the next 130 years, Tikal failed to erect any hieroglyphic monuments, and during this period it appears that Calakmul and Caracol had their way, allying to defeat such rivals as Naranjo (Chase and Chase, 2000a,c). Calakmul also attacked Palenque twice during two dry seasons, in April of A.D. 599 and April of 611 (Mathews, 2000; Schele, 1994, pp. 1–2).

The most famous Calakmul ruler—Jaguar Paw or Yich'aak K'ak'—was born on October 6, A.D. 649, and took office on April 3, 686, at the age of 36 (Marcus and Folan, 1994). As a measure of this ruler's importance, his accession was recorded in texts at Dos Pilas and El Perú, and the lord of Dos Pilas even attended his inauguration. Jaguar Paw eventually suffered defeat in battle with Tikal, but his ultimate fate remains unclear, because there are at least two versions of how his career ended (Carrasco *et al.*, 1999; Martin and Grube, 2000, p. 111). The Tikal version was given by its ruler Jasaw Chan K'awiil, who says that he captured Jaguar Paw of Calakmul on August 5, 695. This version has led many scholars to conclude that Jaguar Paw was killed on that date and buried at Tikal. Recent excavations at Calakmul, however, have provided possible contradictory evidence—an elaborate tomb in Structure II that may contain the remains of Jaguar Paw. A polychrome plate in the tomb bears a hieroglyphic text that specifies "the plate of Jaguar Paw" (Carrasco *et al.*, 1999; García-Moreno and Granados, 2000); of course, we cannot

rule out the possibility that the individual in the tomb had inherited the plate or received it as a gift.

The polity administered by Jaguar Paw of Calakmul was large. It seems, however, to have been a mosaic rather than a continuous bloc, as he did not claim the terrain lying between the cities of his allies. Despite its mosaic nature, Jaguar Paw's territory was so large that the "Snake Head" emblem glyph I identified 30 years ago as Calakmul's was mentioned even more widely by other cities than Tikal's emblem glyph. This wide distribution, as well as the contexts in which subordinate sites mentioned Calakmul, led me to suggest that it was one of the most important Maya capitals, administering a large regional state with a multitiered hierarchy of subordinate settlements, each with its sublord (Marcus, 1973). All the new discoveries by Carrasco, Folan, Freidel, Grube, Martin, and Schele confirm Calakmul's importance and add details I could not have predicted in 1973.

Two Cases of Secondary State Formation in the Maya Area

Two clear cases of Maya secondary state formation—Copan and Dos Pilas—are now known in some detail. We also can use them to shed new light on secondary state collapse.

The Copan Case

The recent Copan project, in which W. L. Fash, B. W. Fash, R. J. Sharer, R. Agurcia, D. Sedat, E. W. Andrews, L. Traxler, L. Schele, D. Stuart, N. Grube, and many others have collaborated, has been a model of multidisciplinary integration. It appears that during the Late Preclassic Copan was not yet part of a state. Later hieroglyphic texts at Copan, however, refer retrospectively to significant events at 321 B.C., A.D. 159, and A.D. 160 (Riese, 1992, pp. 132–133; Schele and Freidel, 1990, Fig. 8:2). We do not yet know what happened on those dates, but they suggest the presence of individual leaders or "agents" whose actions were important enough to be referred to by later rulers. Some of the dates may refer to events that took place in a long cycling process, during which Late Preclassic and Protoclassic leaders made attempts to unify the Copan Valley.

The founder of Copan's first royal dynasty was K'uk' Mo', who arrived in A.D. 426. We are told this on Altar Q, a monument commissioned in A.D. 776, which depicts a ruler named Yax Pasaj and the 15 rulers who preceded him. The text on the top of the altar says, "on September 6, A.D. 426, Lord K'uk' Mo' took the scepter *k'awiil* in the Crossed Torches House"; the hieroglyph of "seizing the *k'awiil* scepter" is often interpreted as accession to the throne (Marcus, 1976, pp. 134–135; Schele and Freidel, 1990, p. 317). Three days later K'uk' Mo' is said to have come away from Crossed Torches House, having received his full royal

name of K'inich Yax K'uk' Mo'; this acquisition of a new name is also consistent with having taken office.

Next comes an important passage stating that K'inich Yax K'uk' Mo' had reached Copan after a trip of five months. From whence had he come? Archaeologists have found a tomb thought likely to be that of K'inich Yax K'uk' Mo (Bell *et al.*, 2003; Sharer *et al.*, 1999a,b), and his bone chemistry indicates that he *was* from another lowland Maya site (Buikstra *et al.*, 2003). His skeleton also shows that he had survived a number of injuries consistent with pre-Columbian military activity. His battle wounds had left him with at least three broken ribs (healed), a parry fracture at the midpoint of his right forearm (partially healed), a fractured scapula (partially healed), and a broken fifth metacarpal. By combining his hieroglyphic death date of A.D. 437 with evidence that he had attained 55–70 years of age, Buikstra *et al.* have concluded that K'inich Yax K'uk' Mo' was at least in his 40s when he acceded to the throne of Copan. That he was of noble birth is suggested by his cranial deformation and the fact that several of his teeth had been filed and given jadeite inlays.

While we will never know the details of Lord K'uk' Mo's life, the data at our disposal suggest an analogy with other royal usurpers—men of high birth who (often because there were others ahead of them in the succession to their native throne) used military skills to take over a distant polity. The Maya lord B'alaj Chan K'awiil of Dos Pilas (see below) and the Mixtec lord 8 Deer "Tiger Claw" of Tilantongo are two who come to mind. To support the notion that Lord K'uk Mo' was a noble usurper who used military campaigns to take over Copan, we can look for evidence that he went to great lengths to legitimize his rule. Among the strategies used by other Mesoamerican usurpers to legitimize themselves were (1) ambitious programs of public construction, (2) the commissioning of new texts, (3) marriages to prominent local women (perhaps even the widows, sisters, or daughters of the local nobles they had defeated), and (4) the acquisition of new territory through conquest or diplomacy (Marcus, 1992a,b).

As it happens, a few of K'inich Yax K'uk' Mo's possible acts of self-legitimization are archaeologically detectable. On the same day that he received his full royal name K'inich Yax K'uk' Mo, he incorporated Quirigua (some 50 km distant) into the Copan polity. A Quirigua hieroglyphic text states that that city's first official ruler took office under the auspices of K'inich Yax K'uk' Mo'; this simultaneous installation of rulers at Copan and Quirigua suggests that K'inich Yax K'uk' Mo' had put someone he trusted in charge of Quirigua, making it a secondary center in his administrative hierarchy. Other towns that may have been conquered by K'inich Yax K'uk' Mo' and incorporated into his expansionist state were Pusilha (c. 120 km from Copan) and Uxbenka (c. 20 km north of Pusilha).

K'inich Yax K'uk' Mo' also may have legitimized himself by marrying an important local woman. The tomb of a woman believed to be K'inich Yax K'uk' Mo's wife has come to light in the Copan building archaeologists have

designated "Margarita" (Bell, 2002; Bell *et al.*, 2000; Sharer, 1998, 1999; Sharer *et al.*, 1999a,b). Her tomb is the richest and most elaborate of all those found at Copan, and strontium isotope analyses suggest that she was native to the Copan Valley (Buikstra *et al.*, 2003). Furthermore, the son of K'inich Yax K'uk' Mo', known as Ruler 2, kept her tomb open to make further offerings. This woman's spectacular offerings would make sense if she were simultaneously the daughter of a noble Copan family, the wife of Yax K'uk' Mo', and the mother of Ruler 2 (Sharer *et al.*, 1999a, p. 242).

K'inich Yax K'uk' Mo' also engaged in the kind of ambitious building program typical of usurpers who seek legitimation. During his short reign (A.D. 426–437) he constructed platforms and public structures that served as the template for all subsequent rulers of his dynasty (Traxler, n.d., 2001). He established a plaza and building complex, now called the Copan Acropolis, that provided the backdrop for 400 subsequent years of royal activities—inaugurations, council meetings, receptions, and funerals.

K'inich Yax K'uk' Mo' and his successors may have administered a state covering c. 10,000 km^2. Their realm remained large until A.D. 738, at which point Quirigua's ruler claims to have captured the lord of Copan in battle, thereby achieving Quirigua's independence (Fash, 1991; Marcus, 1976, 1992a; Sharer, 1994). From that time on, Quirigua embarked on its own ambitious flurry of construction and monument carving (Sharer, 1990, 1991, 1994). Despite their shrinking realm, later rulers at Copan continued to link themselves to K'inich Yax K'uk' Mo', the founder of their first dynasty (Fash, 2001; Sharer, 1994).

Copan qualifies as a secondary state, since it did not arise from a set of chiefdoms in the absence of a preexisting state. It arose 350 years after primary states like Tikal, apparently as the result of a usurper who already knew statecraft. That usurper, K'uk' Mo', used military skills to reach the throne, then arranged an advantageous political marriage and undertook a campaign of ambitious building and military expansion to legitimize himself. Although he reigned for only a decade, his impact on Copan was so lasting that 350 years later, he was still featured on monuments commissioned by the final rulers of the dynasty he had founded.

K'inich Yax K'uk' Mo' evidently brought the template of a powerful preexisting state with him and established a grand architectural plan that was maintained throughout the history of the Copan Acropolis. We know all of this only because the team of archaeologists working at Copan figured out how to tunnel into the core of major structures and recover the sequence of earlier buildings and associated texts. They kept digging—literally and figuratively—until they had K'inich Yax K'uk' Mo' himself, and could read in his healed wounds the price of creating a state through military expansion. Now that the Copan Valley has been intensively researched for decades, it has truly become a case study that transcends its region (Bell *et al.*, 2003). It is in fact one of the most detailed archaeological examples of secondary state formation anywhere in the prehistoric world.

The Dos Pilas Case

The land between the Salinas and Pasión Rivers has provided us with another case of secondary state formation. This area has been the scene of the Vanderbilt Petexbatun project (Demarest, 1997; Demarest *et al.*, 1997; Escobedo, 1997; Houston, 1993; Inomata, 1997; Palka, 1997; Valdés, 1997).

At A.D. 647, the Petexbatun site of Dos Pilas had a small population and no monumental buildings. Its importance was to change, however, in A.D. 648 with the arrival of B'alaj Chan K'awiil, who may have been a son of the 23rd or 24th ruler of Tikal. B'alaj Chan K'awiil had traveled from Tikal to Dos Pilas and, with the support of Yuknoom, ruler of Calakmul, founded his own royal dynasty.

We can only speculate on the political dynamics of these events. Perhaps B'alaj Chan K'awiil, although of noble birth, was not in line for the throne of Tikal and saw the takeover of Dos Pilas as his best chance for advancement. Certainly that site lay far enough from Tikal to make military interference from the latter city difficult. Having Calakmul as an ally would offer B'alaj Chan K'awiil some protection from Tikal; in turn, such an alliance would give Calakmul a foothold of influence in what had been, up until A.D. 648, Tikal's region. One of the ironies of his takeover is that B'alaj Chan K'awiil opted to use the Tikal emblem glyph on his monuments, rather than creating a new one for Dos Pilas. In spite of his change of venue, he may still have seen himself as part of the royal house of Tikal.

Nine years later, in A.D. 657, Calakmul attacked Tikal. In A.D. 659, Tikal's ruler evidently took refuge at Palenque (Schele, 1994, pp. 3–4). Some time later, the Tikal lord was able to return to his throne. In A.D. 672, this same ruler of Tikal attacked Dos Pilas and took control, forcing B'alaj Chan K'awiil into exile, perhaps at Calakmul (Martin and Grube, 2000, p. 58). Uniting with Yuknoom of Calakmul in A.D. 677, B'alaj Chan K'awiil forced the Tikal ruler out of Dos Pilas and regained his throne.

In A.D. 679, Yuknoom of Calakmul, uniting again with B'alaj Chan K'awiil, succeeded in capturing the ruler of Tikal. The date in A.D. 679 was exactly 20 years to the day—one *katun*—since the arrival date in A.D. 659 of the Tikal ruler at Palenque (we simply do not know whether the date of this last event was specially selected, or whether the textual record was adjusted; see Martin and Grube, 2000, p. 43; Schele, 1994, pp. 3–4; Schele and Mathews, 1998, p. 55). As further evidence of Dos Pilas' alliance with Calakmul, B'alaj Chan K'awiil attended two events at Calakmul, one of which was the inauguration of Jaguar Paw, who took the Calakmul throne in A.D. 686 (Marcus and Folan, 1994).

Like many usurpers, B'alaj Chan K'awiil undertook a flurry of building projects and established political ties by marrying women from other cities. During the reigns of his two sons, more military successes were achieved, new public buildings constructed, and various subordinate centers incorporated, all of which helped to create the multitiered hierarchy characteristic of a state. In sum, B'alaj

Chan K'awiil and his sons successfully forged a regional state that encompassed the entire Petexbatun region (Schele and Mathews, 1998, p. 177).

Only because the hieroglyphic texts give us the names of the agents involved, their places of origin, the dates of their battles, and their political alliances can we partially reconstruct this case of secondary state formation. It should be acknowledged that Dos Pilas was not a particularly large state in terms of territory, and although its capital may have had 5000 people at its peak, it featured few truly monumental buildings.

After A.D. 760, warfare continued to escalate in the Petexbatun polity. Each community defended itself, with remarkable fortifications surviving not only at Dos Pilas but also at naturally defensible locations such as Aguateca, Punta de Chimino, Quim Chi Hilan, Cerro de Cheyo, Cerro de Bananas, Cerro de Mariposas, Cerro de Miguel, and Cerro de Yax. Typical fortifications in the region included moats and/or concentric rings of stone walls surmounted by wooden palisades. Demarest *et al.* (1997, p. 247) state that "the Petexbatun landscape had become similar to that of the very early Middle Ages, with defense being the primary variable for location of villages and major centers." Between A.D. 760 and 830 "the great centers of the region fell into ruin one by one" (Demarest, 1997, p. 219).

The Petexbatun project illustrates the point that warfare was as much a creator as a destroyer of states. As for the underlying causes of that warfare, Demarest (1997, p. 221) believes that his project has been able to eliminate from consideration (1) the arrival of foreigners, (2) malnutrition, (3) ecological catastrophe, and (4) a radical change in the economy. Perpetual competition within and between royal houses would seem to be a far more likely underlying cause, although not necessarily the only one.

Finally, we should note that our two cases of secondary state formation—Copan and Dos Pilas—show differences as well as similarities. The differences include the fact that the Petexbatun polity became a state much later in Maya history than Copan and needed to be externally propped up by Calakmul. The similarities include the fact that both polities used warfare and/or strategic marriage alliance to increase their importance; both invested in stone masonry temples, palaces, and hieroglyphic stairways; and both administered multitiered hierarchies after having incorporated some key subordinate centers.

Reconstructing the Classic Maya Diet and Stature

Years ago, archaeologists wrote about "*the* Maya diet" as if it were uniform. Now there is evidence to show that the diets of elites and commoners differed, and that diets varied from individual to individual and site to site over time (Gerry and Krueger, 1997; Lentz, 1991; Powis *et al.*, 1999; Tykot *et al.*, 1996; White, 1997; White *et al.*, 2001; Whittington and Reed, 1997b).

One of the catalysts for new studies on ancient Maya diet has been the development of chemical techniques for the study of human and animal bone. Both trace element analysis and isotopic analysis have overcome some of the limitations of previous studies. One advantage is that they can provide data on the "meal" consumed rather than just the "menu" of possibilities (Bumsted, 1985), and can do so at the level of the individual. Another advantage is that even very fragmentary bone can be analyzed. The ideal is to integrate multiple lines of evidence, combining traditional faunal and floral analyses (the menu) with the results from bone chemistry (the meal).

These isotopic and trace element studies of Maya skeletons turn the spotlight on the individual. By so doing, they complement recent work on agency, the individual in daily life, gender, commoners, and houses and households (Ardren, 2002; Becker, 1999; Canuto and Yaeger, 2000; Gillespie and Joyce, 1997; Hendon, 1997; Hewitt, 1999; Joyce, 2000; Lohse and Valdez, in press; Robin, 1999, 2001, 2002; Sharer, 1996; Sheets, 1992; Sweely, 1999; Yaeger, 2000, 2002, 2003). These issues have implications well beyond Maya archaeology (Dobres and Robb, 2000; Flannery, 1999; Hill and Gunn, 1977; Johnson, 2000; Klein, 2001; Marcus, 1998b; Plunket and Uruñuela, 1998, 2000; Saitta, 1994).

Although maize was certainly a major staple and source of calories, recent work (Powis *et al.*, 1999; van der Merwe *et al.*, 2000) has underscored the diet breadth of the ancient Maya. Variety was particularly notable during the Preclassic and Postclassic periods—times when populations in many regions were lower or more dispersed than during the Classic, or when game and fish were more abundant and access to multiple environmental zones easier.

The topic of nutrition leads naturally to stature, a topic of interest since Steggerda's pioneering work (Steggerda, 1932) on the modern Maya and Haviland's research on the Classic Maya (Haviland, 1967). In the case of the Tikal population, Haviland found a statistically significant decrease in height of almost 10 cm between Early Classic and Late Classic males. For the Altar de Sacrificios population, Saul (1972, p. 29, Table 3) observed a "major decline" in stature after the Preclassic "most readily seen in the male data." Márquez Morfín (1984), who examined 15 skeletal populations from the northern lowlands, also reported a decrease in mean stature from Preclassic to Classic times, particularly in males (Márquez Morfín and del Ángel, 1997).

In a new and wide-ranging study, Danforth (1999, pp. 108–109) has shown that the mean height for all prehistoric Maya men (regardless of time period) was 160.1 cm; for women, it was 147.8 cm. When these figures are compared to those collected by Steggerda (1941, p. 153), we see that modern Yucatec are about 5 cm shorter than prehistoric Maya. Part of this "decrease," however, could be a by-product of having so many high-status males in the prehistoric database, while there are so many low-status men in the modern sample. Indeed, Danforth points out that the mean stature values for the modern Maya are almost identical

to those of "nontomb" burials at Late Classic Tikal. To understand these stature data, we need to determine (1) whether the major decrease in stature noted by earlier researchers occurred mainly between the Preclassic and Early Classic, or between the Early and Late Classic; (2) whether such decreases occurred at every site, or were more evident at capitals than at subordinate sites; (3) whether elites more often achieved maximal stature than commoners, owing to greater access to protein sources like deer; and (4) whether class endogamy helped elites remain taller than commoners. I raise these issues because scholars have probably underemphasized the range of factors operating on stature, particularly some of the social and economic variables; too often, stature among the Maya is seen only in terms of nutrition versus malnutrition. Danforth notes this overemphasis when she concludes, "that 'the Maya got short' during the collapse has been given far more emphasis than is warranted according to analysis of the available data."

Given that some models for the ninth-century Maya collapse rely on stature decrease as evidence for malnutrition and disease, the multiplicity of variables involved will have to be rethought; for example, Demarest (1997) and Fash (2001, p. 175) give more weight to sociopolitical factors. Probably we need a much larger sample of burials to assess stature; when all suitable Preclassic to Postclassic skeletons were compiled by Danforth, it totaled only 293 males and 77 females.

A promising new line of evidence has been the study of stable isotope ratios of carbon and nitrogen in bone collagen, which seem to reflect diet. The fact that elite skeletons have a greater range of carbon isotope values has been used to suggest that the elite diet at Copan was more varied than that of commoners (Whittington and Reed, 1997a, p. 160). Such results complement ethnobotanical studies by Lentz (1991), who concluded that the Copan elite had access to a greater variety of plants. Combining ethnobotanical results with isotopic results can shed more light on the diet of individuals as well as groups (elite vs. nonelite).

Another potential contribution of biology and biochemistry to Maya archaeology lies in the aforementioned efforts to identify the regions of origin for various individuals through their tooth enamel phosphate. The underlying premise is that since dental enamel forms during childhood, the oxygen isotope ratio of its phosphate can be tied to the groundwater of the region where that individual resided during youth.

In one example of this kind of analysis, we can look at the efforts of White *et al.* (2000) to determine if the individuals buried in the Mound A and B tombs at Kaminaljuyú were actual Teotihuacanos or just local Maya emulating Teotihuacan styles. The authors analyzed enamel phosphate for oxygen isotope ratios in the first molars (which form before 3 years) and third molars (which form before 12 years). This analysis revealed that none of the principal occupants of the tombs in Mound A were born outside of Kaminaljuyú. Because of differences between his first and third molars, one individual (Skeleton 1 in Tomb A-V), although regarded as having been born in Kaminaljuyú, might possibly have spent his teenage years in Teotihuacan before returning to Kaminaljuyú. Strontium isotope ratios suggest

that three other individuals at Kaminaljuyú were probably foreign to that site, but native to other Maya cities (Valdés and Wright, 2003).

While we once thought we could learn only about royal individuals (e.g., from the hieroglyphic texts they commissioned), we are now beginning to learn a bit about individual commoners through bone chemistry. One day, when our sample sizes are larger, and we are sure what the accumulating results of isotopic, trace element, and DNA analyses mean, we may even be able to determine a commoner's diet, region of birth, and partial life history (Ambrose and Katzenberg, 2000; Merriwether *et al.*, 1997; White, 1999; Whittington and Reed, 1997b).

THE STRUCTURE OF THE CLASSIC MAYA STATE

Complex systems like states and empires feature multiple hierarchies of administrators and decision makers (Algaze, 1993; Feinman and Marcus, 1998; Spencer and Redmond, 2001a). Hereditary social classes were often crosscut by institutions called "estates," which drew on both nobles and commoners. For example, the religious estate might include high priests drawn from noble families, and religious assistants who were trained commoners. The military estate might include noble generals and leading commoner footsoldiers.

With every position in such a hierarchy went a title. The number of positions and titles could vary from capital to secondary center, and from one province to another. Over time, as state bureaucracies grew in response to arising problems, they often created new posts. In nonliterate states, it is very difficult for archaeologists to determine all of the latter. In societies like Sumer, Egypt, or the Maya, gradual differentiation and specialization of roles can be detected in the ancient writing systems; we see a proliferation of titles.

The Proliferation of Titles and Offices

In the early Egyptian state, the hereditary pharaoh was aided by an individual called a *vizier*. By the time of the fifteenth dynasty, the office of treasurer temporarily supplanted the *vizier*'s as the second most important. By the eighteenth dynasty, the *vizier* was reestablished as second in command, but now there were two individuals with the title of *vizier*, one of whom administered Upper Egypt and the other Lower Egypt. The late Egyptian state was divided into districts called *hesps*, 22 in Upper Egypt and 20 in Lower Egypt, each headed by an administrator whose job it was to collect harvests and taxes and to organize corvée labor.

The Egyptian data show that the number of individuals who bore a title like "overseer" could vary over time. Furthermore, even when certain titles remained unchanged for centuries, there is evidence that the duties assigned to it could

change periodically. In other words, as the Egyptian government evolved, new titles were created and old titles had their associated duties and ranks altered.

The Maya state was no different. Titles varied across space and time, proliferating as the state evolved (Bricker, 1986; Freidel *et al.*, 1993; Houston and Stuart, 2001; Lacadena, 1996; Marcus, 1992b, 1993; Martin and Grube, 2000; Pérez Suárez, 2000; Schele and Freidel, 1990; Schele and Mathews, 1998). Even when similar titles were used in different regions at widely separated points in time, there are hints that the scope of the job was different, and the rank of the individual with a given title was changing. In fact, we have evidence that certain titles were restricted to some regions and that some titles did not make their appearance until the Late Classic.

At the top of the Classic Maya hierarchy was the ruler, generally called the *ajaw* ("lord") or *k'uhul ajaw* ("divine lord"), who resided in a capital city. In some capitals, such as Tikal, the ruler was also called the *kaloomte'* or *ochk'in kaloomte.*' Arrayed around the capitals and major cities were satellite cities and towns, administered by sublords. In some areas, such as the Usumacinta, these sublords were called *sajalob*, but in other areas that term was never used. Within the category of sublords there was internal ranking as well, with some individuals designated "head sublord" or *b'aah sajal*.

There were also Classic Maya terms for occupations, such as *itz'aat*, "artisan"; *uxul*, "stonecutter"; *b'aah uxul*, "head stonecutter"; *aj bich'ul*, "sculptor" or "polisher"; *aj tz'ib*, "scribe"; and *aj k'uhun, aj k'uhul hu'n*, and *aj k'uhuun*, terms variously interpreted as "he of the holy books," "keeper of the paper/headbands," or "he who worships" (Boot, 1999; Coe and van Stone, 2001; Jackson and Stuart, 2001; Lacadena, 1996; Lacadena García-Gallo and Ciudad Ruiz, 1998; Montgomery, 2002, pp. 201–212; Schele and Freidel, 1990; Schele and Mathews, 1998, pp. 28, 111–112).

With further progress in deciphering Classic texts, we may one day be able to demonstrate with greater accuracy both the number and kinds of specialized personnel in different Maya states. Although the work of the last decade has shown a lack of uniformity in the use of titles through time and space, this very diversity of titles has reinforced other lines of evidence showing that the Maya had a well-developed administrative hierarchy. Writing, an elite prerogative, was flexible enough to serve as both a tool and by-product of the state (Marcus, 1992b).

The Maya State: Centralized or Decentralized?

The 1990s featured at least one well-known debate in which Mayanists took one of two opposing positions: (1) the Maya had "bureaucratic (or unitary) states with centralized organization of people and activities" or (2) the Maya had "decentralized segmentary [sic] states in which ritual integrated fairly autonomous

kinship groups" (Fox *et al.*, 1996, pp. 797–799). Chase and Chase (1996) used Classic Caracol to show that the Maya had centralized states. Fox and Cook (1996) used Postclassic Quiché polities to show that the Maya had decentralized states.

The whole premise of this dichotomy requires comment. First of all, while there is nothing wrong with the term "decentralized," the expression "segmentary state" is now considered an oxymoron (Claessen, 1992). The scholar who first used it has already conceded that the societies he applied it to were acephalous tribes, not states (Southall, 1991). Chiefdoms and states, by definition, are nonsegmentary societies (Carneiro, 1981, 1998, 2000; Cohen, 1981; Marcus and Feinman, 1998; Spencer, 1967).

Second, the dichotomy implies an "either/or" scenario that fails to take into account dynamic cycling over time. Caracol was a lowland Classic polity; the Quiché were highland Postclassic polities. The spatial and temporal differences are significant. I have previously argued (Marcus, 1992a, 1993) that one can see long-term oscillations during which Maya polities became strongly centralized, then broke down into their formerly autonomous provinces. During the Classic, there were a number of very large centralized Maya states. Virtually all of them had broken down by the Terminal Classic. Indeed, what is most typical of the Postclassic Maya highlands are polities like the *cacicazgos* of the Postclassic Mexican highlands. There is some question whether *cacicazgos* should be considered "states" at all, since they usually have only a three-level administrative hierarchy. However, since their rulers continued to call themselves "kings" and were often treated as such, it is probably appropriate to call their polities "petty kingdoms."

We run into trouble whenever we try to characterize the entire Maya region, over the whole of the Classic and Postclassic periods, as either "centralized" or "decentralized." There were times when centralized and decentralized polities coexisted, and times when centralized polities broke down.

The same caveats we have leveled at the notion of "segmentary" states can be leveled at the notion that states were run by "kin relations." By definition, archaic states were not run this way. They were governed by a hereditary elite consisting of a royal family, major nobles, and minor nobles who received their authority by right of birth. Only at the level of the village, the fourth and lowest tier of the hierarchy, did the kind of kin organization seen in prestate societies continue. Such kinship operated at the level of the household, the residential ward, perhaps even the individual village. But any society that operates *only* on this level cannot be considered a state. As Chase and Chase (1996, p. 810) emphasize, "the Classic-period Maya maintained large, centralized, differentiated, and integrated polities based on far more than kinship and the ideological role of kings."

In other words, Maya political organization was uniform neither in time nor in space. Throughout the Classic we see a mix of strongly centralized and weakly centralized states, perhaps even with some paramount chiefdoms around the margins. Under the right conditions, centralization could wax or wane (Demarest,

1996). These dynamic sociopolitical oscillations can be documented in a number of ways today, overturning our formerly static view that the only major shift was a ninth-century collapse.

Much of the dynamism in the system originated at the level of the secondary centers below the capital, whose sublords often sought to secede, achieving autonomy and eventually establishing their own subordinate centers through conquest and alliance. As we have seen already, some secondary states were probably created by princes from preexisting primary states who, for one reason or another, could not expect to ascend to the throne of their native polity. This process could continue in third- and fourth-generation states.

Mounting evidence shows that throughout the Maya region, different decades featured different centers jockeying for position (Iannone, 2002; Marcus, 1993, 1995b). We first learned this from hieroglyphic texts at Calakmul, Caracol, Copan, Dos Pilas, Palenque, Tikal, Seibal, and Tonina, among others. Now other lines of evidence are confirming this process, for example in Classic period households and graves (Chase, 1997, 1998; Chase and Chase, 2000b; Gonlin, 1994; Hendon, 1997; Iannone and Connell, 2003; Kievit, 1994; Laporte and Iglesias Ponce de León, 1999; Robin, 1999; Sheets, 1998, 2000; Webster *et al.*, 1997; Woodward, 2000; Yaeger, 2000, 2002).

THE NINTH-CENTURY COLLAPSE: NATURAL DISASTER OR POLITICAL STRIFE?

In the ninth century A.D., a number of major cities throughout the lowlands were abandoned. The evidence for this phenomenon has been synthesized on several occasions (Culbert, 1973; Hosler *et al.*, 1977; Lowe, 1985; Sabloff, 1992; Sharer, 1977), but two divergent views have emerged. One view is that a general collapse broadly co-occurred in the northern and southern lowlands (e.g., Andrews *et al.*, in press); another is that a pan-lowland collapse did not occur (e.g. Chase, 1985, 1986, 1990; Pendergast 1985, 1986, 1990; Rice *et al.*, in press). The most recent synthesis of the collapse is that of Webster (2002). His version implicates three principal factors: (1) a worsening relationship of Maya populations to their agricultural (and other natural) resources, (2) the destabilizing effects of warfare and elite competition, and (3) a rejection of the ideology and institution of kingship (Webster, 2002, p. 328). These, he argued, exacerbated a series of secondary stresses including drought, peasant unrest, and disease; driving the whole process was the population/resource equation as propounded by Malthus (1970).

Natural catastrophes, such as prolonged droughts, are thought by some (Gill, 2000; Gunn, 2000; Gunn *et al.*, 2002; Hodell *et al.*, 1995, 2001; Robichaux, 2000) to have played important roles in site abandonments or cessation of monumental

building in the sixth and ninth centuries, but even some of these proponents have emphasized that the evidence for drought varies considerably across the northern and southern lowlands (Yaeger and Hodell, 2002). Other archaeologists favor *sociopolitical* explanations for the same abandonments and upheavals, noting that the natural environment is so heterogeneous, the subsistence technologies employed in different areas so diverse, and the precollapse skeletal populations so lacking in evidence of malnutrition, that natural catastrophes seem an unlikely explanation (Demarest, 1997, 2001; Wright, 1997a,b).

As for the destabilizing effects of warfare, mounting evidence suggests that it may indeed have been a factor on repeated occasions throughout Maya history (Trejo, 2000). One example can be found in the Petexbatun research by Vanderbilt University. It appears that ongoing warfare forced Dos Pilas to construct fortifications rapidly, only to be defeated by A.D. 761. Another Petexbatun center, Aguateca—although able to hold out longer because it was situated in a naturally defensible location—also shows evidence of rapid abandonment (Inomata, 1997). A third site, Punta de Chimino, had three moats and a massive wall system that allowed it to hold out still longer. While each site fortified itself and held out as long as it could, by c. A.D. 900 the area was largely abandoned. Of great interest is the fact that the process of collapse in the Petexbatun area took perhaps 140 years, and those Maya populations who stayed tried to cope with all the stresses. To be sure, under these conditions, any kind of drought would have found its effects magnified.

Ultimately, even "powerful cities" like Tikal and Calakmul fell. Cowgill (1988, p. 266) has suggested that the longevity of individual Mesoamerican states may have something to do with whether they were put together originally by "subjugation" or "incorporation," with those created by subjugation being more fragile. Large-scale asymmetrical and inegalitarian structures were evidently less stable than commonly assumed (Marcus, 1989, p. 206, 1998a, pp. 93–94), even though many scholars treat such large-scale structures as durable. Furthermore, warfare seems to be implicated in too many of these cases to be ignored (Dahlin, 2000; Marcus, 1992a,b; Spencer and Redmond, 2001a,b).

While the ninth-century collapse has received the most attention, there are many other cases of individual site abandonments that remain to be explained. Why, for example, was El Mirador—seemingly at its peak in the Late Preclassic—abandoned so soon afterwards? Perhaps what fascinates us most is not the collapse itself, but the inability of the Maya to recover in so many cases, leaving some of their biggest cities never to be populated again.

Throughout the history of Maya civilization there were also significant gaps in stelae carving or monumental construction that seem to be site specific. Often, one site's demise seems to have led to another site's rise. Calakmul rose when El Mirador declined, and Caracol and Calakmul often seem to have benefited when Tikal suffered defeat in battle (Chase and Chase, 2000c). During the hiatus in

monument carving at Tikal from A.D. 557 to 692, Caracol—only 76 km distant—was vibrant and flourishing (Chase and Chase, 2000a, p. 61).

By the Late Classic, many Maya capitals were surrounded by hexagonal lattices of subordinate centers, so regularly spaced that the sociopolitical system may have been "hypercoherent." This term, originally used by the late Roy Rappaport (1969), refers to a system so thoroughly integrated that a perturbation in one area can be rapidly transmitted to other parts of the system. If war in one part of the system served as a perturbation, it could eventually amplify the effects of drought in some other part of the system. What we lack is the ability to differentiate among various perturbations, in order to determine their proximate and ultimate causes.

For example, as warfare has now been documented throughout the entire Preclassic/Classic Maya sequence, what was so much worse about warfare from A.D. 700 to 900? Some might say that the scale, intensity, and frequency of warfare had increased; that Maya populations were higher than ever before; and that the effects of droughts were therefore more profound. Perhaps future work will show that several such perturbations traveled rapidly through a hypercoherent system, reinforcing each other sufficiently to topple capitals and depopulate regions.

The Aftermath

The Petexbatun region saw one last flurry of construction at ninth-century Seibal, but then seems to have been largely abandoned. Other regions, however, especially those situated near cenotes, rivers, lagoons, and the ocean, became thriving centers during the Terminal Classic and Postclassic (Masson, 1999, 2000; Pendergast, 1986; Rice *et al*., 1998). Isla Cerritos, Ecab, El Meco, San Miguel on Cancún, San Gervasio on Cozumel, Xcaret, Xelha, Tulum, Muyil, Santa Rita Corozal, Ambergris Cay, Tayasal, and Tipu come to mind (see Fig. 8; Andrews, 1993, 1998; Gallareta Negrón, 1998; Peraza Lope, 1999a).

Wurster *et al.* (2000) have recently contributed a case study in just such a setting—Topoxte Island in Lake Yaxha, Guatemala. The site there has been the object of major excavations, revealing that the island was abandoned at the end of the Terminal Classic and reoccupied around A.D. 1100. Late Postclassic resettlement at Topoxte was truly impressive; what seems to be missing on the island is a vibrant *Early* Postclassic. We do not yet know why, in so many parts of the lowland Maya region, the Early Postclassic seems to be missing. It is possible that the Terminal Classic lasted longer in some areas than we think, and/or that the Late Postclassic began earlier.

In the northern lowlands, the Puuc region witnessed impressive Terminal Classic development. Recent research is throwing new light on the Early Classic foundations for this Puuc florescence and establishing the ecological and sociopolitical stresses that led to its demise, including the role of Chichen Itza (e.g., Anderson, 1998; Carmean and Sabloff, 1996; Dunning, 1992; Gallareta Negrón

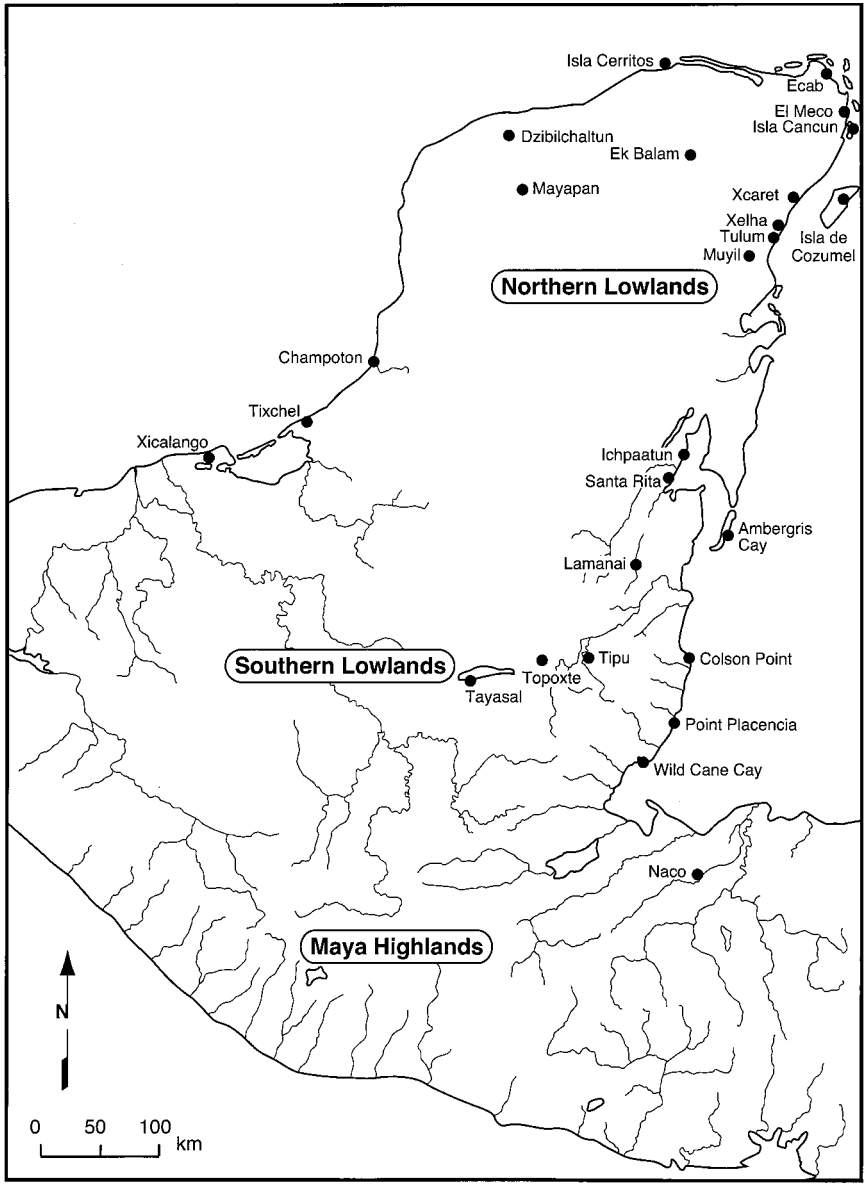

Fig. 8. During the Postclassic, some indigenous populations of Yucatan seem to have relocated from the interior to the peninsula's coasts to pursue maritime trade and/or exploit marine resources. Some key sites are shown here (redrawn from Andrews, 1993, Fig. 1).

et al., 1999; Isendahl, 2002; Kowalski and Dunning, 1999; Michelet *et al.*, 2000; Prem, 1994; Rivera Dorado, 1996, 1998, 1999; Smyth, 1998; Smyth *et al.*, 1998; Tourtellot and Sabloff, 1994). Chichen Itza also has been the focus of new excavations (Schmidt, 1994, 1999). Recent work has reopened the question of whether Chichen was indeed the recipient of Toltec influence, and reassessed the relationship of Chichen to the Puuc sites. Schmidt (1998, p. 444), the director of a highly praised "proyecto especial" at Chichen, regards the nature and chronology of Chichen/Toltec interaction as far from clear-cut: "both in Yucatan as well as in Hidalgo there are important details of absolute and relative chronology remaining to be resolved. . . . the chronology of Chichén Itzá and its relationship with events in the Puuc region are also subject to revision." He believes that "Chichén's expansion indeed led to the destruction of Puuc culture." Significantly, at the very time that Chichen Itza is alleged to show "Toltec influence," highland Mexican centers like Cacaxtla and Xochicalco are alleged to show "Maya influence."

Mayapan took over from Chichen, and when it collapsed in A.D. 1450 (Peraza Lope, 1999b), there was a major demographic shift to the east. More than 100 Postclassic sites have so far been located on the Caribbean coast and islands of the Yucatan Peninsula. As González de la Mata and Andrews (1998, p. 459) emphasize, "the area of the central [Caribbean] coast was the most densely populated: the distribution of the vestiges of constructions is so continuous that it is difficult to determine where one site ends and another begins." There are hints that some populations from the interior of the Yucatan Peninsula migrated to its eastern coastline to take advantage of new emphases on marine resources and long-distance trade. Such activities link the whole area from Veracruz to Honduras and beyond. Postclassic ports on the west side of the peninsula included Xicalango, Tixchel, and Champotón, and on the east coast were Xcaret, Xelha, and Tulum. More southerly sites such as Ichpaatun, Santa Rita Corozal, Lamanai, Tipu, and Punta Placencia also seem to have been part of a coastal trade network. These Postclassic sites were not investing nearly as much labor in monumentality as had their Classic forebears. As Andrews (1993, p. 58) has noted, "The down-sized temples and mass-produced ceramics may be less aesthetic, but they also represented less of a drain on the resources of the society." Finally, in A.D. 1697 the lowland Maya of Petén Itzá, whose nobles claimed descent from the rulers of Chichén Itzá, were conquered by the Spaniards (Jones, 1998). In the Maya highlands, the Postclassic also has been the object of important recent research (e.g., Arnauld, 1993, 1996, 1997; Braswell, 1996a,b; Breton, 1993; Fauvet-Berthelot *et al.*, 1996), but we still need much more as so many Maya archaeologists continue to focus on the lowlands.

FUTURE PROSPECTS: 2002–2022

Maya archaeology has made enormous strides during recent decades. Biological anthropology, with its isotopic, trace element, and "life history" analyses, is outlining differences in diet and health between elites and commoners, men and

women. Bioarchaeology is also starting to document the movement of individual "actors" from region to region, providing new lines of evidence on intersite marriage alliance and political usurpation. Studies of skeletal trauma and defensive earthworks document the role of warfare in the creation and dissolution of Maya states, laying to rest the notion of the Maya as a "peaceful theocracy." Increasingly detailed translations of hieroglyphic texts allow us to see the triumphs and defeats of individual rulers, as well as showing us that rival cities had different versions of historic events.

Most of these advances, however, are focused on the data-rich period from A.D. 300 to 900; so far, we lack comparable insight into the Preclassic and Postclassic. The long period of chiefly cycling prior to state formation, as well as the early and abortive attempts at unification that may have preceded the El Mirador, Tikal, and Calakmul states, all took place before there were extensive hieroglyphic texts. The breakdown of the great Classic states and the formation of Postclassic kingdoms also took place without leaving us many of the most useful lines of evidence. Only when we get to the period of direct contact with the Spaniards do we have the necessary historic detail (Gasco *et al.*, 1997; Jones, 1998; Kepecs, 1997a,b; Leventhal *et al.*, 2001; Millet Cámara *et al.*, 1993; Pendergast, 1993, Pendergast *et al.*, 1993; Simmons, 1995; Yaeger *et al.*, 2002).

Clearly, we will have to refine traditional archaeological techniques to bring periods like the Late Preclassic and Protoclassic into sharper focus. Retrospective texts that refer to earlier, somewhat legendary elite "agents" are enticing, but not enough. We must figure out how to derive finer chronologies for periods with no dated monuments and from sites that lack dated monuments. We must recover more Preceramic and Preclassic skeletons, to compare their diets to those reconstructed for later elite and commoners. We must get bigger samples of the houses, features, and burials that serve to document not only the early escalation of status, but also the setbacks that accompany chiefly cycling. We must refine the chronologies of the Maya highlands, the northern lowlands, and the southern lowlands to determine whether events in all three regions are more entwined than we formerly thought.

Our surveys must recover both *macroevolutionary* changes, such as increases or decreases in the regional tiers of the administrative hierarchy, and *microevolutionary* changes, such as those affecting individual households when a village was incorporated into, or released by, a state. We need to know how subjugation or autonomy affected the size, labor, diet, and occupational specialization of households at every level of the hierarchy. We know a great deal about the period A.D. 300–900, but we cannot fully understand it until we know what preceded and followed it.

In doing this review, I was surprised to discover that it would require a 700-entry bibliography. I now suspect that, given the pace of current research, future overviews will need 1000 entries. If anyone had had any doubt that Maya archaeology has become a huge field unto itself, he or she should know better now.

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REFERENCES CITED

Adams, R. E. W. (1980). Swamps, canals, and the location of ancient Maya cities. *Antiquity* **54:** 206–214.

Adams, R. E. W. (1983). Ancient land use and culture history in the Pasión River region. In Vogt, E. Z., and Leventhal, R. M. (eds.), *Prehistoric Settlement Patterns: Essays in Honor of Gordon R. Willey*, University of New Mexico Press, Albuquerque, and Peabody Museum, Harvard University, pp. 319–336.

Adams, R. E. W. (1993). Rebuttal to Pope and Dahlin: 2. *Journal of Field Archaeology* **20**: 383.

Adams, R. E. W., Brown, W. E., and Culbert, T. P. (1981). Radar mapping, archaeology, and ancient Maya land use. *Science* **213**: 1457–1463.

Adams, R. E. W., Culbert, T. P., Brown, W. E., Harrison, P. D., and Levi, L. J. (1990). Rebuttal to Pope and Dahlin. *Journal of Field Archaeology* **17**: 241–244.

Adams, R. E. W., and Jones, R. C. (1981). Spatial patterns and regional growth among Classic Maya cities. *American Antiquity* **46**: 301–322.

Algaze, G. (1993). Expansionary dynamics of some early pristine states. *American Anthropologist* **95**: 304–333.

Ambrose, S. H., and Katzenberg, M. A. (eds.). (2000). *Biogeochemical Approaches to Paleodietary Analysis*, Kluwer Academic/Plenum, New York.

Anderson, D. G. (1996a). Chiefly cycling and large-scale abandonment as viewed from the Savannah River basin. In Scarry, J. F. (ed.), *Political Structure and Change in the Prehistoric Southeastern United States*, University Press of Florida, Gainesville, pp. 150–191.

Anderson, D. G. (1996b). Fluctuations between simple and complex chiefdoms: Cycling in the Late Prehistoric Southeast. In Scarry, J. F. (ed.), *Political Structure and Change in the Prehistoric Southeastern United States*, University Press of Florida, Gainesville, pp. 231–252.

Anderson, P. K. (1998). Yula, Yucatan, Mexico: Terminal Classic ceramic chronology for the Chichén Itzá area. *Ancient Mesoamerica* **9**: 151–165.

Andrews, A. P. (1993). Late Postclassic lowland Maya archaeology. *Journal of World Prehistory* **7**: 35–69.

Andrews, A. P. (1998). El comercio marítimo de los mayas del posclásico. *Arqueología Mexicana* **VI**(33): 16–23.

Andrews, A. P., Andrews, E. W., and Robles Castellanos, F. (in press). The northern Maya collapse and its aftermath. *Ancient Mesoamerica*.

Ardren, T. (ed.). (2002). *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA.
Arnauld, M.-C. (1993). Los territorios políticos de las cuencas de Salamá, Rabinal y Cubulco en el postclásico. In Breton, A. (ed.), *Representaciones del espacio político en las tierras altas de Guatemala*, CEMCA, Cuadernos de Estudios Guatemaltecos, Piedra Santa, Guatemala, pp. 43–109.
Arnauld, M.-C. (1996). De Nacxit a Rabinal Achi: estados territoriales en formación en las tierras altas mayas (postclásico). In *Investigadores de la cultura maya 3*, Universidad Autónoma de Campeche, Campeche, Tomo II, pp. 231–268.
Arnauld, M.-C. (1997). Relaciones interregionales en el área maya durante el postclásico en base a datos arquitectónicos. In Laporte, J. P., and Escobedo, H. L. (eds.), *X simposio de investigaciones arqueológicas en Guatemala*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 117–131.
Atran, S. (1999). Itzaj Maya folkbiological taxonomy. In Medin, D., and Atran, S. (eds.), *Folkbiology*, MIT Press, Cambridge, pp. 119–203.
Atran, S., Medin, D., Ross, N., Lynch, E., Coley, J., Ucan Ek', E., and Vapnarsky, V. (1999). Folkecology and commons management in the Maya lowlands. *Proceedings of the National Academy of Sciences* **96**: 7598–7603.
Atran, S., Medin, D., Ross, N., Lynch, E., Vapnarsky, V., Ucan Ek', E., Coley, J., Timura, C., and Baran, M. (2002). Folkecology, cultural epidemiology, and the spirit of the commons: A garden experiment in the Maya lowlands, 1991–2001. *Current Anthropology* **43**: 421–450.
Atran, S., and Ukan Ek', E. (1999). Classification of useful plants by the northern Petén Maya (Itzaj). In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 18–59.
Awe, J. J. (1992). *Dawn in the Land Between the Rivers: Formative Occupation at Cahal Pech, Belize and Its Implications for Preclassic Development in the Maya Lowlands*, Ph.D. Dissertation, Institute of Archaeology, University of London, England.
Bailey, F. G. (1969). *Stratagems and Spoils: A Social Anthropology of Politics*, Basil Blackwell, Oxford.
Beadle, G. (1939). Teosinte and the origin of maize. *The Journal of Heredity* **30**: 245–247.
Becker, M. J. (1999). *Excavations in Residential Areas of Tikal: Groups With Shrines*, Tikal Report 21, University Museum Monograph 104, University of Pennsylvania Museum of Archaeology, Philadelphia.
Bell, E. E. (2002). Engendering a dynasty: A royal woman in the Margarita tomb, Copan. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 89–104.
Bell, E. E., Canuto, M. A., and Sharer, R. J. (eds.). (2003). *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.
Bell, E. E., Sharer, R. J., Sedat, D. W., Canuto, M. A., and Grant, L. A. (2000). The Margarita tomb at Copán, Honduras: A research update. *Expedition* **42**(3): 21–25.
Bennetzen, J., Buckler, E., Chandler, V., Doebley, J., Dorweiler, J., Gaut, B., Freeling, M., Hake, S., Kellogg, E., Poethig, R., Walbot, V., and Wessler, S. (2001). Genetic evidence and the origin of maize. *Latin American Antiquity* **12**: 84–86.
Benz, B. F. (2001). Archaeological evidence of teosinte domestication from Guilá Naquitz, Oaxaca. *Proceedings of the National Academy of Sciences* **98**(4): 2104–2106.
Berlin, B., Breedlove, D. E., and Raven, P. H. (1974). *Principles of Tzeltal Plant Classification*, Academic Press, New York.
Berlin, E. A., and Berlin, B. (1996). *Medical Ethnobiology of the Highland Maya of Chiapas, Mexico: The Gastrointestinal Diseases*, Princeton University Press, Princeton, NJ.
Berlin, E. A., and Berlin, B. (1998). *Enciclopedia médica maya*, El Colegio de la Frontera Sur, San Cristóbal de las Casas, Chiapas, Mexico.
Boot, E. (1999). A new Naranjo area toponym: yo:ts. *Mexicon* **XXI**: 39–42.
Brady, J. E., and Ashmore, W. (1999). Mountains, caves, water: Ideational landscapes of the ancient Maya. In Ashmore, W., and Knapp, A. B. (eds.), *Archaeologies of Landscape: Contemporary Perspectives*, Blackwell, Malden, MA, pp. 124–145.
Brainerd, G. W. (1954). *The Maya Civilization*, Southwest Museum, Los Angeles.
Braswell, G. E. (1996a). *A Maya Obsidian Source: The Geoarchaeology, Settlement History, and the Ancient Economy of San Martín Jilotepeque, Guatemala*, Ph.D. Dissertation, Department of Anthropology, Tulane University, University Microfilms, Ann Arbor, MI.

Braswell, G. E. (1996b). El patrón de asentamiento y producción en la fuente de obsidiana de San Martín Jilotepeque. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 499–512.

Braswell, G. E. (ed.). (2003). *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, University of Texas Press, Austin.

Breton, A. (ed.) (1993). *Representaciones del espacio político en las tierras altas de Guatemala*, CEMCA, Cuadernos de Estudios Guatemaltecos, Piedra Santa, Guatemala.

Bricker, V. R. (1986). *A Grammar of Mayan Hieroglyphs*, Publication 56, Middle American Research Institute, Tulane University, New Orleans.

Bricker, V. R., and Vail, G. (eds.). (1997). *Papers on the Madrid Codex*, Publication 64, Middle American Research Institute, Tulane University, New Orleans.

Buikstra, J. E., Price, T. D., Wright, L. E., and Burton, J. H. (2003). Tombs from the Copán Acropolis: A life history approach. In Bell, E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.

Bumsted, M. P. (1985). Past human behavior from bone chemical analysis: Respects and prospects. *Journal of Human Evolution* **14**: 539–551.

Canuto, M. A. (2002). *A Tale of Two Communities: Social and Political Transformation in the Hinterlands of the Maya Polity of Copan*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.

Canuto, M. A., and Yaeger, J. (eds.). (2000). *The Archaeology of Communities: A New World Perspective*, Routledge, London.

Carballo, D. M. (1997). *Investigaciones arqueológicas en Cerro Chino, Honduras*, Manuscript submitted to Research Center of the Instituto Hondureño de Antropología e Historia, Honduras.

Carmean, K., and Sabloff, J. A. (1996). Political decentralization in the Puuc region, Yucatan, Mexico. *Journal of Anthropological Research* **52**: 317–330.

Carneiro, R. L. (1981). The chiefdom: Precursor of the state. In Jones, G. D., and Kautz, R. R. (eds.), *The Transition to Statehood in the New World*, Cambridge University Press, Cambridge, pp. 37–69.

Carneiro, R. L. (1991). The nature of the chiefdom as revealed by evidence from the Cauca Valley of Colombia. In Rambo, A. T., and Gillogly, K. (eds.), *Profiles in Cultural Evolution: Papers From a Conference in Honor of Elman R. Service*, Anthropological Papers No. 85, Museum of Anthropology, University of Michigan, Ann Arbor, pp. 167–190.

Carneiro, R. L. (1998). What happened at the flashpoint? Conjectures on chiefdom formation at the very moment of conception. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 18–42.

Carneiro, R. L. (2000). The transition from quantity to quality: A neglected causal mechanism in accounting for social evolution. *Proceedings of the National Academy of Sciences* **97**: 12926–12931.

Carr, H. S. (1996). Precolumbian Maya exploitation and management of deer populations. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 251–261.

Carrasco, R. (1996). Calakmul, Campeche. *Arqueología Mexicana* **III**(18): 46–51.

Carrasco, R. (1999). Actividad ritual y objetos de poder en la Estructura IV de Calakmul, Campeche. In Gubler, R. (ed.), *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA, pp. 69–84.

Carrasco, R. (2000). El cuchcabal de la cabeza de serpiente. *Arqueología Mexicana* **VII**(42): 12–19.

Carrasco Vargas, R., Boucher, S., Alvarez González, P., Tiesler Blos, V., García Vierna, V., García Moreno, R., and Vázquez Negrete, J. (1999). A dynastic tomb from Campeche, Mexico: New evidence on Jaguar Paw, a ruler of Calakmul. *Latin American Antiquity* **10**: 47–58.

Chase, A. F., and Chase, D. Z. (1995). External impetus, internal synthesis, and standardization: E group assemblages and the crystallization of Classic Maya society in the southern lowlands. In Grube, N. (ed.), *The Emergence of Maya Civilization: The Transition From the Preclassic to the Early Classic*, Acta Mesoamericana 8, Verlag Anton Saurwein, Möckmühl, Germany, pp. 87–101.

Chase, A. F., and Chase, D. Z. (1996). More than kin and king: Centralized political organization among the Late Classic Maya. *Current Anthropology* **37**: 803–810.

Chase, A. F., and Chase, D. Z. (2000a). Sixth and seventh century variability in the southern Maya lowlands: Centralization and integration at Caracol, Belize. In Gunn, J. D. (ed.), *The Years Without*

Summer: Tracing A.D. 536 and Its Aftermath, British Archaeological Reports International Series 872, Archaeopress, Oxford, pp. 55–65.
Chase, D. Z. (1985). Ganned but not forgotten: Late postclassic archaeology and ritual at Santa Rita Corozal, Belize. In Chase, A. F., and Rice, P. M. (eds.), *The Lowland Maya Postclassic*, University of Texas Press, Austin, pp. 104–125.
Chase, D. Z. (1986). Social and political organization of the land of cacao and honey: Spatial frames for correlating the archaeology and the ethnohistory of the Postclassic lowland Maya. In Sabloff, J. A., and Andrews, E. W., V (eds.), *Late Lowland Maya Civilization: Classic to Postclassic*, University of New Mexico Press, Albuquerque, pp. 347–377.
Chase, D. Z. (1990). The invisible Maya: Population history and archaeology at Santa Rita Corozal. In Culbert, T. P., and Rice, D. S. (eds.), *Precolumbian Population History in the Maya Lowlands*, University of New Mexico Press, Albuquerque, pp. 199–213.
Chase, D. Z. (1997). Southern lowland Maya archaeology and human skeletal remains: Interpretations from Caracol (Belize), Santa Rita Corozal (Belize), and Tayasal (Guatemala). In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 15–27.
Chase, D. Z. (1998). Albergando a los muertos en Caracol, Belice. In *Los investigadores de la cultura maya* 6(1), Universidad Autónoma de Campeche, Campeche, pp. 9–25.
Chase, D. Z., and Chase, A. F. (2000b). Inferences about abandonment: Maya household archaeology and Caracol, Belize. *Mayab* **13**: 67–77.
Chase, D. Z., and Chase, A. F. (2000c). La guerra maya del periodo clásico desde la perspectiva de Caracol, Belice. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 53–72.
Cheetham, D. (in press). Cunil: A pre-Mamom horizon in the southern Maya lowlands. In Powis, T. G. (ed.), *Bridging Formative Mesoamerican Cultures: Trade, Exchange, and Interaction*, University of Texas Press, Austin.
Claessen, H. J. M. (1992). Segmentary and state are strange bedfellows. Paper presented at symposium entitled *The Segmentary State and the Classic Lowland Maya*, Cleveland State University, Cleveland, OH.
Clutton-Brock, J., and Hammond, N. (1994). Hot dogs: Comestible canids in Preclassic Maya culture at Cuello, Belize. *Journal of Archaeological Science* **21**: 819–826.
Coe, M. D., and van Stone, M. (2001). *How to Read Maya Glyphs*, Thames and Hudson, London.
Coe, W. R. (1990). *Excavations in the Great Plaza, North Terrace, and North Acropolis of Tikal* (6 vols.), Tikal Report 14, Monograph 61, University Museum, University of Pennsylvania, Philadelphia.
Coggins, C. C. (1975). *Painting and Drawing Styles at Tikal: An Historical and Iconographic Reconstruction*, Ph.D. Dissertation, Department of Art, Harvard University, Cambridge, MA.
Cohen, R. (1981). Evolution, fission, and the early state. In Claessen, H. J. M., and Skalník, P. (eds.), *The Study of the State*, Mouton, The Hague, pp. 87–115.
Cowgill, G. L. (1988). Onward and upward with collapse. In Yoffee, N., and Cowgill, G. L. (eds.), *The Collapse of Ancient States and Civilizations*, University of Arizona Press, Tucson, pp. 244–276.
Culbert, T. P. (ed.). (1973). *The Classic Maya Collapse*, University of New Mexico Press, Albuquerque.
Dahlin, B. H. (2000). The barricade and abandonment of Chunchucmil: Implications for northern Maya warfare. *Latin American Antiquity* **11**: 283–298.
Danforth, M. E. (1999). Coming up short: Stature and nutrition among the ancient Maya of the southern lowlands. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 103–117.
Demarest, A. A. (1996). Closing comment. *Current Anthropology* **37**: 821–824.
Demarest, A. A. (1997). The Vanderbilt Petexbatun regional archaeological project 1989–1994: Overview, history, and major results of a multidisciplinary study of the classic Maya collapse. *Ancient Mesoamerica* **8**: 209–228.
Demarest, A. A. (2001). Climatic change and the Classic Maya collapse: The return of catastrophism. *Latin American Antiquity* **12**: 105–107.
Demarest, A. A., and Foias, A. E. (1993). Mesoamerican horizons and the cultural transformations of Maya civilization. In Rice, D. S. (ed.), *Latin American Horizons*, Dumbarton Oaks, Washington, DC, pp. 147–192.

Demarest, A. A., O'Mansky, M., Wolley, C., Van Tuerenhout, D., Inomata, T., Palka, J., and Escobedo, H. (1997). Classic Maya defensive systems and warfare in the Petexbatun region: Archaeological evidence and interpretations. *Ancient Mesoamerica* **8**: 229–254.

Dobres, M.-A., and Robb, J. E. (eds.). (2000). *Agency in Archaeology*, Routledge, London.

Dunning, N. P. (1992). *Lords of the Hills: Ancient Maya Settlement in the Puuc Region, Yucatan, Mexico*, Prehistory Press, Madison, WI.

Dunning, N. P. (1996). A reexamination of regional variability in the pre-Hispanic agricultural landscape. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 53–68.

Dunning, N. P., Scarborough, V., Valdez, F., Jr., Luzzadder-Beach, S., Beach, T., and Jones, J. G. (1999). Temple mountains, sacred lakes, and fertile fields: Ancient Maya landscapes in northwestern Belize. *Antiquity* **73**: 650–660.

Emery, K. F. (1999). Continuity and variability in Postclassic and Colonial animal use at Lamanai and Tipu, Belize. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 61–81.

Escobedo, H. L. (1997). Arroyo de Piedra: Sociopolitical dynamics of a secondary center in the Petexbatun region. *Ancient Mesoamerica* **8**: 307–320.

Fahsen, F. (1998). El desenlace del clásico temprano en el área maya. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una civilización, aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 87–114.

Fash, W. L. (1991). *Scribes, Warriors, and Kings: The City of Copán and the Ancient Maya*, Thames and Hudson, London.

Fash, W. L. (1994). Changing perspectives on Maya civilization. *Annual Review of Anthropology* **23**: 181–208.

Fash, W. L. (2001). *Scribes, Warriors, and Kings: The City of Copán and the Ancient Maya*, Rev. edn., Thames and Hudson, London.

Fash, W. L., and Andrews, E. W., V (eds.). (in press). *Copan: The Rise and Fall of a Classic Maya Kingdom*, School of American Research Press, Santa Fe, NM.

Fash, W. L., and Fash, B. W. (2000). Teotihuacan and the Maya: A classic heritage. In Carrasco, D., Jones, L., and Sessions, S. (eds.), *Mesoamerica's Classic Heritage: From Teotihuacan to the Aztecs*, University Press of Colorado, Boulder, pp. 433–463.

Fash, W. L., and Sharer, R. J. (1991). Sociopolitical developments and methodological issues at Copan, Honduras: A conjunctive perspective. *Latin American Antiquity* **2**: 166–187.

Fauvet-Berthelot, M.-F., Rodríguez Loredo, C., and Pereira, G. (1996). Costumbres funerarias de la elite de Mixco (Jilotepeque) Viejo. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 513–535.

Fedick, S. L. (ed.). (1996). *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City.

Fedick, S. L., Morrison, B. A., Andersen, B. J., Boucher, S., Ceja Acosta, J., and Mathews, J. P. (2000). Wetland manipulation in the Yalahau region of the northern Maya lowlands. *Journal of Field Archaeology* **27**: 131–152.

Feinman, G. (1997). Thoughts on new approaches to combining the archaeological and historical records. *Journal of Archaeological Method and Theory* **4**: 367–377.

Feinman, G., and Marcus, J. (eds.) (1998). *Archaic States*, School of American Research Press, Santa Fe, NM.

Fialko, V. (1988). Mundo Perdido, Tikal: Un ejemplo de complejos de conmemoración astronómica. *Mayab* **4**: 13–21.

Flannery, K. V. (1999). Process and agency in early state formation. *Cambridge Archaeological Journal* **9**: 3–21.

Flannery, K. V., and Marcus, J. (1994). *Early Formative Pottery of the Valley of Oaxaca*, Memoirs 27, Museum of Anthropology, University of Michigan, Ann Arbor.

Flannery, K. V., and Marcus, J. (2000). Formative Mexican chiefdoms and the myth of the "mother culture." *Journal of Anthropological Archaeology* **19**: 1–37.

Folan, W. J., Fletcher, L. A., May Hau, J., and Florey Folan, L. (2001a). *Las ruinas de Calakmul, Campeche, México: un lugar central y su paisaje cultural*, Universidad Autónoma de Campeche,

Campeche, Mexico, and Foundation for the Advancement of Mesoamerican Studies, Crystal River, FL.
Folan, W. J., Marcus, J., and Miller, W. F. (1995a). Verification of a Maya settlement model through remote sensing.*Cambridge Archaeological Journal* **5**: 277–283.
Folan, W. J., Marcus, J., Pincemin, S., Domínguez Carrasco, M., Fletcher, L., and Morales López, A. (1995b). Calakmul: New data from an ancient Maya capital in Campeche, Mexico. *Latin American Antiquity* **6**: 310–334.
Folan, W. J., May Hau, J., Marcus, J., Miller, W. F., and González Heredia, R. (2001b). Los caminos de Calakmul, Campeche. *Ancient Mesoamerica* **12**: 293–298.
Folan, W. J., Morales López, A., and Tiesler, V. (2002). La ciudad y puerto de Champotón, Campeche: investigaciones arqueológicas recientes. *Mexicon* **XXIV**: 23.
Fowler, W. R. (1984). Late Preclassic mortuary patterns and evidence for human sacrifice at Chalchuapa, El Savador. *American Antiquity* **49**: 603–618.
Fox, J. W., and Cook, G. W. (1996). Constructing Maya communities: Ethnography for archaeology. *Current Anthropology* **37**: 811–821.
Fox, J. W., Cook, G. W., Chase, A. F., and Chase, D. Z. (1996). Questions of political and economic integration: Segmentary versus centralized states among the ancient Maya. *Current Anthropology* **37**: 795–801.
Freidel, D. A., Schele, L., and Parker, J. (1993). *Maya Cosmos: Three Thousand Years on the Shaman's Path*, William Morrow, New York.
Gallareta Negrón, T. (1998). Isla Cerritos, Yucatán. *Arqueología Mexicana* **VI**(33): 24–31.
Gallareta Negrón, T., Toscano, L., Pérez, C., and Péraza, C. (1999). Proyecto Labná, Yucatán, México. In Gubler, R. (ed.), *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA, pp. 85–96.
Garber, J. F., Brown, M. K., and Hartman, C. J. (2001). The development of Middle Formative public architecture in the Maya lowlands: The Blackman Eddy, Belize example. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans.
Garber, J. F., Brown, M. K., and Hartman, C. J. (2002). *The Belize Valley Archaeology Project: Results of the 2001 Field Season*, Southwest Texas State University, San Marcos, TX.
García Cook, A. (1981). The historical importance of Tlaxcala in the cultural development of the central highlands. In Sabloff, J. A. (ed.), *Supplement to the Handbook of Middle American Indians, Vol. 1*, University of Texas Press, Austin, pp. 244–276.
García-Moreno, R., and Granados, J. (2000). Tumbas reales de Calakmul. *Arqueología Mexicana* **VII**(42): 28–33.
Garnica, M., Robinson, E., and Neff, H. (2001). The Preclassic archaeological cultures of the Guatemalan highlands and Pacific coast: Interregional interaction and cultural evolution. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans.
Gasco, J., Smith, G. C., Fournier-García, P. (eds.). (1997). *Approaches to the Historical Archaeology of Mexico, Central and South America*, Monograph 38, Institute of Archaeology, UCLA, Los Angeles.
Gendrop, P. (1984). El tablero-talud en la arquitectura mesoamericana. *Cuadernos de Arquitectura Mesoamericana* **2**: 5–27.
Gerry, J. P. (1993). *Diet and Status Among the Classic Maya: An Isotopic Perspective*, Ph.D. Dissertation, Department of Anthropology, Harvard University, Cambridge, University Microfilms, Ann Arbor, MI.
Gerry, J. P., and Chesson, M. S. (2000). Classic Maya diet and gender relationships. In Donald, M., and Hurcombe, L. (eds.), *Gender and Material Culture in Archaeological Perspective*, St. Martin's Press, New York, pp. 250–265.
Gerry, J. P., and Krueger, H. W. (1997). Regional diversity in Classic Maya diets. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 196–207.
Gibson, E. C. (1991). A preliminary functional and contextual study of constricted adzes from northern Belize. In Hester, T. R., and Shafer, H. J. (eds.), *Maya Stone Tools: Selected Papers From the Second Maya Lithic Conference*, Monographs in World Archaeology No. 1, Prehistory Press, Madison, WI, pp. 229–237.
Gill, R. B. (2000). *The Great Maya Droughts: Water, Life, and Death*, University of New Mexico Press, Albuquerque.

Gillespie, S. D. (2000a). Lévi-Strauss: Maison and société à maisons. In Joyce, R. A., and Gillespie, S. D. (eds.), *Beyond Kinship: Social and Material Reproduction in House Societies*, University of Pennsylvania Press, Philadelphia, pp. 22–52.

Gillespie, S. D. (2000b). Rethinking ancient Maya social organization: Replacing "lineage" with "house." *American Anthropologist* **102**: 467–484.

Gillespie, S. D., and Joyce, R. A. (1997). Gendered goods: The symbolism of Maya hierarchical exchange relations. In Claassen, C., and Joyce, R. A. (eds.), *Women in Prehistory: North America and Mesoamerica*, University of Pennsylvania Press, Philadelphia, pp. 189–207.

Gonlin, N. (1994). Rural household diversity in Late Classic Copán, Honduras. In Schwartz, G. M., and Falconer, S. E. (eds.), *Archaeological Views From the Countryside: Village Communities in Early Complex Societies*, Smithsonian Institution Press, Washington, DC, pp. 177–197.

González de la Mata, R., and Andrews, A. P. (1998). Navigation and trade on the eastern coast of the Yucatán Peninsula. In Schmidt, P., de la Garza, M., and Nalda, E. (eds.), *Maya*, Rizzoli, New York, pp. 450–467.

Gordon, G. B. (1898). *Caverns of Copan, Honduras: Report on Explorations by the Museum, 1896–97*, Memoir 1(5), Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.

Gunn, J. D. (ed.). (2000). *The Years Without Summer: Tracing A.D. 536 and Its Aftermath*, British Archaeological Reports International Series 872, Archaeopress, Oxford.

Gunn, J. D., Matheny, R. T., and Folan, W. J. (2002). Climate-change studies in the Maya area: A diachronic analysis. *Ancient Mesoamerica* **13**: 79–84.

Hall, J., and Viel, R. (2003). The early classic Copan landscape. In Bell, E. E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.

Hammond, N. (1978). The myth of the milpa: Agricultural expansion in the Maya lowlands. In Harrison, P. D., and Turner, B. L. (eds.), *Pre-Hispanic Maya Agriculture*, University of New Mexico Press, Albuquerque, pp. 23–34.

Hammond, N. (ed.). (1991). *Cuello: An Early Maya Community in Belize*, Cambridge University Press, Cambridge.

Hammond, N. (1999). The genesis of hierarchy: Mortuary and offertory ritual in the pre-Classic at Cuello, Belize. In Grove, D. C., and Joyce, R. A. (eds.), *Social Patterns in Pre-Classic Mesoamerica*, Dumbarton Oaks, Washington, DC, pp. 49–66.

Hammond, N., Gerhardt, J., and Donaghey, S. (1991). Stratigraphy and chronology in the reconstruction of Preclassic developments at Cuello. In Hammond, N. (ed.), *Cuello: An Early Maya Community in Belize*, Cambridge University Press, Cambridge, pp. 23–69.

Hansen, R. (1998). Continuity and disjunction: The Preclassic antecedents of Classic Maya architecture. In Houston, S. D. (ed.), *Function and Meaning in Classic Maya Architecture*, Dumbarton Oaks, Washington, DC, pp. 49–122.

Hansen, R. D. (2001). The first cities—the beginnings of urbanization and state formation in the Maya lowlands. In Grube, N. (ed.), *Maya: Divine Kings of the Rain Forest*, Könemann, Cologne, Germany, pp. 50–65.

Harrison, P. D. (1970). *The Central Acropolis, Tikal, Guatemala: A Preliminary Study of the Functions of Its Structural Components During the Late Classic Period*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.

Harrison, P. D. (1986). Tikal: Selected topics. In Benson, E. P. (ed.), *City-States of the Maya: Art and Architecture*, Rocky Mountain Institute for Pre-Columbian Studies, Denver, CO, pp. 45–71.

Harrison, P. D. (1996). Settlement and land use in the Pulltrouser Swamp archaeological zone, northern Belize. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 177–190.

Harrison, P. D. (1999). *The Lords of Tikal: Rulers of an Ancient Maya City*, Thames and Hudson, London.

Harrison, P. D., and Fry, R. E. (2000). *Pulltrouser Swamp: The Settlement Maps*, University of Utah Press, Salt Lake City.

Haviland, W. A. (1967). Stature at Tikal, Guatemala: Implications for ancient Maya demography and social organization. *American Antiquity* **32**: 316–325.

Hendon, J. A. (1997). Women's work, women's space, and women's status among the Classic-period Maya elite of the Copan Valley, Honduras. In Claassen, C., and Joyce, R. A. (eds.), *Women in Prehistory: North America and Mesoamerica*, University of Pennsylvania Press, Philadelphia, pp. 33–46.

Hester, T. R., and Shafer, H. J. (eds.). (1991). *Maya Stone Tools: Selected Papers From the Second Maya Lithic Conference*, Monographs in World Archaeology, No. 1, Prehistory Press, Madison, WI.

Hester, T. R., Shafer, H. J., and Kelly, T. (1980). A preliminary note on artifacts from Lowe Ranch: A Preceramic site in Belize. In Hester, T. R., Eaton, J. D., and Shafer, H. J. (eds.), *The Colha Project Second Season, 1980 Interim Report*, University of Texas, San Antonio, pp. 229–232.

Hewitt, E. A. (1999). What's in a name: Gender, power, and classic Maya women rulers. *Ancient Mesoamerica* **10**: 251–262.

Hill, J. N., and Gunn, J. (eds.). (1977). *The Individual in Prehistory: Studies of Variability in Style in Prehistoric Technologies*, Academic Press, New York.

Hodell, D. A., Brenner, M., Curtis, J. H., and Guilderson, T. (2001). Solar forcing of drought frequency in the Maya lowlands. *Science* **22**: 1367–1370.

Hodell, D. A., Curtis, J. H., and Brenner, M. (1995). Possible role of climate in the collapse of Classic Maya civilization. *Nature* **375**: 391–394.

Hosler, D., Sabloff, J. A., and Runge, D. (1977). Simulation model development: A case study of the Classic Maya collapse. In Hammond, N. (ed.), *Social Process in Maya Prehistory: Studies in Honour of Sir Eric Thompson*, Academic Press, London, pp. 553–590.

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 Stuart, D. (2001). Peopling the Classic Maya court. In Inomata, T., and Houston, S. D. (eds.), *Royal Courts of the Ancient Maya*, Westview Press, Boulder, CO, pp. 54–83.

Hunn, E. (1977). *Tzeltal Folk Zoology: The Classification of Discontinuities in Nature*, Academic Press, New York.

Iannone, G. (2002). Annales history and the ancient Maya state: Some observations on the "Dynamic Model." *American Anthropologist* **104**: 68–78.

Iannone, G., and Connell, S. V. (eds.). (2003). *Perspectives on Ancient Maya Rural Complexity*, Monograph 49, Cotsen Institute of Archaeology, UCLA, Los Angeles.

Iceland, H. B. (1997). *The Preceramic Origins of the Maya: The Results of the Colha Preceramic Project in Northern Belize*, Ph.D. Dissertation, Department of Anthropology, University of Texas Press, Austin.

Iceland, H. B. (2001). The Preceramic to early Middle Preclassic transition in northern Belize. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans.

Inomata, T. (1997). The last day of a fortified Classic Maya center: Archaeological investigations at Aguateca, Guatemala. *Ancient Mesoamerica* **8**: 337–351.

Isendahl, C. (2002). *Common Knowledge: Lowland Maya Farming at Xuch*, Studies in Global Archaeology 1, Department of Archaeology and Ancient History, Uppsala University, Uppsala.

Jackson, S., and Stuart, D. (2001). The *aj k'uhun* title: Deciphering a classic Maya term of rank. *Ancient Mesoamerica* **12**: 217–228.

Jacob, J. S. (1995). Ancient Maya wetland agricultural fields in Cobweb Swamp, Belize: Construction, chronology, and function. *Journal of Field Archaeology* **22**: 175–190.

Johnson, M. (2000). Self-made men and the staging of agency. In Dobres, M.-A., and Robb, J. E. (eds.), *Agency in Archaeology*, Routledge, London, pp. 213–231.

Jones, C., Coe, W. R., and Haviland, W. A. (1981). Tikal: An outline of its field study (1956–1970) and a project bibliography. In Sabloff, J. A. (ed.), *Supplement to the Handbook of Middle American Indians, Vol. 1*, University of Texas Press, Austin, pp. 296–312.

Jones, C., and Satterthwaite, L. (1982). *The Monuments and Inscriptions of Tikal: The Carved Monuments*, Tikal Report 33, Part A, University Museum Monograph 44, University of Pennsylvania, Philadelphia.

Jones, G. D. (1998). *The Conquest of the Last Maya Kingdom*, Stanford University Press, Stanford, CA.

Jones, J. G. (1994). Pollen evidence for early settlement and agriculture in northern Belize. *Palynology* **18**: 205–211.

Joyce, R. A. (2000). *Gender and Power in Prehispanic Mesoamerica*, University of Texas Press, Austin.
Joyce, R. A., and Henderson, J. S. (2001). Beginnings of village life in eastern Mesoamerica. *Latin American Antiquity* **12**: 5–23.
Kelly, T. C. (1993). Preceramic projectile-point typology in Belize. *Ancient Mesoamerica* **4**: 205–227.
Kennett, D. J., and Voorhies, B. (1996). Oxygen isotopic analysis of archaeological shells to detect seasonal use of wetlands on the southern Pacific coast of Mexico. *Journal of Archaeological Science* **23**: 689–704.
Kepecs, S. (1997a). Introduction to new approaches to combining the archaeological and historical records. *Journal of Archaeological Method and Theory* **4**: 193–198.
Kepecs, S. (1997b). Native Yucatán and Spanish influence: The archaeology and history of Chikinchel. *Journal of Archaeological Method and Theory* **4**: 307–329.
Kidder, A. V., Jennings, J. D., and Shook, E. M. (1946). *Excavations at Kaminaljuyu, Guatemala*, Publication 501, Carnegie Institution of Washington, Washington, DC.
Kievit, K. A. (1994). Jewels of Cerén: Form and function comparisons for the earthen structures of Joya de Cerén, El Salvador. *Ancient Mesoamerica* **5**: 193–208.
Klein, C. F. (ed.). (2001). *Gender in Pre-Hispanic America*, Dumbarton Oaks, Washington, DC.
Kowalski, J. K., and Dunning, N. P. (1999). The architecture of Uxmal: The symbolics of statemaking at a Puuc Maya regional capital. In Kowalski, J. K. (ed.), *Mesoamerican Architecture as a Cultural Symbol*, Oxford University Press, New York, pp. 274–297.
Lacadena, A. (1996). A new proposal for the transcription of the a-k'u-na/a-k'u-HUN-na title. *Mayab* **10**: 46–49.
Lacadena García-Gallo, A., and Ciudad Ruiz, A. (1998). Reflexiones sobre la estructura política maya clásica. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una civilización: aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 31–64.
Laporte, J. P. (1989). *Alternativas del clásico temprano en la relación Tikal-Teotihuacan: grupo 6C-XVI, Tikal, Petén, Guatemala*, Ph.D. Dissertation, Universidad Nacional Autónoma de México, Mexico City.
Laporte, J. P., and Fialko, V. (1990). New perspectives on old problems: Dynastic references for the Early Classic at Tikal. In Clancy, F. S., and Harrison, P. D. (eds.), *Vision and Revision in Maya Studies*, University of New Mexico, Albuquerque, pp. 33–66.
Laporte, J. P., and Fialko, V. (1995). Un reencuentro con Mundo Perdido, Tikal, Guatemala. *Ancient Mesoamerica* **6**: 41–94.
Laporte, J. P., and Iglesias Ponce de León, M. J. (1999). Más allá de Mundo Perdido: investigación en grupos residenciales de Tikal. *Mayab* **12**: 32–57.
Lentz, D. L. (1991). Maya diets of the rich and poor: Paleoethnobotanical evidence from Copán. *Latin American Antiquity* **2**: 269–287.
Leventhal, R. M., Yaeger, J., and Church, M. C. (2001).*San Pedro Maya Project: 2000 Field Season Report*, Submitted to the Belize Department of Archaeology, Belmopan.
Lewis, H. S. (1974). *Leaders and Followers: Some Anthropological Perspectives*, Addison-Wesley Module in Anthropology, No. 50.
Lewis, H. S. (1981). Warfare and the origin of the state: Another formulation. In Claessen, H., and Skalník, P. (eds.), *The Study of the State*, Mouton, The Hague, pp. 201–221.
Leyden, B. W. (2002). Pollen evidence for climatic variability and cultural disturbance in the Maya lowlands. *Ancient Mesoamerica* **13**: 85–101.
Leyden, B. W., Brenner, M., Whitmore, T., Curtis, J. H., Piperno, D. R., and Dahlin, B. H. (1996). A record of long- and short-term climatic variation from northwest Yucatán: Cenote San José Chulchacá. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 30–50.
Lohse, J., and Valdez, F. (eds.). (in press). *Ancient Maya Commoners*, University of Texas Press, Austin.
Long, A., Benz, B. F., Donahue, D. J., Jull, A. J. T., and Toolin, L. J. (1989). First direct AMS dates on early maize from Tehuacán, Mexico. *Radiocarbon* **31**: 1035–1040.
Lowe, J. G. W. (1985). *The Dynamics of Apocalypse: A Systems Simulation of the Classic Maya Collapse*, University of New Mexico Press, Albuquerque.
MacNeish, R. S. (1983). *Final Annual Report of the Belize Archaic Archaeological Reconnaissance*, Robert S. Peabody Foundation for Archaeology, Andover, MA.

Malthus, T. (1970). *An Essay on the Principle of Population*, Penguin Books, New York.
Marcus, J. (1973). Territorial organization of the lowland Classic Maya. *Science* **180**: 911–916.
Marcus, J. (1976). *Emblem and State in the Classic Maya Lowlands: An Epigraphic Approach to Territorial Organization*, Dumbarton Oaks, Washington, DC.
Marcus, J. (1982). The plant world of the sixteenth- and seventeenth-century lowland Maya. In Flannery, K. V. (ed.), *Maya Subsistence: Studies in Memory of Dennis E. Puleston*, Academic Press, New York, pp. 239–273.
Marcus, J. (1989). From centralized systems to city-states: Possible models for the Epiclassic. In Diehl, R. A., and Berlo, J. C. (eds.), *Mesoamerica After the Decline of Teotihuacan—A.D. 700-900*, Dumbarton Oaks, Washington, DC, pp. 201–208.
Marcus, J. (1992a). Dynamic cycles of Mesoamerican states. *National Geographic Research and Exploration* **8**: 392–411.
Marcus, J. (1992b). *Mesoamerican Writing Systems: Propaganda, Myth, and History Among Four Ancient Civilizations*, Princeton University Press, Princeton, NJ.
Marcus, J. (1993). Ancient Maya political organization. In Sabloff, J. A., and Henderson, J. S. (eds.), *Lowland Maya Civilization in the Eighth Century A.D.*, Dumbarton Oaks, Washington, DC, pp. 111–183.
Marcus, J. (1995a). Where is lowland Maya archaeology headed? *Journal of Archaeological Research* **3**: 3–53.
Marcus, J. (1995b). Maya hieroglyphs: History or propaganda? In Ember, C., and Ember, M. (eds.), *Research Frontiers in Anthropology*, Prentice-Hall, Englewood Cliffs, NJ, pp. 1–24.
Marcus, J. (1998a). The peaks and valleys of ancient states: An extension of the dynamic model. In Feinman, G. M., and Marcus, J. (eds.), *Archaic States*, School of American Research Press, Santa Fe, NM, pp. 59–94.
Marcus, J. (1998b). *Women's Ritual in Formative Oaxaca: Figurine-making, Divination, Death and the Ancestors, Memoir* 33, Museum of Anthropology, University of Michigan, Ann Arbor.
Marcus, J. (2003). Monumentality in archaic states: Lessons learned from large-scale excavations of the past. In Papadopoulos, J. K., and Leventhal, R. M. (eds.), *Archaeology in the Mediterranean: Old World and New World Perspectives*, Advanced Seminar Series, Cotsen Institute of Archaeology, UCLA, Los Angeles.
Marcus, J., and Feinman, G. M. (1998). Introduction. In Feinman, G. M., and Marcus, J. (eds.), *Archaic States*, School of American Research, Santa Fe, NM, pp. 3–13.
Marcus, J., and Flannery, K. V. (1996). *Zapotec Civilization: How Urban Society Evolved in Mexico's Oaxaca Valley*, Thames and Hudson, London.
Marcus, J., and Folan, W. J. (1994). Una estela más del siglo V y nueva información sobre Pata de Jaguar, gobernante de Calakmul, Campeche, el el siglo VII. *Gaceta Universitaria*, Año IV, Nos. 15/16, Campeche.
Márquez Morfín, L. (1984). Distribución de la estatura en colecciones óseas mayas prehispánicas. In Ramos Galván, R., and Ramos Rodríguez, R. M. (eds.), *Estudios de antropología biológica (II Colegio de Antropología Física Juan Comas, 1982)*, Universidad Nacional Autónoma de México, Mexico City, pp. 253–271.
Márquez Morfín, L., and del Ángel, A. (1997). Height among Prehispanic Maya of the Yucatán peninsula: A reconsideration. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 51–61.
Martin, S., and Grube, N. (2000). *Chronicle of the Maya Kings and Queens: Deciphering the Dynasties of the Ancient Maya*, Thames and Hudson, London.
Massey, V. K., and Steele, D. G. (1997). A Maya skull pit from the Terminal Classic period, Colha, Belize. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 62–77.
Masson, M. A. (1999). Postclassic Maya communities at Progresso Lagoon and Laguna Seca, northern Belize. *Journal of Field Archaeology* **26**: 285–306.
Masson, M. A. (2000). *In the Realm of Nachan Kan: Postclassic Maya Archaeology at Laguna de On, Belize*, University Press of Colorado, Boulder.
Matheny, R. T. (ed.). (1980). *El Mirador, Peten, Guatemala: An Interim Report*, Papers 45, New World Archaeological Foundation, Brigham Young University, Provo, UT.
Matheny, R. T. (1986). Investigations at El Mirador, Peten, Guatemala. *National Geographic Research* **2**: 332–353.

Matheny, R. T. (1987). Early states in the Maya lowlands during the late pre-Classic period: Edzna and El Mirador. In Benson, E. P. (ed.), *City-States of the Maya: Art and Architecture*, Rocky Mountain Institute for Pre-Columbian Studies, Denver, CO, pp. 1–44.

Mathews, P. (2000). Guerra en las tierras bajas occidentales mayas. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 125–155.

Merriwether, D. A., Reed, D. M., and Ferrell, R. E. (1997). Ancient and contemporary mitochondrial DNA variation in the Maya. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 208–217.

Michelet, D., Becquelin, P., and Arnauld, M.-C. (2000). *Mayas del Puuc: arqueología de Xculoc, Campeche*, Gobierno del Estado de Campeche and Centre Français d'études mexicaines et centroaméricaines, Mexico City.

Millet Cámara, L., Ojeda, M., H., and Suárez, A., V. (1993). Tecoh, Izamal: nobleza indígena y conquista española. *Latin American Antiquity* **4**: 48–58.

Moholy-Nagy, H. (1998). A preliminary report on the use of vertebrate fauna at Tikal, Guatemala. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una Civilización, Aproximaciones Interdisciplinarias a la Cultura Maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 115–129.

Montgomery, J. (2002). *How to Read Maya Hieroglyphs*, Hippocrene Books, New York.

Morales López, A. (1989). La plaza principal de Calakmul y la presencia de un grupo "E." Paper presented at the *Primer Congreso Internacional de Mayistas, San Cristóbal de las Casas*, Chiapas, Mexico.

Niederberger, C. (1976). *Zohapilco: cinco milenios de ocupación humana en un sitio lacustre de la Cuenca de México*, Colección Científica, Arqueología 30, Instituto Nacional de Antropología e Historia, Mexico City.

Niederberger, C. (1987). *Paléopaysages et archéologie pré-urbaine du Bassin de Mexique*, Etudes Mesoamericaines 11, Mexico City.

Oberg, K. (1955). Types of social structure among the lowland tribes of South and Central America. *American Anthropologist* **57**: 472–487.

Palka, J. W. (1997). Reconstructing Classic Maya socioeconomic differentiation and the collapse at Dos Pilas, Petén, Guatemala. *Ancient Mesoamerica* **8**: 293–306.

Pendergast, D. (1985). Lamanai, Belize: An updated view. In Chase, A.F., and Rice, P. M. (eds.), *The Lowland Maya Postclassic*, University of Texas Press, Austin, pp. 91–103.

Pendergast, D. (1986). Stability through change: Lamanai, Belize, from the 9th to the 17th century. In Sabloff, J. A., and Andrews, E. W., V (eds.), *Late Lowland Maya Civilization: Classic to Postclassic*, University of New Mexico Press, Albuquerque, pp. 223–249.

Pendergast, D. (1990). Up from the dust: The central lowlands Postclassic as seen from Lamanai and Marcos Gonzalez, Belize. In Clancy, F. S., and Harrison, P. D. (eds.), *Vision and Revision in Maya Studies*, University of New Mexico Press, Albuquerque, pp. 169–177.

Pendergast, D. (1993). Worlds in collision: The Maya/Spanish encounter in sixteenth and seventeenth century Belize. In Bray, W. (ed.), *The Meeting of Two Worlds: Europe and the Americas, 1492–1650*, Proceedings of the British Academy 81, University of Oxford Press, Oxford, pp. 105–143.

Pendergast, D., Jones, G. D., and Graham, E. (1993). Locating Maya lowlands Spanish colonial towns: A case study from Belize. *Latin American Antiquity* **4**: 59–73.

Peraza Lope, C. (1999a). *Estudio y Secuencia del Material Cerámico de San Gervasio, Cozumel*, Tesis de licenciatura, Facultad de Ciencias Antropológicas, Universidad Autónoma de Yucatán, Mérida, Mexico.

Peraza Lope, C. A. (1999b). Mayapán, ciudad-capital del postclásico. *Arqueología Mexicana* **VII**(37): 48–53.

Pérez Suárez, T. (2000). Pintores y escultores del mundo maya. *Arqueología Mexicana* **VII**(42): 60–67.

Piperno, D. R., and Flannery, K. V. (2001). The earliest archaeological maize (*Zea mays* L.) from highland Mexico: New accelerator mass spectrometry dates and their implications. *Proceedings of the National Academy of Sciences* **98**(4): 2101–2103.

Plunket, P., and Uruñuela, G. (1998). Preclassic household patterns preserved under volcanic ash at Tetimpa, Puebla. *Latin American Antiquity* **9**: 287–309.
Plunket, P., and Uruñuela, G. (2000). The quick and the dead: Decision-making in the abandonment of Tetimpa. *Mayab* **13**: 78–87.
Pohl, M. D. (1994). The economics and politics of Maya meat eating. In Brumfiel, E. M. (ed.), *The Economic Anthropology of the State*, University Press of America, New York, pp. 119–148.
Pohl, M., and Bloom, P. (1996). Prehistoric Maya farming in the wetlands of northern Belize: More data from Albion Island and beyond. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 145–164.
Pohl, M. D., Pope, K. O., Jones, J. G., Jacob, J. S., Piperno, D. R., deFrance, S. D., Lentz, D. L., Gifford, J. A., Danforth, M. E., and Josserand, J. K. (1996). Early agriculture in the Maya lowlands. *Latin American Antiquity* **7**: 355–372.
Pope, K. O., and Dahlin, B. H. (1989). Ancient Maya wetland agriculture: New insights from ecological and remote sensing research. *Journal of Field Archaeology* **16**: 87–106.
Pope, K. O., and Dahlin, B. H. (1993). Radar detection and ecology of ancient Maya canal systems—reply to Adams et al. *Journal of Field Archaeology* **20**: 379–383.
Pope, K. O., Pohl, M. D., and Jacob, J. S. (1996). Formation of ancient Maya wetlands: Natural and anthropogenic processes. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 165–176.
Pope, K. O., Pohl, M. D., Jones, J. G., Lentz, D. L., von Nagy, C., Vega, F. J., and Quitmyer, I. R. (2001). Origin and environmental setting of ancient agriculture in the lowlands of Mesoamerica. *Science* **292**: 1370–1373.
Powis, T. G., Stanchly, N., White, C. D., Healy, P. F., Awe, J. J., and Longstaffe, F. (1999). A reconstruction of Middle Preclassic Maya subsistence economy at Cahal Pech, Belize. *Antiquity* **73**(280): 364–376.
Prem, H. J. (ed.) (1994). *Hidden Among the Hills: Maya Archaeology of the Northwest Yucatan Peninsula*, Acta Mesoamericana 7, Verlag von Flemming, Möckmühl, Germany.
Proskouriakoff, T. (1993). *Maya History*, University of Texas Press, Austin.
Puleston, D. E. (1977). The art and archaeology of hydraulic agriculture in the Maya lowlands. In Hammond, N. (ed.), *Social Process in Maya Prehistory: Studies in Honour of Sir Eric Thompson*, Academic Press, New York, pp. 449–467.
Puleston, D. E., and Callender, D. W., Jr. (1967). Defensive earthworks at Tikal. *Expedition* **9**(3): 40–48.
Pyburn, K. A. (1996). The political economy of ancient Maya land use: The road to ruin. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 236–247.
Pyburn, K. A. (1997). The archaeological signature of complexity in the Maya lowlands. In Nichols, D. L., and Charlton, T. H. (eds.), *The Archaeology of City-States: Cross-Cultural Approaches*, Smithsonian Institution Press, Washington, DC, pp. 155–168.
Rappaport, R. A. (1969). Sanctity and Adaptation. Paper prepared for Wenner-Gren Conference on the *Moral and Aesthetic Structure of Human Adaptation*. (Reprinted in 1970 in *Io* **7**: 46–71.)
Rattray, E. C. (1977). Los contactos entre Teotihuacan y Veracruz. *Mesa Redonda* **15**(2): 301–311.
Rattray, E. C. (1983). Gulf Coast influences at Teotihuacan. Paper presented at *Art and the Rise of the Teotihuacan State*, UCLA, Los Angeles.
Redmond, E. M. (1994). *Tribal and Chiefly Warfare in South America*, Memoir 28, Museum of Anthropology, University of Michigan, Ann Arbor.
Redmond, E. M. (ed.), (1998). *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville.
Reed, D. M. (1994). Ancient Maya diet at Copán, Honduras, as determined through analysis of stable carbon and nitrogen isotopes. In Sobolik, K. D. (ed.), *Paleonutrition: The Diet and Health of Prehistoric Americans*, Occasional Paper 22, Center for Archaeological Investigations, Southern Illinois University, Carbondale, pp. 210–221.
Reichel-Dolmatoff, G. (1976). Cosmology as ecological analysis: A view from the rainforest. *Man* **2**: 307–318.
Rice, D. S., Rice, P., and Demarest, A. A. (eds.). (in press). *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*, Westview Press, Boulder, CO.
Rice, D. S., Rice, P. M., and Pugh, T. (1998). Settlement continuity and change in the central Petén lakes region: The case for Zacpetén. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo,

J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una civilización, aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 207–252.

Riese, B. (1992). The Copan dynasty. In Bricker, V. R. (ed.), *Supplement to the Handbook of Middle American Indians, Vol. 5*, University of Texas Press, Austin, pp. 128–153.

Rivera Dorado, M. (1996). *Los mayas de Oxkintok*, Ministerio de Educación y Cultura, Madrid.

Rivera Dorado, M. (1998). El urbanismo de Oxkintok: problemas e interpretaciones. *Revista Española de Antropología Americana* **28**: 39–61.

Rivera Dorado, M. (1999). La emergencia del estado maya de Oxkintok. *Mayab* **12**: 71–78.

Robichaux, H. R. (2000). The Maya hiatus and the A.D. 536 atmospheric event. In Gunn, J. D. (ed.), *The Years Without Summer: Tracing A.D. 536 and Its Aftermath*, British Archaeological Reports International Series 872, Archaeopress, Oxford, pp. 55–65.

Robin, C. (1989). *Preclassic Maya Burials at Cuello, Belize*, British Archaeological Reports International Series 489, Archaeopress, Oxford.

Robin, C. (1999). *Towards an Archaeology of Everyday Life: Maya Farmers of Chan Noohol and Dos Chombitos Cik'in, Belize*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.

Robin, C. (2001). Peopling the past: New perspectives on the ancient Maya. *Proceedings of the National Academy of Sciences* **98**: 18–21.

Robin, C. (2002). Gender and Maya farming: Chan Noohol, Belize. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 12–30.

Robin, C., and Hammond, N. (1991). Burial practices. In Hammond, N. (ed.), *Cuello: An Early Maya Community in Belize*, Cambridge University Press, Cambridge, pp. 204–225.

Robinson, E., and Pye, M. E. (1996). Investigaciones en Rucal, Sacatepéquez: hallazgos de una ocupación del formativo medio en el altiplano de Guatemala. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 487–498.

Rosenmeier, M. F., Hodell, D. A., Brenner, M., Curtis, J. H., and Guilderson, T. P. (2002). A 4000-year lacustrine record of environmental change in the southern Maya lowlands, Petén, Guatemala. *Quaternary Research* **57**: 183–190.

Rosenswig, R. M., and Masson, M. A. (2001). Seven new Preceramic sites documented in northern Belize. *Mexicon* **XXIII**: 138–140.

Rue, D. J. (1989). Archaic Middle American agriculture and settlement: Recent pollen data from Honduras. *Journal of Field Archaeology* **16**: 177–184.

Rue, D. J., Freter, A., and Ballinger, D. A. (1989). The caverns of Copan revisited: Preclassic sites in the Sesesmil River Valley, Copan, Honduras. *Journal of Field Archaeology* **16**: 395–404.

Sabloff, J. A. (1990). *The New Archaeology and the Ancient Maya*, Scientific American Library, New York.

Sabloff, J. A. (1992). Interpreting the collapse of Classic Maya civilization: A case study of changing perspectives. In Embree, L. (ed.), *Metaarchaeology: Reflections by Archaeologists and Philosophers*, Kluwer Academic, New York, pp. 99–119.

Sabloff, J. A. (ed.). (2003). *Tikal: Dynasties, Foreigners, and Affairs of State*, School of American Research Press, Santa Fe, NM.

Saitta, D. J. (1994). Agency, class, and archaeological interpretation. *Journal of Anthropological Archaeology* **13**: 201–227.

Sanders, W. T. (1974). From chiefdom to state: Political evolution at Kaminaljuyu, Guatemala. In Moore, C. B. (ed.), *Reconstructing Complex Societies: An Archaeological Colloquium*, Supplement to Bulletin 20, American Schools of Oriental Research, Cambridge, MA, pp. 97–116.

Saul, F. P. (1972). *The Human Skeletal Remains of Altar de Sacrificios: An Osteobiographic Analysis*, Papers of the Peabody Museum, Vol. 63, No. 2, Harvard University, Cambridge, MA.

Saul, F. P., and Saul, J. M. (1991). The Preclassic population of Cuello. In Hammond, N. (ed.), *Cuello: An Early Maya Community in Belize*, Cambridge University Press, Cambridge, pp. 134–158.

Saul, J. M., and Saul, F. P. (1997). The Preclassic skeletons from Cuello. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 28–50.

Scarborough, V. L. (1998). Ecology and ritual: Water management and the Maya. *Latin American Antiquity* **9**: 135–159.

Schele, L. (1994). Some thoughts on the inscriptions of House C. In Robertson, M. G., and Fields, V. M. (eds.), *Seventh Palenque Round Table, 1989, Vol. IX*, The Pre-Columbian Art Research Institute, San Francisco, pp. 1–10.
Schele, L., and Freidel, D. (1990). *A Forest of Kings: The Untold Story of the Ancient Maya*, Morrow, New York.
Schele, L., and Mathews, P. (1998). *The Code of Kings: The Language of Seven Sacred Maya Temples and Tombs*, Scribner, New York.
Schmidt, P. J. (1994). Chichén Itzá. *Arqueología Mexicana* **II**(7): 38–46.
Schmidt, P. J. (1998). Contacts with central Mexico and the transition to the Postclassic: Chichén Itzá in central Yucatán. In Schmidt, P., de la Garza, M., and Nalda, E. (eds.), *Maya*, Rizzoli, New York, pp. 427–449.
Schmidt, P. J. (1999). Chichén Itzá: resultados y proyectos nuevos (1992–1999). *Arqueología Mexicana* **VII**(37): 32–39.
Shafer, H. J., and Hester, T. R. (1991). Lithic craft specialization and product distribution at the Maya site of Colha, Belize. *World Archaeology* **23**: 79–97.
Shafer, H. J., Hester, T. R., and Kelly, T. C. (1980). Notes on the Sand Hill site. In Hester, T. R., Eaton, J. D., and Shafer, H. J. (eds.), *The Colha Project Second Season, 1980 Interim Report*, University of Texas, San Antonio, and Centro Studi e Ricerche Ligabue, Venezia, pp. 233–240.
Sharer, R. J. (1977). The Maya collapse revisited: Internal and external perspectives. In Hammond, N. (ed.), *Social Process in Maya Prehistory: Studies in Honour of Sir Eric Thompson*, Academic Press, London, pp. 531–552.
Sharer, R. J. (1990). *Quirigua: A Classic Maya Center and Its Sculpture*, Carolina Academic Press, Durham, NC.
Sharer, R. J. (1991). Diversity and continuity in Maya civilization: Quirigua as a case study. In Culbert, T. P. (ed.), *Classic Maya Political History*, Cambridge University Press, Cambridge, pp. 180–198.
Sharer, R. J. (1992). The Preclassic origin of lowland Maya states. In Danien, E. C., and Sharer, R. J. (eds.), *New Theories on the Ancient Maya*, University Museum Monograph 77, Symposium Series, Vol. 3, University of Pennsylvania, Philadelphia, pp. 131–136.
Sharer, R. J. (1994). *The Ancient Maya*, 5th edn., Stanford University Press, Stanford, CA.
Sharer, R. J. (1996). *Daily Life in Maya Civilization*, Greenwood Press, Westport, CT.
Sharer, R. J. (1998). *Dialogue With the Past at Copan, Honduras*. Paper presented at the faculty colloquium, Department of Anthropology, University of Pennsylvania, Philadelphia.
Sharer, R. J. (1999). Archaeology and history in the royal acropolis, Copan, Honduras. *Expedition* **41**(2): 8–15.
Sharer, R. J., Fash, W. L., Sedat, D. W., Traxler, L. P., and Williamson, R. (1999a). Continuities and contrasts in Early Classic architecture of central Copan. In Kowalski, J. K. (ed.), *Mesoamerican Architecture as a Cultural Symbol*, Oxford University Press, New York, pp. 220–249.
Sharer, R. J., and Sedat, D. (1987). *Archaeological Investigations in the Northern Maya Highlands: Interaction and the Development of Maya Civilizations*, University Museum Monograph 59, University of Pennsylvania, Philadelphia.
Sharer, R. J., Traxler, L. P., Sedat, D. W., Bell, E. E., Canuto, M. A., and Powell, C. (1999b). Early Classic architecture beneath the Copan acropolis. *Ancient Mesoamerica* **10**: 3–23.
Shaw, L. C. (1999). Social and ecological aspects of Preclassic Maya meat consumption at Colha, Belize. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 83–100.
Sheets, P. (1992). *The Cerén Site*, Harcourt Brace Jovanovich, Fort Worth, TX.
Sheets, P. (1998). Place and time in activity area analysis: A study of elevated contexts used for artifact curation at the Cerén site, El Salvador. *Revista Española de Antropología Americana* **28**: 63–98.
Sheets, P. (2000). Provisioning the Cerén household: The vertical economy, village economy, and household economy in the southeastern Maya periphery. *Ancient Mesoamerica* **11**: 217–230.
Sheets, P. D. (ed.). (2002). *Before the Volcano Erupted: The Ancient Cerén Village in Central America*, University of Texas Press, Austin.
Sherratt, A. (1992). What can archaeologists learn from annalists? In Knapp, A. B. (ed.), *Archaeology, Annales, and Ethnohistory*, Cambridge University Press, Cambridge, pp. 135–142.
Siemens, A. H., and Puleston, D. E. (1972). Ridged fields and associated features in southern Campeche: New perspectives on the lowland Maya. *American Antiquity* **37**: 228–239.

Siemens, A. H., Soler Graham, J. A., Hebda, R., and Heimo, M. (2002). "Dams" on the Candelaria. *Ancient Mesoamerica* **13**: 115–123.
Simmons, S. E. (1995). Maya resistance, Maya resolve: The tools of autonomy from Tipu, Belize. *Ancient Mesoamerica* **6**: 135–146.
Smyth, M. P. (1998). Before the florescence: Chronological reconstructions at Chac II, Yucatan, Mexico. *Ancient Mesoamerica* **9**: 137–150.
Smyth, M. P., Ligorred Perramón, J., Ortegón Zapata, D., and Farrell, P. (1998). An Early Classic center in the Puuc region: New data from Chac II, Yucatan, Mexico. *Ancient Mesoamerica* **9**: 233–257.
Southall, A. (1991). The segmentary state: From the imaginary to the material means of production. In Claessen, H. J. M., and van de Velde, P. (eds.), *Early State Economics*, Transaction Publishers, New Brunswick, NJ.
Spencer, C. S. (1993). Human agency, biased transmission, and the cultural evolution of chiefly authority. *Journal of Anthropological Archaeology* **12**: 41–74.
Spencer, C. S., and Redmond, E. M. (2001a). Multilevel selection and political evolution in the Valley of Oaxaca, 500–100 B.C. *Journal of Anthropological Archaeology* **20**: 195–229.
Spencer, C. S., and Redmond, E. M. (2001b). The chronology of conquest: Implications of new radiocarbon analyses from the Cañada de Cuicatlán, Oaxaca. *Latin American Antiquity* **12**: 182–201.
Spencer, H. (1967). *The Evolution of Society: Selections From Herbert Spencer's Principles of Sociology*, University of Chicago Press, Chicago.
Steggerda, M. (1932). *Anthropometry of Adult Maya Indians: A Study of Their Physical and Physiological Characteristics*, Publication 434, Carnegie Institution of Washington, Washington, DC.
Steggerda, M. (1941). *Maya Indians of Yucatan*, Publication 531, Carnegie Institution of Washington, Washington, DC.
Stein, G., and Rothman, M. S. (eds.). (1994). *Chiefdoms and Early States in the Near East: The Organizational Dynamics of Complexity*, Monographs in World Archaeology, No. 18, Prehistory Press, Madison, WI.
Stone, A. (1989). Disconnection, foreign insignia, and political expansion: Teotihuacan and the warrior stelae of Piedras Negras. In Diehl, R. A., and Berlo, J. C. (eds.), *Mesoamerica After the Decline of Teotihuacan—A.D. 700–900*, Dumbarton Oaks, Washington, DC, pp. 153–172.
Stuart, D. (2000). The arrival of strangers: Teotihuacan and Tollan in Classic Maya history. In Carrasco, D., Jones, L., and Sessions, S. (eds.), *Mesoamerica's Classic Heritage: From Teotihuacan to the Great Aztec Temple*, University Press of Colorado, Boulder, pp. 465–513.
Suasnávar, J. (1994). Las calzadas de Nakbe. In Laporte, J. P., Escobedo, H. L., and de Brady, S. V. (eds.), *VII simposio de investigaciones arqueológicas en Guatemala, 1993*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Instituto de Antropología e Historia de Guatemala, pp. 335–348.
Sweely, T. L. (ed.). (1999). *Manifesting Power: Gender and the Interpretation of Power in Archaeology*, Routledge, London.
Sztompka, P. (ed.) (1994). *Agency and Structure: Reorienting Social Theory*, Gordon and Breach, Yverdon, Switzerland.
Tourtellot, G., and Sabloff, J. A. (1994). Puuc development as seen from Sayil. In Prem, H. J. (ed.), *Hidden Among the Hills: Maya Archaeology of the Northwest Yucatan Peninsula*, Acta Mesoamericana 7, Verlag von Flemming, Möckmühl, Germany, pp. 71–92.
Traxler, L. (2001). The royal court of Early Classic Copan. In Inomata, T., and Houston, S. D. (eds.), *Royal Courts of the Ancient Maya, Vol. 2*, Westview Press, Boulder, CO, pp. 46–73.
Traxler, L. (n.d.). *Evolution and Social Meaning of Early Classic Architecture at Copán, Honduras*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.
Trejo, S. (ed.). (2000). *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico City.
Tykot, R. H., van der Merwe, N. J., and Hammond, N. (1996). Stable isotope analysis of bone collagen, bone apatite, and tooth enamel in the reconstruction of human diet: A case study for Cuello, Belize. In Orna, M. V. (ed.), *Archaeological Chemistry V*, American Chemical Society, Washington, DC, pp. 355–365.

Valdés, J. (1992). El crecimiento de la civilización maya del área central durante el preclásico tardío: una vista desde el grupo H de Uaxactun. *U tz'ib* **1**(2): 16–31.
Valdés, J. A. (1997). Tamarindito: Archaeology and regional politics in the Petexbatun region. *Ancient Mesoamerica* **8**: 321–335.
Valdés, J., Fahsen, F., and Escobedo, H. L. (1999). *Reyes, tumbas, y palacios: la historia dinástica de Uaxactun*, Centro de Estudios Mayas, Cuaderno 25, Universidad Nacional Autónoma de México, Mexico City, and Instituto de Antropología de Guatemala, Guatemala.
Valdés, J. A., Fahsen, F., and Muñoz Cosme, G. (1997). *Estela 40 de Tikal: hallazgo y lectura*, Agencia Española de Cooperación Internacional e Instituto de Antropología e Historia de Guatemala, Guatemala.
Valdés, J. A., and Wright, L. E. (2003). The Early Classic and its antecedents at Kaminaljuyu: A complex society, with complex problems. In Bell, E. E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.
van der Merwe, N. J., Tykot, R. H., Hammond, N., and Oakberg, K. (2000). Diet and animal husbandry of the Preclassic Maya at Cuello, Belize: Isotopic and zooarchaeological evidence. In Ambrose, S. H., and Katzenberg, M. A. (eds.), *Biogeochemical Approaches to Paleodietary Analysis*, Kluwer Academic/Plenum, New York, pp. 23–38.
Vidal, C., Teufel, S., and Fialko, V. (1996). Exploraciones arqueológicas en El Corozal, centro periférico de Tikal. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 59–68.
Viel, R. H. (1999). El periodo formativo de Copán, Honduras. In Laporte, J. P., Escobedo, H. L., and Monzón de Suasnávar, A. C. (eds.), *XII simposio de investigaciones arqueológicas en Guatemala, 1998*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 99–104.
Vogt, E. Z. (1964). The genetic model and Maya cultural development. In Vogt, E. Z., and Ruz Lhuillier, A. (eds.), *Desarrollo cultural de los mayas*, Universidad Nacional Autónoma de México, Mexico, pp. 9–48.
Vogt, E. Z. (1994). On the application of the phylogenetic model to the Maya. In DeMallie, R. J., and Ortiz, A. (eds.), *North American Indian Anthropology: Essays on Society and Culture*, University of Oklahoma Press, Norman, pp. 377–414.
Voorhies, B. (1976). *The Chantuto People: An Archaic Period Society of the Chiapas Littoral, Mexico*, Papers No. 41, New World Archaeological Foundation, Brigham Young University, Provo, UT.
Voorhies, B. (1996). The transformation from foraging to farming in lowland Mesoamerica. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 17–29.
Voorhies, B., and Kennett, D. (1995). Buried sites on the Soconusco coastal plain, Chiapas, Mexico. *Journal of Field Archaeology* **22**: 65–79.
Voorhies, B., Kennett, D. J., Jones, J. G., and Wake, T. A. (2002). A Middle Archaic archaeological site on the west coast of Mexico. *Latin American Antiquity* **13**: 179–200.
Walker, W. H., and Lucero, L. J. (2000). The depositional history of ritual and power. In Dobres, M.-A., and Robb, J. E. (eds.), *Agency in Archaeology*, Routledge, London, pp. 130–147.
Webster, D. (2002). *The Fall of the Ancient Maya: Solving the Mystery of the Maya Collapse*, Thames and Hudson, London.
Webster, D., Gonlin, N., and Sheets, P. (1997). Copan and Cerén: Two perspectives on ancient Mesoamerican households. *Ancient Mesoamerica* **8**: 43–61.
White, C. D. (1997). Ancient diet at Lamanai and Pacbitun: Implications for the ecological model of collapse. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 171–180.
White, C. D. (ed.). (1999). *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City.
White, C. D., Pendergast, D. M., Longstaffe, F. J., and Law, K. R. (2001). Social complexity and food systems at Altun Ha, Belize: The isotopic evidence. *Latin American Antiquity* **12**: 371–393.
White, C. D., Spence, M. W., Longstaffe, F. J., and Law, K. R. (2000). Testing the nature of Teotihuacán imperialism at Kaminaljuyú using phosphate oxygen-isotope ratios. *Journal of Anthropological Research* **56**: 535–558.

Whittington, S. L., and Reed, D. M. (1997a). Commoner diet at Copán: Insights from stable isotopes and porotic hyperostosis. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 157–170.
Whittington, S. L., and Reed, D. M. (eds.). (1997b). *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC.
Willey, G. R. (1980). Towards an holistic view of Maya civilization. *Man* **15**: 249–266.
Williams, B. J. (1980). Pictorial representation of soils in the Valley of Mexico: Evidence from the Codex Vergara. *Geoscience and Man* **21**: 51–62.
Williams, B. J. (1981). Aztec soil glyphs and contemporary Nahua soil classification. In Jansen, M., and Leyenaar, T. (eds.), *The Indians of Mexico in Pre-Columbian and Modern Times*, Rijksmuseum voor Volkenkunde, Leiden, Netherlands, pp. 206–222.
Wing, E. S. (1975). Appendix 6: Animal remains from Lubaantun. In Hammond, N., *Lubaantun: A Classic Maya Realm*, Monographs of the Peabody Museum, No. 2, Harvard University, Cambridge, pp. 379–383.
Wing, E. S., and Scudder, S. J. (1991). The ecology and economy of Cuello: The exploitation of animals. In Hammond, N. (ed.), *Cuello: An Early Maya Community in Belize*, Cambridge University Press, Cambridge, pp. 84–97.
Woodward, M. R. (2000). Considering household food security and diet at the Classic period village of Cerén, El Salvador (A.D. 600). *Mayab* **13**: 22–33.
Wright, L. E. (1997a). Ecology or society? Paleodiet and the collapse of the Pasión Maya lowlands. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 181–195.
Wright, L. E. (1997b). Biological perspectives on the collapse of the Pasion Maya. *Ancient Mesoamerica* **8**: 267–273.
Wurster, W. W., Hermes, B., Noriega, R., and Quintana, O. (eds.). (2000). *El sitio maya de Topoxté: investigaciones en una isla del Lago Yaxhá, Petén, Guatemala, Vol. 57*, Materialien zur Allgemeinen und Vergleichenden Archäologie, Verlag Philipp von Zabern, Mainz am Rhein, Germany.
Yaeger, J. (2000). *Changing Patterns of Maya Community Structure and Organization at the End of the Classic Period: San Lorenzo, Cayo District, Belize*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.
Yaeger, J. (2002). Internal complexity, household strategies of affiliation, and the changing organization of small communities in the upper Belize River Valley. In Iannone, G., and Connell, S. V. (eds.), *Perspectives on Ancient Maya Rural Complexity*, Monograph 49, Cotsen Institute of Archaeology, UCLA, Los Angeles, pp. 43–58.
Yaeger, J. (2003). Untangling the ties that bind: The city, the countryside, and the nature of Maya urbanism at Xunantunich, Belize. In Smith, M. L. (ed.), *The Social Construction of Ancient Cities*, Smithsonian Institution Press, Washington, DC, pp. 121–155.
Yaeger, J., Church, M. C., Dornan, J., and Leventhal, R. M. (2002). *The San Pedro Maya Project: Preliminary Report of the 2001 Field Season*, Submitted to the Belize Department of Archaeology, Belmopan.
Yaeger, J., and Hodell, D. (2002). Climate–culture–environment interactions and the collapse of Classic Maya civilization. Paper presented at the Dumbarton Oaks symposium on *El Niño, Catastrophism, and Culture Change in Ancient America*, Washington, DC.
Zagarell, A. (1986). Structural discontinuity—A critical factor in the emergence of primary and secondary states. *Dialectical Anthropology* **10**: 155–177.
Zeitlin, R. N., and Zeitlin, J. F. (2000). The Paleoindian and Archaic cultures of Mesoamerica. In Adams, R. E. W., and MacLeod, M. J. (eds.), *The Cambridge History of the Native Peoples of the Americas*, Cambridge University Press, Cambridge, pp. 45–121.

BIBLIOGRAPHY OF RECENT LITERATURE

Abrams, E. M. (1994). *How the Maya Built Their World: Energetics and Ancient Architecture*, University of Texas Press, Austin.

Abrams, E. M. (1995). A model of fluctuating labor value and the establishment of state power: An application to the Prehispanic Maya. *Latin American Antiquity* **6**: 196–213.

Abrams, E. M., Freter, A., Rue, D. J., and Wingard, J. D. (1996). The role of deforestation in the collapse of the Late Classic Copan Maya state. In Sponsel, L., Headland, T., and Bailey, R. (eds.), *Tropical Deforestation: The Human Dimension*, Columbia University Press, New York, pp. 55–75.

Abrams, E. M., and Rue, D. J. (1988). The causes and consequences of deforestation among the Prehistoric Maya. *Human Ecology* **16**: 337–396.

Acevedo, R., Hermes, B., and Calderón, Z. (1996). Ixtinto: Rescate arqueológico. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 233–251.

Acevedo, R., Wright, L. E., Hermes, B., and Schwarcz, H. P. (1997). La dieta maya después del colapso: un estudio isotópico del sitio Topoxté. In Laporte, J. P., and Escobedo, H. L. (eds.), *X simposio de investigaciones arqueológicas en Guatemala, 1996, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 587–600.

Acosta Bustillos, L. E., Salvador Flores, J., and Gómez Pompa, A. (1998). *Uso y manejo de plantas forrajeras para cría de animales del solar en una comunidad maya en Yucatán*, Etnoflora Yucatanense 14, Universidad Autónoma de Yucatán, Mérida, Mexico.

Adams, R. E. W. (1999). *Río Azul: An Ancient Maya City*, University of Oklahoma Press, Norman.

Agurcia, R. (1996). Rosalila, el corazón de la acrópolis, el templo del rey-sol. *Yaxkin* **14**(10–2): 5–18.

Agurcia, R., and Valdés, J. A. (1994). *Secrets of Two Maya Cities: Copan and Tikal*, La Nación, San José, Costa Rica.

Aimers, J. J., Powis, T. G., and Awe, J. J. (2000). Preclassic round structures of the upper Belize River Valley. *Latin American Antiquity* **11**: 71–86.

Alcala Herrera, J. A., Jacob, J., Machain Costillo, M., and Neck, R. W. (1994). Holocene paleosalinity in a Maya wetland, Belize, inferred from the microfaunal assemblage. *Quaternary Research* **41**: 121–130.

Andrews, A. P. (1997). La sal entre los antiguos mayas. *Arqueología Mexicana* **V**(28): 38–45.

Andrews, A. P., Andrews, E. W., and Robles, F. (2000). The northern Maya collapse and its aftermath. Paper presented at the 65th *Annual Meeting of the Society for American Archaeology*, Philadelphia.

Andrews, E. W., V, and Mozzillo, E. O. (eds.). (1994). *Five Hundred Years After Columbus: Proceedings of the 47th International Congress of Americanists*, Middle American Research Institute, Tulane University, New Orleans.

Andrews, G. F. (1996). Arquitectura Río Bec y Chenes. *Arqueología Mexicana* **III**(18):16–25.

Andrews, G. F. (2000). *Architecture of the Chenes Region: Pyramids and Palaces, Monsters and Masks, Vol. 2*, Labyrinthos, Lancaster, CA.

Aoyama, K. (1999). *Ancient Maya State, Urbanism, Exchange, and Craft Specialization: Chipped Stone Evidence From the Copan Valley and the La Entrada Region, Honduras (Estado, urbanismo, intercambio y especialización artesanal entre los mayas antiguos: evidencia de lítica menor del valle de Copán y la región de La Entrada, Honduras)*, Memoirs in Latin American Archaeology 12, University of Pittsburgh, Pittsburgh.

Aoyama, K., Tashiro, T., and Glascock, M. D. (1999). A pre-Columbian obsidian source in San Luis, Honduras: Implications for the relationship between Late Classic Maya political boundaries and the boundaries of obsidian exchange networks. *Ancient Mesoamerica* **10**: 237–249.

Ardren, T. (2002). Women and gender in the ancient Maya world. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 1–11.

Ardren, T. (2002). Death became her: Imagery of female power from Yaxuna burials. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 68–88.

Arroyo, B., and Neff, H. (1996). Nuevos hallazgos de la costa baja de Suchitepéquez. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 539–548.

Ashmore, W. (1998). Monumentos políticos: sitio, asentamiento y paisaje alrededor de Xunantunich, Belice. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una*

civilización, aproximaciones interdisciplinarias a la cultura maya, Sociedad Española de Estudios Mayas, Madrid, pp. 161–183.
Ashmore, W. (2002). Encountering Maya women. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 229–245.
Ashmore, W., and Knapp, A. B. (eds.). (1999). *Archaeologies of Landscape: Contemporary Perspectives*, Blackwell, Malden, MA.
Ashmore, W., and Sabloff, J. A. (2002). Spatial orders in Maya civic plans. *Latin American Antiquity* **13**: 201–215.
Awe, J., and Healy, P. F. (1994). Flakes to blades: Middle Formative development of obsidian artifacts in the upper Belize River Valley. *Latin American Antiquity* **5**: 193–205.
Ayala Falcón, M. (1997). Who were the people of Toniná? In Macri, M. J., and Ford, A. (eds.), *The Language of Maya Hieroglyphs*, Pre-Columbian Art Research Institute, San Francisco, CA, pp. 69–75.
Ayala Falcón, M. (2002). Lady k'awil, goddess O, and Maya warfare. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 105–113.
Balcárcel, B. (1999). Excavaciones en residencias preclásicas de Nakbé, Petén. In Laporte, J. P., Escobedo, H. L., and Monzón de Suasnávar, A. C. (eds.), *XII simposio de investigaciones arqueológicas en Guatemala, 1998*, Instituto de Antropología e Historia de Guatemala, Guatemala, pp. 337–352.
Ball, J. W. (1993). *Cahal Pech, The Ancient Maya, and Modern Belize*, San Diego State University Press, San Diego, CA.
Barrera Rubio, A. (1995). El Puuc. *Arqueología Mexicana* **II**(11): 18–25.
Barrera Rubio, A., and Peraza Lope, C. (1999). Los vestigios pictóricos de la cueva de Tixcuytún, Yucatán. In Gubler, R. (ed.), *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA, pp. 57–68.
Baudez, C.-F. (1992). The snake dance: A classic Maya rain ritual. *Res: Anthropology and Aesthetics* **21**: 37–52.
Baudez, C.-F. (1994). *Maya Sculpture of Copan: The Iconography*, University of Oklahoma Press, Norman.
Baudez, C.-F. (1996). Arquitectura y escenografía en Palenque: un ritual de entronización. *Res: Anthropology and Aesthetics* **29**/**30**: 172–179.
Baudez, C.-F. (1996). La casa de los cuatro reyes de Balamkú. *Arqueología Mexicana* **III**(18): 36–41.
Baudez, C.-F. (1999). Los templos enmascarados de Yucatán. *Arqueología Mexicana* **VII**(37): 54–59.
Baudez, C.-F. (2000). Botín humano de las guerras mayas: decapitados y cabezas–trofeo. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 189–204.
Baudez, C.-F. (2002). *Une histoire de la religion des mayas: du panthéisme au panthéon*, Albin Michel, Paris.
Beach, T. (1998). Soil constraints on northwest Yucatan: Pedroarchaeology and Maya subsistence at Chunchucmil, Yucatan, Mexico. *Geoarchaeology* **13**: 759–791.
Beach, T., and Dunning, N. P. (1995). Ancient Maya terracing and modern conservation in the Peten rainforest in Guatemala. *Journal of Soil and Water Conservation* **50**: 138–145.
Beaudry-Corbett, M., and McCafferty, S. (2002). Spindle whorls: Household specialization at Cerén. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 52–67.
Bell, E. E., Canuto, M. A., and Ramos, J. (2001). El Paraíso: punto embocadero de la periferia sudeste maya. *Yaxkin* **19**: 41–75.
Benavides, C. A. (1995). Becán y su región. *Journal de la Société des Américanistes* **81**: 259–266.
Benavides, C. A. (1996). Edzná, Campeche. *Arqueología Mexicana* **III**(18): 26–31.
Benavides, C. A. (1997). *Edzná: una ciudad prehispánica de Campeche*, Instituto Nacional de Antropología e Historia, Mexico, and the University of Pittsburgh, Pittsburgh.
Benavides, C. A. (1998). Las mujeres mayas de ayer. *Arqueología Mexicana* **V**(29): 34–41.
Benavides, C. A. (2000). Ichmac, un sitio puuc de Campeche. *Mexicon* **XXII**: 134–139.
Benavides, C. A. (2001). Xchan, Campeche, un sitio Puuc con columnas decoradas. *Mexicon* **XXIII**: 146–148.
Bey, G. J., Bond, T. M., Ringle, W. M., Hanson, C. A., Houck, C. W., and Peraza Lope, C. (1998). The ceramic chronology of Ek Balam, Yucatan, Mexico. *Ancient Mesoamerica* **9**: 101–120.

Bey, G. J., Hanson, C. A., and Ringle, W. M. (1997). Classic to Postclassic at Ek Balam, Yucatan: Architectural and ceramic evidence for defining the transition. *Latin American Antiquity* **8**: 237–254.

Bill, C. R., Hernández, C. L., and Bricker, V. R. (2000). The relationship between Early Colonial Maya new year's ceremonies and some almanacs in the Madrid Codex. *Ancient Mesoamerica* **11**: 149–168.

Bolles, D., and Bolles, A. (2001). *A Grammar of the Yucatecan Mayan Language*, Labyrinthos, Lancaster, CA.

Bolles, D., and Folan, W. J. (2001). An analysis of roads listed in colonial dictionaries and their relevance to pre-Hispanic linear features in the Yucatan peninsula. *Ancient Mesoamerica* **12**: 299–314.

Boremanse, D. (1998). *Hach Winik: The Lacandon Maya of Chiapas, Southern Mexico*, Monograph 11, Institute for Mesoamerican Studies, State University of New York, Albany.

Boucher Le Landais, S., and Palomo, C. Y. (2000). Cerámica ritual de Calakmul. *Arqueología Mexicana* **VII**(37): 34–39.

Bracamonte y Sosa, P. (1999). El sagrado balché. *Arqueología Mexicana* **VII**(37): 66–69.

Brady, J. E. (1995). A reassessment of the chronology and function of Gordon's Cave #3, Copan, Honduras. *Ancient Mesoamerica* **6**: 29–38.

Brady, J. E. (1997). Settlement configuration and cosmology: The role of caves at Dos Pilas. *American Anthropologist* **99**: 602–618.

Brady, J. E. (1999). The gruta de Jobonche: An analysis of speleothem rock art. In Gubler, R. (ed.), *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA, pp. 57–68.

Brady, J. E., Ball, J. W., Bishop, R. L., Pring, D. C., Hammond, N., and Housley, R. A. (1998). The lowland Maya "protoclassic": A reconsideration of its nature and significance. *Ancient Mesoamerica* **9**: 17–38.

Brady, J. E., Ware, G. A., Luke, B., Cobb, A., Fogarty, J., and Shade, B. (1997). Preclassic cave utilization near Cobanerita, San Benito, Peten. *Mexicon* **XIX**: 91–96.

Braswell, G. E. (1996). The sculpture of San Martín Jilotepeque: Cotzumalguapan influence in the highlands or highland influence on the Pacific coast? In Macri, M., and McHargue, J. (eds.), *Eighth Palenque Roundtable, 1993*, Pre-Columbian Art Research Institute, San Francisco, CA, pp. 441–451.

Braswell, G. E. (1997). El intercambio prehispánico en Yucatán, México. In Laporte, J. P., and Escobedo, H. L. (eds.), *X simposio de investigaciones arqueológicas en Guatemala, 1996, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 545–556.

Braswell, G. E. (2001). Cultural emulation, ethnogenesis, and survival: The "mexicanization" of the highland Maya in the 15th and 16th centuries. In Hostettler, U., and Restall, M. (eds.), *Maya Survivalism*, Acta Mesoamericana 12, Verlag Anton Saurwein, Markt Schwaben, Germany, pp. 51–58.

Braswell, G. E. (2001). Ancient economy and alternative approaches to stone tools at Copan, Honduras. *Latin American Antiquity* **12**: 217–220.

Braswell, G. E. (2002). Praise the gods and pass the obsidian? The organization of ancient economy in San Martín Jilotepeque, Guatemala. In Masson, M., and Freidel, D. (eds.), *Ancient Maya Political Economies*, AltaMira Press, Walnut Creek, CA, pp. 285–306.

Braswell, G. E., Andrews, E. W., and Glascock, M. D. (1994). The obsidian artifacts of Quelepa, El Salvador. *Ancient Mesoamerica* **5**: 173–192.

Braswell, G. E., Clark, J. E., Aoyama, K., McKillop, H. I., and Glascock, M. D. (2000). Determining the geological provenance of obsidian artifacts from the Maya region: A test of the efficacy of visual sourcing. *Latin American Antiquity* **11**: 269–282.

Braswell, G. E., and Glascock, M. D. (1998). Interpreting intrasource variation in the composition of obsidian: The geoarchaeology of San Martín Jilotepeque, Guatemala. *Latin American Antiquity* **9**: 353–369.

Braswell, J. B. (1998). *Archaeological Investigations at Group D, Xunantunich, Belize*, Ph.D. Dissertation, Department of Anthropology, Tulane University, New Orleans.

Brenner, M. (1994). Lakes Salpeten and Quexil, Petén, Guatemala, Central America. In Gierlowski-Kordesch, E. H., and Kelts, K. R. (eds.), *Global Geological Record of Lake Basins*, Cambridge University Press, Cambridge, pp. 377–380.

Brenner, M., Leyden, B. W., and Binford, M. W. (1990). Recent sedimentary histories of shallow lakes in the Guatemalan savannas. *Journal of Paleolimnology* **86**: 1–14.
Brenner, M., Rosenmeier, M. F., Hodell, D. A., and Curtis, J. H. (2002). Paleolimnology of the Maya lowlands: Long-term perspectives on interactions among climate, environment, and humans. *Ancient Mesoamerica* **13**: 141–157.
Bricker, H. M., Aveni, A. F., and Bricker, V. R. (2001). Ancient Maya documents concerning the movements of Mars. *Proceedings of the National Academy of Sciences* **98**(4): 2107–2110.
Bricker, V. R., and Bill, C. R. (1994). Mortuary practices in the Madrid Codex. In Fields, V. M. (ed.), *Seventh Palenque Round Table, 1989*, Pre-Columbian Art Research Institute, San Francisco, CA, pp. 195–200.
Bricker, V. R., Po'ot Yah, E., and Dzul de Po'ot, O. (1998). *A Dictionary of the Maya Language as Spoken in Hocabá, Yucatán*, University of Utah Press, Salt Lake City.
Brokmann, C. (2000). *Tipología y Análisis de la Obsidiana de Yaxchilán, Chiapas*, Colección Científica, Serie Arqueología 422, Instituto Nacional de Antropología e Historia, Mexico.
Brown, L., and Sheets, P. (2000). Distinguishing domestic from ceremonial structures in southern Mesoamerica: Suggestions from Cerén, El Salvador. *Mayab* **13**: 11–21.
Brown, M. K., and Stanton, T. W. (eds.). (2003). *Ancient Mesoamerican Warfare*, AltaMira Press, Walnut Creek, CA.
Buikstra, J. E. (1997). Studying Maya bioarchaeology. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 221–228.
Cackler, P. R., Glascock, M. D., Neff, H., Iceland, H., Pyburn, K. A., Hudler, D., Hester, T. R., Chiarulli, B. M. (1999). Chipped stone artifacts, source areas, and provenance studies of the northern Belize chert-bearing zone. *Journal of Archaeological Science* **26**: 389–397.
Campaña, V. L. E. (1995). Una tumba en el Templo de Búho, Dzibanché. *Arqueología Mexicana* **III**(14): 28–31.
Canuto, M. A. (2003). The rural settlement of Copan: Changes through the Early Classic. In Bell, E. E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.
Carlsen, R. S. (1997). *The War for the Heart and Soul of a Highland Maya Town*, University of Texas Press, Austin.
Carmack, R. M. (1995). *Rebels of Highland Guatemala: The Quiché-Mayas of Momostenango*, University of Oklahoma Press, Norman.
Carr, H. S. (1996). Precolumbian Maya exploitation and management of deer populations. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 251–261.
Carrasco, M. D., and Hull, K. (2002). The cosmogonic symbolism of the corbeled vault in Maya architecture. *Mexicon* **XXIV**: 26–32.
Carrasco, R. (1993). Formación sociopolítica en el puuc: el sacbe Uxmal-Nohpat-Kabah. In Iglesias Ponce de León, M. J., and Ligorred Perramón, F. (eds.), *Perspectivas antropológicas en el mundo maya*, Publicaciones de la Sociedad Española de Estudios Mayas, No. 2, Catalunya, Spain, pp. 199–211.
Carrasco Vargas, R., and Wolf, M. (1996). Nadzcaan: una antigua ciudad en el suroeste de Campeche, Mexico. *Mexicon* **XVIII**: 70–74.
Carsten, J., and Hugh-Jones, S. (eds.). (1995). *About the House: Lévi-Strauss and Beyond*, Cambridge University Press, Cambridge.
Chambers, M. E., and Hansen, R. D. (1996). Monumento 10 de El Mirador: el contexto arqueológico y la iconografía. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 313–329.
Chase, A. F. (1998). Planeación cívica e integración de sitio en Caracol, Belice: definiendo una economía administrada del periodo clásico maya. In *Los investigadores de la cultura maya* 6(1), Universidad Autónoma de Campeche, Mexico, pp. 26–44.
Chase, A. F. (2001). Tayasal. In Evans, S. T., and Webster, D. L. (eds.), *The Archaeology of Ancient Mexico and Central America: An Encyclopedia*, Garland Publishing, New York, p. 705.
Chase, A. F., and Chase, D. Z. (1996). A mighty Maya nation: How Caracol built an empire by cultivating its "middle class." *Archaeology* **49**(5): 66–72.

Chase, A. F., and Chase, D. Z. (1996). The organization and composition of classic lowland Maya society: The view from Caracol, Belize. In Greene Robertson, M., Macri, M., and McHargue, J. (eds.), *Eighth Palenque Round Table, 1993, Vol. IX*, Pre-Columbian Art Research Institute, San Francisco, pp. 213–222.

Chase, A. F., and Chase, D. Z. (1998). Late Classic Maya political structure, polity size, and warfare arenas. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una civilización, aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 11–29.

Chase, A. F., and Chase, D. Z. (1998). Scale and intensity in Classic period Maya agriculture: Terracing and settlement at the 'garden city' of Caracol, Belize. *Culture and Agriculture* **20**(2): 60–77.

Chase, A. F., and Chase, D. Z. (1999). Hallowed fire in Caracol. *Mundo Maya* **7**(20): 39–46.

Chase, A. F., and Chase, D. Z. (2001). The royal court of Caracol, Belize: Its palaces and people. In Inomata, T., and Houston, S. D. (eds.), *Royal Courts of the Ancient Maya, Vol. 2*, Westview Press, Boulder, CO, pp. 102–137.

Chase, A. F., and Chase, D. Z. (2001). Ancient Maya causeways and site organization at Caracol, Belize. *Ancient Mesoamerica* **12**: 273–281.

Chase, A. F., and Chase, D. Z. (2001). Caracol. In Fash, W. (ed.), *The Oxford Encyclopedia of Mesoamerican Cultures, Vol. 1*, Oxford University Press, New York, pp. 143–145.

Chase, A. F., and Chase, D. Z. (2001). Caracol. In Evans, S. T., and Webster, D. L. (eds.), *The Archaeology of Ancient Mexico and Central America: An Encyclopedia*, Garland Publishing, New York, pp. 96–97.

Chase, A. F., Chase, D. Z., and Haviland, W. A. (2002). Maya social organization from a "big site" perspective: Classic period Caracol, Belize and Tikal, Guatemala. In Tiesler Blos, V., Cobos, R., and Greene, M. (eds.), *Organización social maya: 1999 Palenque Mesa Redonda*, Instituto Nacional de Antropología e Historia, Mexico, pp. 48–57.

Chase, A. F., Chase, D. Z., and White, C. D. (2001). El paisaje urbano maya: la integración de los espacios construidos y la estructura social en Caracol, Belice. In Ciudad Ruiz, A., Iglesias Ponce de León, M. J., and Martínez Martínez, M. (eds.), *Reconstruyendo la Ciudad Maya: El Urbanismo en las Sociedades Antiguas*, Sociedad Española de Estudios Mayas, Madrid, pp. 95–122.

Chase, D. Z. (2001). Santa Rita Corozal. In Evans, S. T., and Webster, D. L. (eds.), *The Archaeology of Ancient Mexico and Central America: An Encyclopedia*, Garland Publishing, New York, p. 654.

Chase, D. Z., and Chase, A. F. (1996). Maya multiples: Individuals, entries, and tombs in Structure A34 of Caracol, Belize. *Latin American Antiquity* **7**: 61–79.

Chase, D. Z., and Chase, A. F. (1998). The architectural context of caches, burials, and other ritual activities for the Classic period Maya (as reflected at Caracol, Belize). In Houston, S. D. (ed.), *Function and Meaning in Classic Maya Architecture*, Dumbarton Oaks, Washington, DC, pp. 299–332.

Chase, D. Z., and Chase, A. F. (2001). Underlying structure in Maya persistence: An archaeological perspective. In Hostettler, U., and Restall, M. (eds.), *Maya Survivalism*, Acta Mesoamericana 12, Verlag Anton Saurwein, Markt Schwaben, Germany, pp. 37–50.

Chinchilla Mazariegos, O. (1999). Desarrollo de la escritura en Mesoamérica durante el preclásico. In Popenoe de Hatch, M. (ed.), *Historia General de Guatemala, Vol. I*, Asociación de Amigos del País, Fundación para la Cultura y el Desarrollo, Guatemala City, pp. 557–562.

Ciudad Ruiz, A. (2000). Después del fuego: el uso del espacio en una unidad habitacional del clásico tardío en Guatemala. *Mayab* **13**: 34–45.

Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.). (1998). *Anatomía de una civilización: aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid.

Ciudad Ruiz, A., and Iglesias Ponce de León, M. J. (1996). Muerte y orientación norte-sur en el valle de Dolores. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 195–206.

Claassen, C., and Joyce, R. A. (eds.). (1997). *Women in Prehistory: North America and Mesoamerica*, University of Pennsylvania Press, Philadelphia.

Clancy, F. S. (1999). *Sculpture in the Ancient Maya Plaza: The Early Classic Period*, University of New Mexico Press, Albuquerque.

Clark, J. E., and Houston, S. D. (1998). Craft specialization, gender, and personhood among the post-conquest Maya of Yucatan, Mexico. In Costin, C. L., and Wright, R. P. (eds.), *Craft and Social Identity*, Archeological Papers No. 8, American Anthropological Association, Arlington, VA, pp. 31–46.

Cobos, R. (1999). Fuentes históricas y arqueología: convergencias y divergencias en la reconstrucción del período clásico terminal en Chichén Itzá. *Mayab* **12**: 58–70.

Cobos, R. (in press). Chichén Itzá: Settlement and hegemony during the Terminal Classic period. In Rice, D. S., Rice, P. M., and Demarest, A. A. (eds.), *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*, Westview Press, Boulder, CO.

Cobos, R., and Sheets, P. (1997). *San Andrés y Joya de Cerén: Patrimonio de la Humanidad*, Bancasa, San Salvador, El Salvador.

Cobos, R., and Winemiller, T. L. (2001). The Late and Terminal Classic-period causeway systems of Chichen Itza, Yucatan, Mexico. *Ancient Mesoamerica* **12**: 283–291.

Coe, M. D. (1998). *The Art of the Maya Scribe*, Harry N. Abrams, New York.

Cohen, M. N., O'Conner, K., Danforth, M. E., Jacobi, K. P., and Armstrong, C. (1997). Archaeology and osteology of the Tipu site. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 78–86.

Colas, P. R., Delvendahl, K., Kuhnert, M., and Pieler, A. (eds.). (2002). *The Sacred and the Profane: Architecture and Identity in the Southern Maya Lowlands*, Acta Mesoamericana 10, Verlag Anton Saurwein, Markt Schwaben, Germany.

Colas, P. R., Helmke, C. G. B., Awe, J. J., and Powis, T. G. (2002). Epigraphic and ceramic analysis of two Early Classic Maya vessels from Baking Pot, Belize. *Mexicon* **XXIV**: 33–39.

Conkey, M. W., and Gero, J. M. (1997). Programme to practice: Gender and feminism in archaeology. *Annual Review of Anthropology* **26**: 411–437.

Cook, P. M. (1997). *Basal Platform Mounds at Chau Hiix, Belize: Evidence of Ancient Maya Social Structure and Cottage Industry Manufacturing*, Ph.D. Dissertation, Department of Anthropology, University of Arizona, UMI Microfilms, Ann Arbor.

Corzo, L. A. (1996). Sitios asociados al resumidero del Río Mopan: Análisis de su patrón de asentamiento. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 213–231.

Coyston, S. (1994). *An Application of Carbon-Isotope Analysis of Bone Apatite to the Study of Maya Diets and Subsistence at Pacbitun and Lamanai, Belize*, M.A. Thesis, Department of Anthropology, Trent University, Peterborough, Canada.

Coyston, S., White, C. D., and Schwarcz, H. P. (1999). Dietary carbonate analysis of bone and enamel for two sites in Belize. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 221–243.

Crane, C. J. (1996). Archaeobotanical and palynological research at a Late Preclassic Maya community, Cerros, Belize. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 262–277.

Culbert, T. P., Fialko, V., McKee, B., Grazioso, L., Kunen, J., and Paez, L. (1997). Investigaciones arqueológicas en el bajo La Justa, Petén. In Laporte, J. P., and Escobedo, H. L. (eds.), *X simposio de investigaciones arqueológicas en Guatemala*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 367–371.

Culbert, T. P., Levi, L., McKee, B., and Kunen, J. (1996). Investigaciones arqueológicas en el bajo La Justa, entre Yaxha y Nakum. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 51–57.

Curtis, J. H., Brenner, M., Hodell, D. A., Balser, R. A., Islebe, G. A., and Hoogiemstra, H. (1998). A multi-proxy study of Holocene environmental change in the Maya lowlands of Petén, Guatemala. *Journal of Paleolimnology* **19**: 139–159.

Curtis, J. H., Hodell, D. A., and Brenner, M. (1996). Climate variability on the Yucatan Peninsula (Mexico) during the past 3500 years, and the implications for Maya cultural evolution. *Quaternary Research* **46**: 37–47.

Dahlin, B. H., Andrews, A. P., Beach, T., Bezanilla, C., Farrell, P., Luzzadder-Beach, S., and McCormick, V. (1998). Punta Canbalam in context: A peripatetic coastal site in northwest Campeche, Mexico. *Ancient Mesoamerica* **9**: 1–16.

Dakin, K., and Wichmann, S. (2000). Cacao and chocolate: A uto-aztecan perspective. *Ancient Mesoamerica* **11**: 55–75.

Danforth, M. E. (1994). Stature change in the prehistoric Maya of the southern lowlands. *Latin American Antiquity* **5**: 206–211.

Danforth, M. E. (1997). Late Classic Maya health patterns: Evidence from enamel microdefects. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 127–137.

Danforth, M. E., Jacobi, K. P., and Cohen, M. N. (1997). Gender and health among the colonial Maya of Tipu, Belize. *Ancient Mesoamerica* **8**: 13–22.

Danforth, M. E., Whittington, S. L., and Jacobi, K. P. (1997). Appendix. An indexed bibliography of prehistoric and early historic Maya human osteology: 1839–1994. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 229–259.

Danien, E. (1997). The ritual on the Ratinlixul vase: Pots and politics in highland Guatemala. *Expedition* **39**(3): 37–48.

de Jong, H. J. (1999). *The Land of Corn and Honey: The Keeping of Stingless Bees (Meliponiculture) in the Ethno-Ecological Environment of Yucatan (Mexico) and San Salvador*, Ph.D. Dissertation, Utrecht University, The Netherlands.

Demarest, A. A. (1997). War, peace, and the collapse of a Native American civilization: Lessons for contemporary systems of conflict. In Gregor, T. (ed.), *A Natural History of Peace*, Vanderbilt University Press, Nashville, TN, pp. 215–248.

de Montmollin, O. (1995). *Settlement and Politics in Three Late Classic Maya Polities*, Prehistory Press, Madison, WI.

de Montmollin, O. (1997). A regional study of Classic Maya ballcourts from the upper Grijalva Basin, Chiapas, Mexico. *Ancient Mesoamerica* **8**: 23–41.

Dixon, B., Joesink-Mandeville, L. R. V., Hasebe, N., Mucio, M., Vincent, W., James, D., and Petersen, K. (1994). Formative-period architecture at the site of Yarumela, central Honduras. *Latin American Antiquity* **5**: 70–87.

Domínguez Carrasco, M. del R. (1994). *Calakmul, Campeche: análisis de la cerámica*, Universidad Autónoma de Campeche, Campeche, Mexico.

Domínguez Carrasco, M. del R. (1996). Calakmul, México: aguadas, bajos, precipitación y asentamiento en el Petén campechano. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 171–193.

Drew, D. (2000). *The Lost Chronicles of the Maya Kings*, University of California Press, Berkeley.

Driver, W. D. (2002). An Early Classic colonnaded building at the Maya site of Blue Creek, Belize. *Latin American Antiquity* **13**: 63–84.

Driver, W. D., and Wanyerka, P. (2002). Creation symbolism in the architecture and ritual at Structure 3, Blue Creek, Belize. *Mexicon* **XXIV**: 6–8.

Dull, R. A., Southon, J. R., and Sheets, P. (2001). Volcanism, ecology and culture: A reassessment of the Volcán Ilopango TBJ eruption in the southern Maya realm. *Latin American Antiquity* **12**: 25–44.

Dunham, P. S. (1996). Resource exploitation and exchange among the Classic Maya: Some initial findings of the Maya Mountains archaeological project. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 315–334.

Dunham, P. S., and Prufer, K. M. (1998). En la cumbre del clásico: descubrimientos recientes en la montaña maya en el sur de Belice. In Laporte, J. P. and Escobedo, H. L. (eds.), *XI simposio de investigaciones arqueológicas en Guatemala, 1997*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Instituto de Antropología e Historia, Asociación Tikal, Guatemala, pp. 165–170.

Dunning, N. P., and Beach, T. (1994). Soil erosion, slope management, and ancient terracing in the Maya lowlands. *Latin American Antiquity* **5**: 51–69.

Dunning, N. P., Beach, T., Farrell, P., and Luzzadder-Beach, S. (1998). Prehispanic agrosystems and adaptive regions in the Maya lowlands. *Culture and Agriculture* **20**: 87–101.

Dunning, N. P., Beach, T., and Rue, D. J. (1997). The paleoecology and ancient settlement of the Petexbatún region, Guatemala. *Ancient Mesoamerica* **8**: 255–266.

Dunning, N. P., Rue, D. J., Beach, T., Covich, A., and Traverse, A. (1998). Human–environment interactions in a tropical watershed: The paleoecology of Laguna Tamarindito, El Petén, Guatemala. *Journal of Field Archaeology* **25**: 139–151.

Ehrenreich, R. M., Crumley, C. L., and Levy, J. E. (eds.). (1995). *Heterarchy and the Analysis of Complex Societies*, Archeological Papers No. 6, American Anthropological Association, Arlington, VA.

Ehret, J. (n.d.). *Lineage, Land, and Loyalty: Implications of Ancient Maya Settlement Complexity in the Rural Hinterlands of Xunantunich, Belize*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.

Erlandson, J. M. (2001). The archaeology of aquatic adaptations: Paradigms for a new millennium. *Journal of Archaeological Research* **9**: 287–350.

Escobedo, H. L., Urquizú, M., and Castellanos, J. (1996). Nuevas investigaciones en Kaminaljuyu: excavaciones en los montículos A-V-11, A-VI-1 y sus alrededores. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 419–437.

Espejo-Ponce Hunt, M., and Restall, M. (1997). Work, marriage, and status: Maya women of colonial Yucatan. In Schroeder, S., Wood, S., and Haskett, R. (eds.), *Indian Women of Early Mexico*, University of Oklahoma Press, Norman, pp. 231–252.

Estrada Belli, F., and Kosakowsky, L. J. (1996). Proyecto arqueológico Santa Rosa, 1995: resultados de la primera temporada. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 565–582.

Evans, S. T., and Webster, D. L. (eds.). (2001). *Archaeology of Ancient Mexico and Central America: An Encyclopedia*, Garland Publishers, New York.

Fedick, S. L. (1994). Ancient Maya agricultural terracing in the upper Belize River area. *Ancient Mesoamerica* **5**: 107–127.

Fedick, S. L. (1995). Land evaluation and ancient Maya land use in the upper Belize River area, Belize, Central America. *Latin American Antiquity* **6**: 16–34.

Fedick, S. L. (1996). An interpretive kaleidoscope: Alternative perspectives on ancient agricultural landscapes of the Maya lowlands. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 107–131.

Fedick, S. L. (1998). Ancient Maya use of wetlands in northern Quintana Roo, Mexico. In Bernick, K. (ed.), *Hidden Dimensions: The Cultural Significance of Wetland Archaeology*, University of British Columbia Press, Vancouver, pp. 107–129.

Fedick, S. L., and Taube, K. A. (eds.). (1995). *The View from Yalahau: 1993 Archaeological Investigations in Northern Quintana Roo, Mexico*, Latin American Studies Program, Field Report Series 2, University of California, Riverside.

Feldman, L. H. (ed.). (2000). *Lost Shores, Forgotten Peoples: Spanish Explorations in the Southeast Maya Lowlands*, Duke University Press, Durham, NC.

Fernández Souza, L. (1999). Un contexto funerario en la Plaza del Osario. *Temas Antropológicos* **21**(2): 264–279.

Fitzsimmons, J. (1998). Classic Maya mortuary anniversaries at Piedras Negras, Guatemala. *Ancient Mesoamerica* **9**: 271–278.

Flores, M., García, B., Flores, Z., and Lara, M. Y. (1964). Annual patterns of family and children's diet in three Guatemalan Indian communities. *British Journal of Nutrition* **18**: 281–293.

Foias, A. E., and Bishop, R. L. (1997). Changing ceramic production and exchange in the Petexbatun region, Guatemala: Reconsidering the Maya collapse. *Ancient Mesoamerica* **8**: 275–291.

Folan, W. J. (ed.). (1994). *Campeche Maya Colonial*, Colección Arqueología, Centro de Investigaciones Históricas y Sociales, Universidad Autónoma de Campeche, Campeche, Mexico.

Ford, A. (1996). Critical resource control and the rise of the Classic period Maya. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 297–303.

Forsyth, D. (1993). The ceramic sequence at Nakbe, Guatemala. *Ancient Mesoamerica* **4**: 31–53.
Freidel, D., and Schele, L. (1997). Maya royal women: A lesson in Precolumbian history. In Brettell, C. B., and Sargent, C. F. (eds.), *Gender in Cross-Cultural Perspective*, Prentice Hall, Upper Saddle River, NJ, pp. 59–63.
Freidel, D., and Suhler, C. (1999). The path of life: Toward a functional analysis of Maya architecture. In Kowalski, J. K. (ed.), *Mesoamerican Architecture as a Cultural Symbol*, Oxford University Press, New York, pp. 250–273.
Fung, C. D. (1995). *Domestic Labor, Gender, and Social Power: Household Archaeology in Terminal Classic Yoro, Honduras*, Ph.D. Dissertation, Department of Anthropology, Harvard University, Cambridge, MA.
García Campillo, J. M. (2000). *Estudio introductorio del léxico de las inscripciones de Chichén Itzá, Yucatán, México*, British Archaeological Reports International Series 831, Archaeopress, Oxford.
García Campillo, J. M. (2001). Santuarios urbanos: casas para los antepasados en Chichén Itzá. In Ciudad Ruiz, A., Iglesias Ponce de León, M. J., and Martínez Martínez, M. (eds.), *Reconstruyendo La Ciudad Maya: El Urbanismo en las Sociedades Antiguas*, Sociedad Española de Estudios Mayas, Madrid, pp. 137–161.
García Cruz, F. (1994). Balamkú. *Arqueología Mexicana* **I**(5): 59–60.
García Moll, R. (1996). Yaxchilán, Chiapas. *Arqueología Mexicana* **IV**(22): 36–45.
Gendrop, P. (1998). *Río Bec, Chenes, and Puuc Styles in Maya Architecture*, Labyrinthos, Lancaster, CA.
Gill, R. B., and Keating, J. P. (2002). Volcanism and Mesoamerican archaeology. *Ancient Mesoamerica* **13**: 125–140.
Gillespie, S. D. (1999). Olmec thrones as ancestral altars: The two sides of power. In Robb, J. (ed.), *Material Symbols: Culture and Economy in Prehistory*, Occasional Paper 26, Center for Archaeological Investigations, Southern Illinois University, Carbondale, pp. 224–253.
Gillespie, S. D. (2000). Beyond kinship: An introduction. In Joyce, R. A., and Gillespie, S. D. (eds.), *Beyond Kinship: Social and Material Reproduction in House Societies*, University of Pennsylvania Press, Philadelphia, pp. 1–21.
Gillespie, S. D. (2000). Maya "nested houses": The ritual construction of place. In Joyce, R. A., and Gillespie, S. D. (eds.), *Beyond Kinship: Social and Material Reproduction in House Societies*, University of Pennsylvania Press, Philadelphia, pp. 135–160.
Gillespie, S. D. (2001). Personhood, agency, and mortuary ritual: A case study from the ancient Maya. *Journal of Anthropological Archaeology* **20**: 73–112.
Gillespie, S. D. (2002). Body and soul among the Maya: Keeping the spirits in place. In Silverman, H., and Small, D. B. (eds.), *The Space and Place of Death*, Archeological Papers No. 11, American Anthropological Association, Arlington, VA, pp. 67–78.
Gillespie, S. D., and Joyce, R. A. (1998). Deity relationships in Mesoamerican cosmologies: The case of the Maya god L. *Ancient Mesoamerica* **9**: 279–296.
Glassman, D. M., and Garber, J. F. (1999). Land use, diet, and their effects on the biology of the prehistoric Maya of northern Ambergris Cay, Belize. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 119–132.
Golden, C. W. (in press). The politics of warfare in the Usumacinta basin: La Pasadita and the realm of Bird Jaguar. In Stanton, T., and Brown, M. K. (eds.), *Ancient Mesoamerican Warfare*, AltaMira Press, Walnut Creek, CA.
Gómez, O. (1996). Calzadas mayas: un estudio desde el sureste de Petén. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 135–151.
Gómez Rueda, H. (1996). Izapa: organización espacial de un centro del formativo en la costa pacífica de Chiapas. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 549–563.
Góngora, S. A. (2001). El desarrollo de los estucos modelados en Dzibilchaltún, Yucatán, México. *Mexicon* **XXIII**: 102–106.
Góngora, S. A., Andrews, A. P., and Robles, C. F. (2000). La capilla colonial de Tzemé, Yucatán. *Mexicon* **XXII**: 77–80.
González Cruz, A. (1994). Trabajos recientes en Palenque. *Arqueología Mexicana* **2**(10): 39–45.

Graña-Behrens, D., Prager, C., and Wagner, E. (1999). The hieroglyphic inscription of the "high priest's grave" at Chichén Itzá, Yucatán, Mexico. *Mexicon* **XXI**: 61–66.
Greenberg, L. S. Z. (1992). Garden hunting among the Yucatec Maya: A coevolutionary history of wildlife and culture. *Etnoecología* **1**(1): 23–33.
Grube, N. (ed.). (1995). *The Emergence of Lowland Maya Civilization: The Transition From the Preclassic to the Early Classic*, Anton Saurwein, Möckmühl, Germany.
Grube, N. (1999). Observations on the Late Classic interregnum at Yaxchilan. In Bray, W., and Manzanilla, L. (eds.), *The Archaeology of Mesoamerica: Mexican and European Perspectives*, British Museum Press, London, pp. 116–127.
Grube, N. (2000). On Classic Maya inscriptions. *Current Anthropology* **41**: 837–838.
Grube, N., Guderjan, T. H., and Haines, H. R. (1995). Late Classic architecture and iconography at the Blue Creek Ruin, Belize. *Mexicon* **XVII**: 51–56.
Grunberg, W. (2000). *Modeling Deforestation: Risks for the Maya Biosphere Reserve, Guatemala*, School for Renewable Natural Resources, University of Arizona, Tucson.
Gubler, R. (ed.). (1999). *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA.
Gubler, R., and Bolles, D. (2000). *The Book of Chilam Balam of Nah*, Labyrinthos, Lancaster, CA.
Gubler, R., and Martel, P. (eds.). (2001). *Yucatán a través de los siglos: memorias del simposio del 49 Congreso Internacional de Americanistas*, Quito, Ecuador, Universidad Autónoma de Yucatán, Mérida, Mexico.
Guderjan, T. H. (1998). The Blue Creek jade cache: Early Classic ritual in northwestern Belize. In Mock, S. B. (ed.), *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*, University of New Mexico, Albuquerque, pp. 101–111.
Guderjan, T. H., and Garber, J. F. (eds.). (1995). *Maya Maritime Trade, Settlement, and Populations on Ambergris Caye, Belize*, Maya Research Program and Labyrinthos, Lancaster, CA.
Gunn, J. D., Folan, W. J., and Robichaux, H. R. (1995). A landscape analysis of the Candelaria watershed in Mexico: Insights into paleoclimate affecting upland horticulture in the southern Yucatan Peninsula semi-karst. *Geoarchaeology* **10**: 3–42.
Hammond, N. (2001). A new Maya stela from La Milpa, Belize. *Antiquity* **75**(288): 267–268.
Hammond, N., Tourtellot, G., Donaghey, S., and Clarke, A. (1996). Survey and excavation at La Milpa, Belize, 1996. *Mexicon* **XVIII**: 86–91.
Hammond, N., Tourtellot, G., Donaghey, S., and Clarke, A. (1998). No slow dusk: Maya urban development and decline at La Milpa, Belize. *Antiquity* **72**(278): 831–837.
Hammond, N., Tourtellot, G., Everson, G., Sagebiel, K., Thomas, B., and Wolf, M. (2000). Survey and excavation at La Milpa, Belize, 1998. *Mexicon* **XXII**: 38–45.
Hansen, R. D. (1991). *An Early Maya Text from El Mirador, Guatemala*. Research Reports on Ancient Maya Writing No. 37, Center for Maya Research, Washington, DC.
Hansen, R. D., Bishop, R. L., and Fahsen, F. (1999). Notes on codex-style ceramics from Nakbe, Peten, Guatemala. *Ancient Mesoamerica* **2**: 225–243.
Hanson, C. (1995). The Hispanic horizon in Yucatán: A model of Franciscan missionization. *Ancient Mesoamerica* **6**: 15–28.
Haviland, W. A. (1997). On the Maya state. *Current Anthropology* **38**: 443–445.
Haviland, W. A. (1997). The rise and fall of sexual inequality: Death and gender at Tikal, Guatemala. *Ancient Mesomerica* **8**: 1–12.
Haviland, W. A., and Haviland, A. de L. (1995). Glimpses of the supernatural: Altered states of consciousness and the graffiti of Tikal, Guatemala. *Latin American Antiquity* **6**: 295–309.
Havill, L. M., Warren, D. M., Jacobi, K. P., Gettelman, K. D., Cook, D. C., and Pyburn, K. A. (1997). Late Postclassic tooth filing at Chau Hiix and Tipu, Belize. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 89–104.
Healy, P. F. (ed.). (1999). *Belize Valley Preclassic Maya Project: Report on the 1996 and 1997 Field Season*, Occasional Papers in Anthropology 13, Trent University, Peterborough, Ontario.
Healy, P. F., and Awe, J. J. (eds.). (1995). *Belize Valley Preclassic Maya Project: Report on the 1994 Field Season*, Occasional Papers in Anthropology 10, Trent University, Peterborough, Ontario.
Healy, P. F., and Awe, J. J. (eds.). (1996). *Belize Valley Preclassic Maya Project: Report on the 1995 Field Season*. Occasional Papers in Anthropology 12, Trent University, Peterborough, Ontario.

Healy, P. F., and Awe, J. J. (2001). Middle Preclassic jade spoon from Belize. *Mexicon* **XXIII**: 61–64.
Healy, P. F., Awe, J. J., and Helmuth, H. (1998). An ancient Maya multiple burial at Caledonia, Cayo District, Belize. *Journal of Field Archaeology* **25**: 261–274.
Helms, M. W. (1999). Why Maya lords sat on jaguar thrones. In Robb, J. E. (ed.), *Material Symbols: Culture and Economy in Prehistory*, Occasional Paper 26, Center for Archaeological Investigations, Southern Illinois University, Carbondale, pp. 56–69.
Hendon, J. A. (1999). The Preclassic Maya compound as the focus of social identity. In Grove, D. C., and Joyce, R. A. (eds.), *Social Patterns in Pre-Classic Mesoamerica*, Dumbarton Oaks, Washington, DC, pp. 97–125.
Hendon, J. A. (2000). Round structures, household identity, and public performance in Preclassic Maya society. *Latin American Antiquity* **11**: 299–301.
Hendon, J. A. (2000). Having and holding: Storage, memory, knowledge, and social relations. *American Anthropologist* **102**: 42–53.
Hermes, B., Calderón, Z., Pinto, E., and Ugarte, R. (1996). Investigación arqueológica en Nakum, Yaxha y Topoxte, región noreste de Petén. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX Simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 3–24.
Hermes, B., and Velázquez, J. L. (1996). El complejo cerámico Majadas de Kaminaljuyu. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 439–450.
Hofling, C. A. (1996). Indigenous linguistic revitalization and outsider interaction: The Itzaj Maya case. *Human Organization* **55**: 108–116.
Hofling, C. A., and Tesucún, F. (1997). *Itzaj-Maya–Spanish–English Dictionary*, University of Utah Press, Salt Lake City.
Hohmann, H. (1998). *A Maya Palace in Mexico: Structure IV at Becan*, Academic Publishers, Graz.
Hohmann, H. (2000). The palace of Nohkax. *Mexicon* **XXII**: 55–58.
Hostettler, U., and Restall, M. (eds.). (2001). *Maya Survivalism*, Acta Mesoamericana 12, Verlag Anton Saurwein, Markt Schwaben, Germany.
Houston, S. (1997). The shifting now: Aspect, deixis, and narrative in Classic Maya texts. *American Anthropologist* **99**: 291–305.
Houston, S., Chinchilla Mazariegos, O., and Stuart, D. (eds.). (2001). *The Decipherment of Ancient Maya Writing*, University of Oklahoma Press, Norman.
Houston, S., Escobedo, H., Child, M., Golden, C., Muñoz, R., and Urquizú, M. (1999). Monumental architecture at Piedras Negras, Guatemala: Time, history, and meaning. *Mayab* **11**: 40–56.
Houston, S., Escobedo, H., Child, M., Golden, C., Terry, R., and Webster, D. (2000). In the land of the turtle lords: Archaeological investigations at Piedras Negras, Guatemala, 2000. *Mexicon* **XXII**: 97–110.
Houston, S., Escobedo, H., Forsyth, D., Hardin, P., Webster, D., and Wright, L. (1998). On the river of ruins: Explorations at Piedras Negras, Guatemala, 1997. *Mexicon* **XX**: 16–22.
Houston, S., Escobedo, H., Hardin, P., Terry, R., Webster, D., Child, M., Golden, C., Emery, K., and Stuart, D. (1999). Between mountains and sea: Investigations at Piedras Negras, Guatemala, 1998. *Mexicon* **XXI**: 10–17.
Houston, S., Escobedo, H., Terry, R., Webster, D., Veni, G., and Emery, K. F. (2000). Among the river kings: Archaeological research at Piedras Negras, Guatemala, 1999. *Mexicon* **XXII**: 8–17.
Houston, S., Robertson, J., and Stuart, D. (2000). The language of Classic Maya inscriptions. *Current Anthropology* **41**: 321–356.
Houston, S. D., and Stuart, D. (1996). Of gods, glyphs and kings: Divinity and rulership among the Classic Maya. *Antiquity* **70**(268): 289–312.
Houston, S. D., and Stuart, D. (1998). The ancient Maya self: Personhood and portraiture in the Classic period. *Res: Anthropology and Aesthetics* **33**: 73–101.
Huchim Herrera, J., and Toscano Hernández, L. (1999). El cuadrángulo de los pájaros de Uxmal. *Arqueología Mexicana* **VII**(37): 18–23.
Hughbanks, P. J. (1998). Settlement and land use at Guijarral, northwest Belize. *Journal of Culture and Agriculture* **20**: 107–120.
Hughes, C. E., Moshell, J. M., Reed, D., Chase, D. Z., and Chase, A. F. (2001). The Caracol time travel project. *Journal of Visualization and Computer Animation* **12**: 203–214.

Hult, W., and Hester, T. R. (1995). The lithics of Ambergris Caye. In Guderjan, T. H., and Garber, J. F. (eds.), *Maya Maritime Trade, Settlement, and Populations on Ambergris Caye, Belize*, Labyrinthos, Lancaster, CA, pp. 139–161.

Hurst, W. J., Martin, R. A., Jr., Tarka, S. M., Jr., and Hall, G. D. (1989). Authentication of cocoa in Maya vessels using high performance liquid chromatographic techniques. *Journal of Chromatography* **466**: 279–289.

Iannone, G. (2001). Rediscovery of the ancient Maya center of Minanhá, Belize: Background, description, and future prospects. *Mexicon* **XXIII**: 125–129.

Iceland, H. B., and Goldberg, P. (1999). Late-Terminal Classic Maya pottery in northern Belize: A petrographic analysis of sherd samples from Colha and Kichpanha. *Journal of Archaeological Science* **26**: 951–966.

Ichon, A., and Grignon, R. (2000). *El Chagüite, Jalapa: El Período Formativo en el Oriente de Guatemala*, British Archaeological Reports International Series 887, Archaeopress, Oxford.

Inomata, T. (2001). The power and ideology of artistic creation: Elite craft specialists in Classic Maya society. *Current Anthropology* **42**: 321–349.

Inomata, T., and Aoyama, K. (1996). Central-place analyses in the La Entrada region, Honduras: Implications for understanding the Classic Maya political and economic systems. *Latin American Antiquity* **7**: 291–312.

Inomata, T., and Houston, S. D. (eds.). (2001). *Royal Courts of the Ancient Maya*, Westview Press, Boulder, CO.

Inomata, I., and Stiver, L. (1998). Floor assemblages from burned structures at Aguateca, Guatemala: A study of Classic Maya households. *Journal of Field Archaeology* **25**: 431–452.

Inomata, T., and Triadan, D. (2000). Craft production by Classic Maya elites in domestic settings: Data from rapidly abandoned structures at Aguateca, Guatemala. *Mayab* **13**: 57–66.

Islebe, G. A., Hooghiemstra, H., Brenner, M., Curtis, J. H., and Hodell, D. A. (1996). A Holocene vegetation history from lowland Guatemala. *The Holocene* **6**: 265–271.

Jacobi, K. P. (1997). Dental genetic structuring of a Colonial Maya cemetery, Tipu, Belize. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 138–153.

Johnston, K. J., Breckenridge, A. J., and Hansen, B. C. (2001). Paleoecological evidence of an early Postclassic occupation in the southwestern Maya lowlands: Laguna Las Pozas, Guatemala. *Latin American Antiquity* **12**: 149–166.

Jones, C. (1996). *Excavations in the East Plaza of Tikal*, Tikal Report 16, University Museum Monograph 92, University of Pennsylvania, Philadelphia.

Josserand, J. K. (2002). Women in Classic Maya hieroglyphic texts. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 114–151.

Joyce, R. A. (1996). The construction of gender in Classic Maya monuments. In Wright, R. P. (ed.), *Gender and Archaeology*, Unversity of Pennsylvania Press, Philadelphia, pp. 167–195.

Joyce, R. A. (1998). Performing the body in pre-Hispanic Central America. *Res: Anthropology and Aesthetics* **33**: 147–165.

Joyce, R. A., and Gillespie, S. D. (eds.). (2000). *Beyond Kinship: Social and Material Reproduction in House Societies*, University of Pennsylvania Press, Philadelphia.

Justeson, J., and Kaufman, T. (1993). A decipherment of epi-Olmec hieroglyphic writing. *Science* **259**: 1703–1710.

Justeson, J., and Kaufman, T. (1997). A newly discovered column in the hieroglyphic text on La Mojarra Stela 1: A test of the epi-Olmec decipherment. *Science* **277**: 207–210.

Kaplan, J. (1995). The Incienso throne and other thrones from Kaminaljuyu, Guatemala: Late Preclassic examples of a Mesoamerican throne tradition. *Ancient Mesoamerica* **6**: 185–196.

Kaplan, J. (2000). Monument 65: A great emblematic depiction of throned rule and royal sacrifice at Late Preclassic Kaminaljuyu. *Ancient Mesoamerica* **11**: 185–198.

Kepecs, S. (1998). Diachronic ceramic evidence and its social implications in the Chikinchel region, northeastern Yucatan, Mexico. *Ancient Mesoamerica* **9**: 121–135.

Kepecs, S., and Boucher, S. (1996). The pre-Hispanic cultivation of *rejolladas* and stone-lands: New evidence from northeast Yucatán. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 69–91.

Klein, C. F., Guzmán, E., Mandell, E. C., and Stanfield-Mazzi, M. (2002). The role of shamanism in Mesoamerican art: A reassessment. *Current Anthropology* **43**: 383–419.

Koontz, R., Reese-Taylor, K., and Headrick, A. (eds.). (2001). *Landscape and Power in Ancient Mesoamerica*, Westview Press, Boulder, CO.
Kosakowsky, L. (2001). The ceramic sequence from Holmul, Guatemala: Preliminary results from the year 2000 season. *Mexicon* **XXIII**: 85–91.
Kosakowsky, L. J., Estrada Belli, F., and Pettitt, P. (2000). Preclassic through Postclassic: Ceramics and chronology of the southeastern Pacific coast of Guatemala. *Ancient Mesoamerica* **11**: 199–215.
Kosakowsky, L. J., Estrada Belli, F., and Neff, H. (1999). Late Preclassic ceramic interaction spheres: The Pacific coast as core, not periphery. *Journal of Field Archaeology* **26**: 377–390.
Kray, C. A. (1997). *Worship in Body and Spirit: Practice, Self, and Religious Sensibility in Yucatán, Mexico*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.
Kristan-Graham, C. (2001). A sense of place at Chichén Itzá. In Koontz, R., Reese-Taylor, K., and Headrick, A. (eds.), *Landscape and Power in Ancient Mesoamerica*, Westview Press, Boulder, CO, pp. 317–369.
Krochock, R. J. (2002). Women in the hieroglyphic inscriptions of Chichén Itzá. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 152–170.
Kurjack, E. B. (1999). Was Dzibilchaltun a preindustrial city? In Gubler, R. (ed.), *Land of the Turkey and the Deer: Recent Research in Yucatan*, Labyrinthos, Lancaster, CA, pp. 119–128.
Lange, F. W. (1971). Marine resources: A viable subsistence alternative for the Prehistoric lowland Maya. *American Antiquity* **73**: 619–639.
Laporte, J. P. (1996). El concepto de entidad segmentaria en la historia arqueológica del noroeste de las montañas mayas. *Mayab* **10**: 25–32.
Laporte, J. P. (1996). *Organización territorial y política prehispánica en el sureste de Petén*. Atlas Arqueológico de Guatemala, Vol. 4, Instituto de Antropología e Historia, Universidad de San Carlos, Guatemala.
Laporte, J. P. (1996). La población del norte de Verapaz, sur de Petén e Izabal. In *Historia general de Guatemala, Vol. 2*, Fundación para la Cultura y el Desarrollo, Guatemala, pp. 663–672.
Laporte, J. P. (1996). La cuenca del Río Mopan-Belice: una sub-región cultural de las tierras bajas mayas centrales. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 253–279.
Laporte, J. P. (1998). Una perspectiva del desarrollo político prehispánico en el sureste de Petén, Guatemala. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una Civilización, Aproximaciones Interdisciplinarias a la Cultura Maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 131–160.
Laporte, J. P. (2001). Dispersión y estructura de las ciudades del sureste de Petén, Guatemala. In Ciudad Ruiz, A., Iglesias Ponce de León, M. J., and Martínez Martínez, M. (eds.), *Reconstruyendo la ciudad maya: El urbanismo en las sociedades Antiguas*, Sociedad Española de Estudios Mayas, Madrid, pp. 137–161.
Laporte, J. P., and Mejía, H. E. (2001). Los sitios arqueológicos de la cuenca del Río Salsipuedes en el sureste de Petén, Guatemala. *Mexicon* **XXIII**: 65–72.
Laporte, J. P., Morales, P. I., and Valdizón, M. (1997). San Luis Pueblito: un sitio mayor al oeste de Dolores, Petén. *Mexicon* **IX**: 47–51.
LeCount, L. J. (1999). Polychrome pottery and political strategies in Late and Terminal Classic lowland Maya society. *Latin American Antiquity* **10**: 239–258.
LeCount, L. J., Yaeger, J., Leventhal, R. M., and Ashmore, W. (2002). Dating the rise and fall of Xunantunich, Belize: A Late and Terminal Classic lowland Maya regional center. *Ancient Mesoamerica* **13**: 41–63.
Lentz, D. L. (1999). Plant resources of the ancient Maya: The paleoethnobotanical evidence. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 3–18.
Lentz, D. L., Beaudry-Corbett, M. P., Reyna de Aguilar, M. L., and Kaplan, L. (1996). Foodstuffs, forests, fields, and shelter: A paleoethnobotanical analysis of vessel contents from the Cerén site, El Salvador. *Latin American Antiquity* **7**: 247–262.
Lentz, D. L., Ramírez, C. R., and Griscom, B. W. (1997). Formative-period subsistence and forest-product extraction at the Yarumela site, Honduras. *Ancient Mesoamerica* **8**: 63–74.

Lentz, D. L., Reyna de Aguilar, M. L., Villacorta, R., and Marini, H. (1996). *Trachypogon plumosus* (Poaceae, Andropogoneae): Ancient thatch and more from the Cerén site. *Economic Botany* **50**: 108–114.

Levi, L. J. (1996). Sustainable production and residential variation: A historical perspective on pre-Hispanic domestic economies in the Maya lowlands. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 92–106.

Leyden, B. W., Brenner, M., and Dahlin, B. H. (1998). Cultural and climatic history of Cobá: A lowland Maya city in Quintana Roo, Mexico. *Quaternary Research* **49**: 111–122.

Liendo Stuardo, R. (2001). Palenque y su área de sustentación: patrón de asentamiento y organización política en un centro maya del clásico. *Mexicon* **XXIII**: 36–42.

Liljefors Persson, B. (2000). *The Legacy of the Jaguar Prophet: An Exploration of Yucatec Maya Religion and Historiography*, Lund Studies in History of Religions, Vol. 10, Lund University, Sweden.

Lohse, J. C., and Findlay, P. N. (2000). A Classic Maya house-lot drainage system in northwestern Belize. *Latin American Antiquity* **11**: 175–185.

Lombardo de Ruiz, S. (1998). La navegación en la iconografía maya. *Arqueología Mexicana* **VI**(33): 40–47.

Looper, M. (1999). New perspectives on the Late Classic political history of Quirigua, Guatemala. *Ancient Mesoamerica* **10**: 263–280.

Looper, M. G. (2002). Women-men (and men-women): Classic Maya rulers and the third gender. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 171–202.

López Olivares, N. M. (1997). Cultural odontology: Dental alterations from Petén, Guatemala. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 105–115.

Lorenzen, K. J. (1999). New discoveries at Tumben-Naranjal: Late Postclassic reuse and ritual recycling of cultural geography. *Mexicon* **XXI**: 98–107.

Lou, B. (1996). Exploraciones arqueológicas en los espacios intersitios entre Yaxha y Nakum. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 37–49.

Lucero, L. (1999). Classic Lowland Maya political organization: A review. *Journal of World Prehistory* **13**: 211–263.

Lucero, L. J. (2001). *Social Integration in the Ancient Maya Hinterlands: Ceramic Variability in the Belize River Area*, Anthropological Research Paper No. 53, Arizona State University, Tempe.

Macri, M. (1994). The five door temples at Piedras Negras and Palenque. *Mexicon* **XVI**: 100–102.

Macri, M., and Stark, L. M. (1993). *A Sign Catalog of the La Mojarra Script*, Monograph 5, Pre-Columbian Art Research Institute, San Francisco.

Magennis, A. L. (1999). Dietary change at the lowland Maya site of Kichpanha, Belize. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 133–150.

Maldonado, C. R. (1999). Ultimas intervenciones y hallazgos en Dzibilchaltún, Yucatán. *Arqueología Mexicana* **VII**(37): 70–71.

Marcus, J. (1995). Writing, literacy, and performance in the New and Old Worlds. *Cambridge Archaeological Journal* **5**: 325–331.

Marcus, J. (1995). Patrones comunes en varios estados mesoamericanos. In *Los investigadores de la cultura maya, Vol. 1*, Universidad Autónoma de Campeche, Mexico, pp. 185–213.

Marcus, J. (1996). Writing systems. In Levinson, D., and Ember, M. (eds.), *Encyclopedia of Cultural Anthropology, Vol. 4*, Henry Holt, New York, pp. 1387–1391.

Marcus, J. (1999). Men's and women's ritual in Formative Oaxaca. In Grove, D. C., and Joyce, R. A. (eds.), *Social Patterns in Pre-Classic Mesoamerica*, Dumbarton Oaks, Washington, DC, pp. 67–96.

Marcus, J. (2000). Cinco mitos sobre la guerra maya. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and Consejo Nacional para la Cultura y las Artes, Mexico, pp. 225–247.

Marcus, J. (2000). Toward an archaeology of communities. In Canuto, M. A., and Yaeger, J. (eds.), *The Archaeology of Communities: A New World Perspective*, Routledge, London, pp. 231–242.

Marcus, J. (2001). La zona maya en el clásico terminal. In Manzanilla, L., and López Luján, L. (eds.), *Historia antigua de México, vol. II: el horizonte clásico*, Instituto Nacional de Antropología e Historia, Mexico, pp. 301–346.
Marcus, J. (2001). Breaking the glass ceiling: The strategies of royal women in ancient states. In Klein, C. F. (ed.), *Gender in Pre-Hispanic America*, Dumbarton Oaks, Washington, DC, pp. 305–340.
Marcus, J. (2003). The Maya and Teotihuacan. In Braswell, G. E. (ed.), *Teotihuacan and the Ancient Maya: Reinterpreting Early Classic Interaction*, University of Texas Press, Austin.
Marcus, J. (2003). Primary and secondary state formation in southern Mesoamerica. In Bell, E. E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum, University of Pennsylvania, Philadelphia.
Martin, S. (1996). Tikal's "star war" against Naranjo. In Greene Robertson, M., Macri, M., and McHargue, J. (eds.), *Eighth Palenque Round Table, 1993, Vol. IX*, Pre-Columbian Art Research Institute, San Francisco, pp. 223–236.
Martin, S. (1996). Calakmul y el enigma del glifo cabeza de serpiente. *Arqueología Mexicana* **III**(18): 42–45.
Martin, S. (2000). Nuevos datos epigráficos sobre la guerra maya del clásico. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and Consejo Nacional para la Cultura y las Artes, Mexico, pp. 105–124.
Martin, S. (2000). Los señores de Calakmul. *Arqueología Mexicana* **VII**(42): 40–45.
Martin, S., and Grube, N. (1995). Maya superstates. *Archaeology* **48**(6): 41–46.
Martínez, H. G., Cabrera, T., and Monterroso, N. (1996). Urbanismo y diseño arquitectónico en la Plaza Mirador de Kaminaljuyu, Guatemala. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 397–409.
Masson, M. A., and Freidel, D. A. (eds.). (2002). *Ancient Maya Political Economies*, AltaMira Press, Walnut Creek, CA.
Mata, G. (1996). Cilindros amatitlanecos. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 477–486.
Mateos González, F. (1997). *Toniná: la pintura mural y los relieves*, Colección Científica 358,Instituto Nacional de Antropología e Historia, Mexico.
Mathews, J. P. (1998). *The Ties That Bind: The Ancient Maya Interaction Spheres of the Late Preclassic and Early Classic Periods in the Northern Yucatan Peninsula*, Ph.D. Dissertation, University of California, Riverside, University Microfilms, Ann Arbor.
Maxwell, D. (2000). Beyond maritime symbolism: Toxic marine objects from ritual contexts at Tikal. *Ancient Mesoamerica* **11**: 91–98.
May Hau, J., Couoh Muñoz, R., González Heredia, R., and Folan, W. J. (2001). *El mapa de Calakmul*, Centro de Investigaciones Históricas y Sociales, Universidad Autónoma de Campeche, Campeche, Mexico.
McAnany, P. A., and López, S. (1999). Re-creating the Formative Maya village of K'axob: Chronology, ceramic complexes, and ancestors in archaeological context. *Ancient Mesoamerica* **10**: 147–168.
McAnany, P. A., Storey, R., and Lockard, A. K. (1999). Mortuary ritual and family politics at Formative and Early Classic K'axob. *Ancient Mesoamerica* **10**: 129–146.
McAnany, P. A., Thomas, B. S., Morandi, S., Peterson, P. A., and Harrison, E. (2002). Praise the ajaw and pass the *kakaw*: Xibun Maya and the political economy of cacao. In Masson, M., and Freidel, D. (eds.), *Ancient Maya Political Economies*, AltaMira Press, Walnut Creek, CA, pp. 123–139.
McKee, B. R. (1999). Household archaeology and cultural formation processes: Examples from the Cerén site, El Salvador. In Allison, P. M. (ed.), *The Archaeology of Household Activities*, Routledge, London, pp. 30–42.
McKillop, H. (1996). Prehistoric Maya use of native palms: Archaeobotanical and ethnobotanical evidence. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 278–294.
McVicker, D., and Palka, J. W. (2001). A Maya carved shell plaque from Tula, Hidalgo, Mexico: Comparative study. *Ancient Mesoamerica* **12**: 175–197.

Merk, S. (1999). The Maya ruins of Nohkax, Yucatan, Mexico. *Mexicon* **XXI**: 120–121.
Messenger, L. C., Jr. (2002). Los mayas y el niño: paleoclimatic correlations, environmental dynamics, and cultural implications for the ancient Maya. *Ancient Mesoamerica* **13**: 159–170.
Milbrath, S. (1999). *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*, University of Texas Press, Austin.
Miller, M. E. (2000). Guerra y escultura maya: un argumento en favor del tributo artístico. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 175–187.
Millet Cámara, L. (1996). Arqueología de Campeche. *Arqueología Mexicana* **III**(18): 8–13.
Millet Cámara, L. (1999). Los mayas de Yucatán: entre las colinas y el estero. *Arqueología Mexicana* **VII**(37): 4–13.
Mock, S. B. (1994). *The Northern River Lagoon Site (NRL): Late to Terminal Classic Maya Settlement, Saltmaking, and Survival on the Northern Belize Coast*, Ph.D. Dissertation, Department of Anthropology, University of Texas, Austin.
Mock, S. B. (1998). Monkey business at Northern River Lagoon: A coastal–inland interaction sphere in northern Belize. *Ancient Mesoamerica* **8**: 165–184.
Mock, S. B. (ed.). (1998). *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*, University of New Mexico, Albuquerque.
Moholy-Nagy, H. (1997). Middens, construction fill, and offerings: Evidence for the organization of Classic period craft production at Tikal, Guatemala. *Journal of Field Archaeology* **24**: 293–313.
Moholy-Nagy, H. (1999). Mexican obsidian at Tikal, Guatemala. *Latin American Antiquity* **10**: 300–313.
Monaghan, J. (1996). The Mesoamerican community as a "great house." *Ethnology* **35**: 181–194.
Nahm, W. (1994). Maya warfare and the Venus year. *Mexicon* **XVI**: 6–10.
Nahm, W. (1997). Hieroglyphic Stairway 1 at Yaxchilan. *Mexicon* **XIX**: 65–69.
Nalda, E., and Balanzario, S. (1997). La casa maya. *Arqueología Mexicana* **V**(28): 6–13.
Nalda, E., and López Camacho, J. (1995). Investigaciones arqueológicas en el sur de Quintana Roo. *Arqueología Mexicana* **III**(14): 12–25.
Nalda, E., and Velázquez, A. (1995). Kohunlich, Quintana Roo.*Arqueología Mexicana* **II**(11): 84–85.
Neff, H., Cogswell, J. W., Kosakowsky, L. J., Estrada Belli, F., and Bove, F. J. (1999). A new perspective on the relationships among cream paste ceramic traditions of southeastern Mesoamerica. *Latin American Antiquity* **10**: 281–299.
Neff, L. S. (n.d.). *The Archaeology of Agricultural Intensification: A Study of Precolumbian Maya Agricultural Terracing in the Dos Chombitos Area, Belize*, Ph.D. Dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.
Neff, L. S. (2002). Gender divisions of labor and lowland terrace agriculture. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 31–51.
Nelson, S. M. (1997). *Gender in Archaeology: Analyzing Power and Prestige*, AltaMira Press, Walnut Creek, CA.
Newsome, E. A. (2001). *Trees of Paradise and Pillars of the World: The Serial Stela Cycle of "18 Rabbit-God K," King of Copan*, University of Texas Press, Austin.
Ortega, E. R., Suasnávar, J., Velásquez, J. L., and Roldán, J. A. (1996). El montículo La Culebra, Kaminaljuyu: proyectos de rescate arqueológico. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 461–476.
Ortega, L. M., Avendaño, S., Gómez Pompa, A., and Ucan Ek', E. (1993). Los solares de Chunchucmil, Yucatán, México. *Biotica* **1**: 37–51.
Paine, R. R., and Freter, A. (1996). Environmental degradation and the Classic Maya collapse at Copan, Honduras (A.D. 600–1250): Evidence from studies of household survival. *Ancient Mesoamerica* **7**: 37–48.
Paine, R. R., Freter, A., and Webster, D. L. (1996). A mathematical projection of population growth in the Copan Valley, Honduras, A.D. 400–800. *Latin American Antiquity* **7**: 51–60.
Palka, J. W. (1996). Sociopolitical implications of a new emblem glyph and place name in Classic Maya inscriptions. *Latin American Antiquity* **7**: 211–227.

Palka, J. W. (1998). Lacandón Maya culture change and survival in the lowland frontier of the expanding Guatemalan and Mexican republics. In Cusick, J. G. (ed.), *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, Occasional Paper 25, Center for Archaeological Investigations, Southern Illinois University, Carbondale, pp. 457–475.

Palka, J. W. (1999). Classic Maya elite parentage and social structure with insights on ancient gender ideology. In Wicker, N. L., and Arnold, B. (eds.), *From the Ground Up: Beyond Gender Theory in Archaeology, Proceedings of the Fifth Gender and Archaeology Conference*, British Archaeological Reports International Series 812, Archaeopress, Oxford, pp. 41–48.

Palka, J. W. (2000). *Historical Dictionary of Ancient Mesoamerica*, Scarecrow Press, Lanham, MD.

Palka, J. W. (2001). Ancient Maya defensive barricades, warfare, and site abandonment. *Latin American Antiquity* **12**: 427–430.

Paulinyi, Z. (2001). Los señores con tocado de borlas: un estudio sobre el estado teotihuacano. *Ancient Mesoamerica* **12**: 1–30.

Pendergast, D. M. (1998). Intercession with the gods: Caches and their significance at Altun Ha and Lamanai, Belize. In Mock, S. B. (ed.), *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*, University of New Mexico Press, Albuquerque, pp. 55–63.

Pincemin, S., Marcus, J., Florey Folan, L., Folan, W. J., Domínguez Carrasco, M., and Morales López, A. (1998). Extending the Calakmul dynasty back in time: A new stela from a Maya capital in Campeche, Mexico. *Latin American Antiquity* **9**: 310–327.

Popenoe de Hatch, M. (1997). *Kaminaljuyu/San Jorge: Evidencia Arqueológica de la Actividad Económica en el valle de Guatemala, 300 a.C. a 300 d.C.*, Universidad del Valle, Guatemala.

Popenoe de Hatch, M., Ponciano, E., Barrientos, T., Brenner, M., and Ortloff, C. (2002). Climate and technological innovation at Kaminaljuyu, Guatemala. *Ancient Mesoamerica* **13**: 103–114.

Powis, T. G., and Hohmann, B. (1995). From private household to public ceremony: Middle Formative occupation at the Tolok group, Cahal Pech, Belize. In Healy, P. F., and Awe, J. J. (eds.), *Belize Valley Preclassic Maya Project: Report on the 1994 Field Season*, Occasional Papers in Anthropology 10, Trent University, Peterborough, Ontario.

Powis, T. G., Valdez, F., Jr., Hester, T. R., Hurst, W. J., and Tarka, S. M., Jr. (2002). Spouted vessels and cacao use among the Preclassic Maya. *Latin American Antiquity* **13**: 85–106.

Pugh, T. W. (2001). Flood reptiles, serpent temples, and the quadripartite universe: The *imago mundi* of Late Postclassic Mayapan. *Ancient Mesoamerica* **12**: 247–258.

Pyburn, K. A. (1998). Smallholders in the Maya lowlands: Homage to a garden variety ethnographer. *Human Ecology* **26**: 267–286.

Pyburn, K. A. (1998). Consuming the Maya. *Dialectical Anthropology* **23**: 111–129.

Pyburn, K. A. (1999). Repudiating witchcraft. In Sweely, T. L. (ed.), *Manifesting Power: Gender and the Interpretation of Power in Archaeology*, Routledge, London, pp. 190–197.

Pyburn, K. A., Dixon, B., Cook, P., and McNair, A. (1998). The Albion Island settlement pattern project: Domination and resistance in Early Classic northern Belize. *Journal of Field Archaeology* **25**: 37–62.

Quintal Suaste, B. (1999). Los mascarones de Acanceh. *Arqueología Mexicana* **VII**(37): 14–17.

Reed, D. M. (1999). Cuisine from Hun-Nal-Ye. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 183–196.

Reed, N. (2001). *The Caste War of Yucatan*, Stanford University Press, Stanford, CA.

Reents-Budet, D. (1994). *Painting the Maya Universe*, Duke University Press, Durham, NC.

Reents-Budet, D. (1997). Cerámica maya. *Arqueología Mexicana* **V**(28): 20–29.

Reents-Budet, D., Bishop, R. L., Taschek, J. T., and Ball, J. W. (2000). Out of the palace dumps: Ceramic production and use at Buenavista del Cayo. *Ancient Mesoamerica* **11**: 99–121.

Remmers, G., and de Koeijer, H. (1992). The *t'olche'*, a Maya system of communally managed forest belts. *Agroforestry Systems* **18**: 149–177.

Restall, M. (1997). *The Maya World: Yucatec Culture and Society 1550–1850*, Stanford University Press, Stanford, CA.

Rice, D. S. (1996). Paleolimnological analysis in the central Petén, Guatemala. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 193–206.

Rice, P. (1996). Postclassic censers around Lake Petén Itzá, Guatemala. In Mastache, A. G., Parsons, J. R., Santley, R. S., and Serra Puche, M. C. (eds.), *Arqueología Mesoamericana: homenaje a*

William T. Sanders, Vol. II, Instituto Nacional de Antropología e Historia, Mexico City, pp. 123–136.
Ringle, W. (1999). Pre-Classic cityscapes: Ritual politics among the early lowland Maya. In Grove, D. C., and Joyce, R. A. (eds.), *Social Patterns in Pre-Classic Mesoamerica*, Dumbarton Oaks, Washington, DC, pp. 183–223.
Ringle, W. M., Gallareta Negrón, T., and Bey, G. J., III (1998). The return of Quetzalcoatl: Evidence for the spread of a world religion during the Epiclassic period. *Ancient Mesoamerica* **9**: 183–232.
Rivero Torres, S. (1999). Montículo 1 del sitio arqueológico Lagartero, Mpio. La Trinitaria, Chiapas. *Mexicon* **XXI**: 58–61.
Robin, C. (2001). Kin and gender in Classic Maya society: A case study from Yaxchilan, Mexico. In Stone, L. (ed.), *New Directions in Anthropological Kinship*, Rowman and Littlefield, Lanham, MD, pp. 204–228.
Rodríguez Campero, O. (2000). La gran plaza de Calakmul. *Arqueología Mexicana* **VII**(42): 22–27.
Romero, M. E., and Riqué Flores, J. H. (1995). Explorando un nuevo sitio, Chacchoben, Quintana Roo. *Arqueología Mexicana* **III**(15): 71–72.
Rovner, I., and Lewenstein, S. M. (1997). *Maya Stone Tools of Dzibilchaltun, Yucatan, and Becan and Chicanna, Campeche*, Publication 65, Middle American Research Institute, Tulane University, New Orleans.
Sabloff, J. A. (1996). Settlement patterns and community organization in the Maya lowlands. *Expedition* **38**(1): 3–13.
Sabloff, J. A. (1997). The *Cities of Ancient Mexico: Reconstructing a Lost World*, Rev. edn., Thames and Hudson, New York.
Sanchez, J. L. (1997). *Royal Strategies and Audience: An Analysis of Classic Maya Monumental Art*, Ph.D. Dissertation, Department of Anthropology, University of California, Los Angeles.
Sanders, W. T., and Webster, D. (1994). Preindustrial man and environmental degradation. In Kim, K. C., and Weaver, R. (eds.), *Biodiversity and Landscapes: A Paradox of Humanity*, Cambridge University Press, Cambridge, pp. 77–104.
Santley, R. S., and Hirth, K. G. (eds.). (1993). *Prehispanic Domestic Units in Western Mesoamerica: Studies in Household, Compound, and Residence*, CRC Press, Boca Raton, FL.
Saturno, W. A. (2000). *In the Shadow of the Acropolis: Investigations at Río Amarillo, Copán Valley*, Ph.D. Dissertation, Department of Anthropology, Harvard University, Cambridge.
Scarborough, V. L. (1994). Maya water management. *Research and Exploration* **10**: 184–199.
Scarborough, V. L. (1996). Reservoirs and watersheds in the central Maya lowlands. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 304–314.
Scarborough, V. L., Becher, M. E., Baker, J. L., Harris, G., and Valdez, F., Jr. (1995). Water and land at the ancient Maya community of La Milpa. *Latin American Antiquity* **6**: 98–119.
Scarborough, V., Connolly, R. P., and Ross, S. P. (1994). The pre-Hispanic Maya reservoir system at Kinal, Peten, Guatemala. *Ancient Mesoamerica* **5**: 97–106.
Schmidt, P., de la Garza, M., and Nalda, E. (eds.). (1998). *Maya*, Rizzoli, New York.
Schortman, E. M., and Urban, P. (1995). Late Classic society in the middle Ulua drainage, Honduras. *Journal of Field Archaeology* **22**: 439–457.
Schortman, E. M., and Urban, P. (1998). Culture contact structure and process. In Cusick, J. (ed.), *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, Occasional Paper No. 25, Center for Archaeological Investigations, Southern Illinois University, Carbondale, pp. 102–125.
Schumann, O. (2000). *Introducción al maya itzá*, Universidad Nacional Autónoma de México, Mexico.
Schuster, A. M. H. (1997). The search for site Q. *Archaeology* **50**(5): 42–45.
Schwarcz, H. P. (2000). Some biochemical aspects of carbon isotopic paleodiet studies. In Ambrose, S. H., and Katzenberg, M. A. (eds.), *Biogeochemical Approaches to Paleodietary Analysis*, Kluwer Academic/Plenum, New York, pp. 189–209.
Schwartz, M. (1997). *A History of Dogs in the Early Americas*, Yale University Press, New Haven.
Schwartz, N. B. (1995). Colonization, development, and deforestation in Petén, northern Guatemala. In Painter, M., and Durham, W. H. (eds.), *The Social Causes of Environmental Destruction in Latin America*, University of Michigan Press, Ann Arbor, pp. 101–130.

Seele, E. (2001). Hipótesis sobre el medio ambiente maya: consecuencias de una catástrofe natural en la península de Yucatán/México. *Mexicon* **XXIII**: 92–101.
Sharer, R. J. (2000). The Maya highlands and Pacific coast. In Adams, R. E. W., and MacLeod, M. J. (eds.), *The Cambridge History of the Native Peoples of the Americas*, Cambridge University Press, Cambridge, pp. 449–499.
Sharer, R. J. (2003). Founding events and Teotihuacan connections at Copan, Honduras. In Braswell, G. (ed.), *Teotihuacan and the Maya: Reinterpreting Early Classic Interaction*, University of Texas Press, Austin.
Sharer, R. J. (2003). Early Classic Copan and external interaction. In Bell, E., Canuto, M. A., and Sharer, R. J. (eds.), *Understanding Early Classic Copan*, University Museum Publications, University of Pennsylvania, Philadelphia.
Sharer, R. J. (2003). Tikal and the Copan dynastic founding. In Sabloff, J. A. (ed.), *Tikal: Dynasties, Foreigners, and Affairs of State*, School of American Research Press, Santa Fe, NM.
Sharer, R. J., Sedat, D. W., Traxler, L. P., and Miller, J. C. (in press). Early Classic royal power in Copan: The origins and development of the acropolis (ca. A.D. 250–650). In Fash, W. L., and Andrews, E. W. (eds.), *Copan: The Rise and Fall of a Classic Maya Kingdom*, School of American Research Press, Santa Fe, NM.
Shaw, J. M. (1998). *The Community Settlement Patterns and Residential Architecture of Yaxuna From A.D. 600–1400*, Ph.D. Dissertation, Department of Anthropology, Southern Methodist University, Dallas, TX.
Shaw, J. M. (2001). Maya *sacbeob*: Form and function. *Ancient Mesoamerica* **12**: 261–272.
Shaw, J. M., and Johnstone, D. (2001). The Late Classic at Yaxuna, Yucatan, Mexico. *Mexicon* **XXIII**: 10–14.
Smith, J. G. (2001). Preliminary report of the Chichen Itza–Ek Balam transect project. *Mexicon* **XXIII**: 30–35.
Smith, M. E. (1992). Braudel's temporal rhythms and chronology theory in archaeology. In Knapp, A. B. (ed.), *Archaeology, Annales, and Ethnohistory*, Cambridge University Press, Cambridge, pp. 23–34.
Smith, M. E. (1992). Rhythms of change in Postclassic central Mexico: Archaeology, ethnohistory, and the Braudelian model. In Knapp, A. B. (ed.), *Archaeology, Annales, and Ethnohistory*, Cambridge University Press, Cambridge, pp. 51–74.
Smith, T. J. (2002). Skipping years and scribal errors: Kaqchikel Maya timekeeping in the fifteenth, sixteenth, and seventeenth centuries. *Ancient Mesoamerica* **13**: 65–76.
Solís Robleda, G. (1995). Gonzalo Guerrero entre los mayas. *Arqueología Mexicana* **II**(11): 62–65.
Stanton, T. W. (2000). *Heterarchy, Hierarchy, and the Emergence of the Northern Lowland Maya: A Study of Complexity at Yaxuna, Yucatan, Mexico (400 B.C.–A.D. 600)*, Ph.D. Dissertation, Department of Anthropology, Southern Methodist University, University Microfilms, Ann Arbor, MI.
Stanton, T. W., and Gallareta Negrón, T. (2001). Warfare, ceramic economy, and the Itza: A reconsideration of the Itza polity in ancient Yucatan. *Ancient Mesoamerica* **12**: 229–245.
Stemp, W. J. (2001). *Chipped Stone Tool Use in the Maya Coastal Economics of Marco Gonzalez and San Pedro, Ambergris Caye, Belize*, John and Eric Hedges, Oxford, England.
Stomper, J. A. (2001). A model for Late Classic community structure at Copán, Honduras. In Koontz, R., Reese-Taylor, K., and Headrick, A. (eds.), *Landscape and Power in Ancient Mesoamerica*, Westview Press, Boulder, CO, pp. 197–229.
Stone, A. (1999). Architectural innovation in the Temple of the Warriors at Chichen Itza. In Kowalski, J. K. (ed.), *Mesoamerican Architecture as a Cultural Symbol*, Oxford University Press, New York, pp. 298–319.
Storey, R. (1997). Individual frailty, children of privilege, and stress in Late Classic Copán. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 116–126.
Storey, R. (1999). Late Classic nutrition and skeletal indicators at Copán, Honduras. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, UT, pp. 169–179.
Stross, B. (1998). Seven ingredients in Mesoamerican ensoulment: Dedication and termination in Tenejapa. In Mock, S. B. (ed.), *The Sowing and the Dawning: Termination, Dedication, and*

Transformation in the Archaeological and Ethnographic Record of Mesoamerica, University of New Mexico Press, Albuquerque, pp. 31–39.
Suhler, C., Ardren, T., and Johnstone, D. (1998). The chronology of Yaxuna: Evidence from excavation and ceramics. *Ancient Mesoamerica* **9**: 167–182.
Suhler, C., and Freidel, D. (1998). Life and death in a Maya war zone. *Archaeology* **51**(3): 28–34.
Suhler, C., and Freidel, D. (2000). Rituales de terminación: implicaciones de la guerra maya. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 73–103.
Sweely, T. L. (1998). Personal interactions: The implications of spatial arrangements for power relations at Cerén, El Salvador. *World Archaeology* **29**: 393–406.
Sweely, T. L. (1999). Gender, space, people and power at Cerén, El Salvador. In Sweely, T. L. (ed.), *Manifesting Power: Gender and the Interpretation of Power in Archaeology*, Routledge, London, pp. 155–171.
Taschek, J., and Ball, J. W. (1999). The ruins of Arenal: Preliminary report on a subregional major center in the western Belize Valley. *Ancient Mesoamerica* **10**: 215–235.
Tate, C. (1999). Writing on the face of the moon: Women's products, archetypes, and power in ancient Maya civilization. In Sweely, T. L. (ed.), *Manifesting Power: Gender and the Interpretation of Power in Archaeology*, Routledge, London, pp. 81–102.
Taube, K. (1998). The jade hearth: Centrality, rulership, and the Classic Maya temple. In Houston, S. (ed.), *Function and Meaning in Classic Maya Architecture*, Dumbarton Oaks, Washington, DC, pp. 427–478.
Thompson, P. C. (1999). *Tekanto, a Maya Town in Colonial Yucatan*, Publication 67, Middle American Research Institute, Tulane University, New Orleans.
Tiesler Blos, V. (1998). *La costumbre de la deformación cefálica entre los antiguos mayas: aspectos morfológicos y culturales*, Colección Científica 377, Serie Arqueología, Instituto Nacional de Antropología e Historia, Mexico.
Tourtellot, G., and Hammond, N. (1998). Crecimiento y ritual en La Milpa, Belice. In Ciudad Ruiz, A., Fernández Marquínez, Y., García Campillo, J. M., Iglesias Ponce de León, M. J., Lacadena García-Gallo, A., and Sanz Castro, L. T. (eds.), *Anatomía de una civilización: aproximaciones interdisciplinarias a la cultura maya*, Sociedad Española de Estudios Mayas, Madrid, pp. 185–205.
Tourtellot, G., Rose, J. J., Grube, N., Donaghey, S., and Hammond, N. (1994). More light on La Milpa: Maya settlement archaeology in northwestern Belize. *Mexicon* **XVI**: 119–124.
Tourtellot, G., Rose, J. J., and Hammond, N. (1996). Maya settlement survey at La Milpa, Belize 1994. *Mexicon* **XVIII**: 8–11.
Tourtellot, G., and Sabloff, J. A. (1995). La antigua ciudad maya de Sayil. *Arqueología Mexicana* **II**(11): 28–34.
Tourtellot, G., Wolf, M., Estrada Belli, F., and Hammond, N. (2000). Discovery of two predicted ancient Maya sites in Belize. *Antiquity* **74**: 481–482.
Triadan, D. (2000). Elite household subsistence at Aguateca, Guatemala. *Mayab* **13**: 46–56.
Urban, P., Schortman, E., and Ausec, M. (2002). Power without bounds? Middle Preclassic political developments in the Naco Valley, Honduras. *Latin American Antiquity* **13**: 131–152.
Urban, P. A., and Schortman, E. M. (2000). The Proyecto Valle de Cacaulapa, northwestern Honduras: Archaeological investigations conducted during the 1999 field season. Unpublished manuscript on file, Department of Anthropology, Kenyon College, Gambier, OH.
Vail, G. (2000). Pre-Hispanic Maya religion: Conceptions of divinity in the Postclassic Maya codices. *Ancient Mesoamerica* **11**: 123–147.
Vail, G., and Stone, A. (2002). Representations of women in Postclassic and Colonial Maya literature and art. In Ardren, T. (ed.), *Ancient Maya Women*, AltaMira Press, Walnut Creek, CA, pp. 203–228.
Valdés, J., and Fahsen, F. (1995). The reigning dynasty of Uaxactun during the Early Classic: The rulers and the ruled. *Ancient Mesoamerica* **6**: 197–219.
Valdés, J. A., and Popenoe de Hatch, M. (1996). Evidencias de poder y control social en Kaminaljuyu: proyecto arqueológico Miraflores II. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 1*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 377–396.

Vargas de la Peña, L., and Castillo Borges, V. R. (1999). Ek' Balam: ciudad que empieza a revelar sus secretos. *Arqueología Mexicana* **VII**(37): 24–31.
Velásquez, J. L., and Hermes, B. (1996). El proyecto evolutivo del centro de El Salvador: su secuencia de ocupación y relaciones. In Laporte, J. P., and Escobedo, H. L. (eds.), *IX simposio de investigaciones arqueológicas en Guatemala, 1995, Vol. 2*, Museo Nacional de Arqueología y Etnología, Ministerio de Cultura y Deportes, Guatemala, pp. 619–648.
Velázquez Morlet, A. (1995). Cosmogonía y vida cotidiana en Kohunlich. *Arqueología Mexicana* **III**(14): 32–36.
Viel, R. H. (1999). The pectorals of Altar Q and Structure 11: An interpretation of the political organization at Copan, Honduras. *Latin American Antiquity* **10**: 377–399.
Villa Roiz, C. (1995). *Gonzalo Guerrero: memoria olvidada*, Plaza y Valdés, Mexico City.
Vogt, E. Z., and Ruz Lhuillier, A. (eds.). (1964). *Desarrollo cultural de los mayas*, Universidad Nacional Autónoma de México, Mexico.
Wagner, E. (1995). The dates of the high priest grave ("osario") inscription, Chichen Itza, Yucatan. *Mexicon* **XVII**: 10–13.
Wanyerka, P. (1996). The carved monuments of Uxbenka, Toledo District, Belize. *Mexicon* **XVIII**: 29–36.
Webster, D. (1997). Studying Maya burials. In Whittington, S. L., and Reed, D. M. (eds.), *Bones of the Maya: Studies of Ancient Skeletons*, Smithsonian Institution Press, Washington, DC, pp. 3–12.
Webster, D. (1998). Warfare and status rivalry: Lowland Maya and Polynesian comparisons. In Feinman, G. M., and Marcus, J. (eds.), *Archaic States*, School of American Research Press, Santa Fe, NM, pp. 311–352.
Webster, D. (1999). The archaeology of Copan, Honduras. *Journal of Archaeological Research* **7**: 1–53.
Webster, D. (2000). The not so peaceful civilization: A review of Maya war. *Journal of World Prehistory* **14**: 65–119.
Webster, D. (2000). Rivalidad, faccionalismo y guerra maya durante el clásico tardío. In Trejo, S. (ed.), *La guerra entre los antiguos mayas: memoria de la Primera Mesa Redonda de Palenque*, Instituto Nacional de Antropología e Historia and the Consejo Nacional para la Cultura y las Artes, Mexico, pp. 17–38.
Webster, D., Gonlin, N., and Freter, A. (2000). *Copan: The Rise and Fall of an Ancient Maya Kingdom*, Harcourt Brace, Fort Worth, TX.
Wells, E. C., Terry, R. E., Parnell, J. J., Hardin, P. J., Jackson, M. W., and Houston, S. D. (2000). Chemical analyses of ancient anthrosols in residential areas at Piedras Negras, Guatemala. *Journal of Archaeological Science* **27**: 449–462.
White, C. D., Healy, P. F., and Schwarcz, H. P. (1993). Intensive agriculture, social status, and Maya diet at Pacbitun, Belize. *Journal of Anthropological Research* **49**: 347–375.
White, C. D., Pohl, M. E. D., Schwarcz, H. P., and Longstaffe, F. J. (2001). Isotopic evidence for Maya patterns of deer and dog use at Preclassic Colha. *Journal of Archaeological Science* **28**: 89–107.
White, C. D., and Schwarcz, H. P. (1989). Ancient Maya diet: As inferred from isotopic and elemental analysis of human bone. *Journal of Archaeological Science* **16**: 451–474.
White, C. D., Wright, L. E., and Pendergast, D. M. (1994). Biological disruption in the Early Colonial period at Lamanai. In Larsen, C. S., and Milner, G. R. (eds.), *In the Wake of Contact: Biological Responses to Conquest*, Wiley-Liss, New York, pp. 135–145.
Whitley, J. (2002). Too many ancestors. *Antiquity* **76**(291): 119–126.
Whitmore, T. J., Brenner, M., Curtis, J. H., Dahlin, B. H., and Leyden, B. W. (1996). Holocene climatic and human influences on lakes of the Yucatan Peninsula, Mexico: An interdisciplinary paleolimnological approach. *Holocene* **6**: 273–287.
Whittington, S. L. (1992). Enamel hypoplasia in the low status Maya population of Prehispanic Copan, Honduras. In Goodman, A. H., and Capasso, L. L. (eds.), *Recent Contributions to the Study of Enamel Developmental Defects*, Monographic Publications 2. Journal of Paleopathology, Edigrafitae, Teramo, Italy, pp. 185–205.
Whittington, S. L. (1999). Caries and antemortem tooth loss at Copán: Implications for commoner diet. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 151–167.
Whittington, S. L., and Reed, D. M. (1994). Los esqueletos de Iximché. In Laporte, J. P., and Escobedo, H. L. (eds.), *VII simposio de investigaciones arqueológicas en Guatemala*, 1993, Museo Nacional de Arqueología y Etnología, Guatemala, pp. 23–28.

Wilson, S. M., Iceland, H. B., and Hester, T. R. (1998). Preceramic connections between Yucatan and the Caribbean. *Latin American Antiquity* **9**: 342–252.

Wingard, J. D. (1996). Interactions between demographic processes and soil resources in the Copán Valley, Honduras. In Fedick, S. L. (ed.), *The Managed Mosaic: Ancient Maya Agriculture and Resource Use*, University of Utah Press, Salt Lake City, pp. 207–235.

Witschey, W. R. T. (1993). *The Archaeology of Muyil, Quintana Roo, Mexico: A Maya Site on the East Coast of the Yucatan Peninsula*, Ph.D. Dissertation, Department of Anthropology, Tulane University, University Microfilms, Ann Arbor, MI.

Wright, L. (1994). *The Sacrifice of the Earth? Diet, Health, and Inequality in the Pasión Maya Lowlands*, Ph.D. Dissertation, Department of Anthropology, University of Chicago, Chicago.

Wright, L. E. (1999). The elements of Maya diets: Alkaline earth baselines and paleodietary reconstruction in the Pasión region. In White, C. D. (ed.), *Reconstructing Ancient Maya Diet*, University of Utah Press, Salt Lake City, pp. 197–219.

Wright, L. E., and Chew, F. (1999). Porotic hyperostosis and paleoepidemiology: A forensic perspective on anemia among the ancient Maya. *American Anthropologist* **100**: 924–939.

Wright, L. E., and Schwarcz, H. P. (1996). Infrared and isotopic evidence for diagenesis of bone apatite at Dos Pilas, Guatemala: Paleodietary implications. *Journal of Archaeological Science* **23**: 933–944.

Wright, L. E., and Schwarcz, H. P. (1999). Correspondence between stable carbon, oxygen and nitrogen isotopes in human tooth enamel and dentine: Infant diets and weaning at Kaminaljuyú. *Journal of Archaeological Science* **26**: 1159–1170.

Wright, L. E., and White, C. D. (1996). Human biology in the Classic Maya collapse: Evidence from paleopathology and paleodiet. *Journal of World Prehistory* **10**: 147–198.

Wright, R. P. (ed.) (1996). *Gender and Archaeology*, University of Pennsylvania Press, Philadelphia.

Yadeun, J. (1994). Toniná: espacio sagrado de la guerra celeste. *Arqueología Mexicana* **II**(8): 24–31.

Yaeger, J. (2000). The social construction of communities in the Classic Maya countryside: Strategies of affiliation in western Belize. In Canuto, M. A., and Yaeger, J. (eds.), *The Archaeology of Communities: A New World Perspective*, Routledge, London, pp. 123–142.

Yaeger, J., and Robin, C. (in press). Heterogeneous hinterlands: The social and political organization of commoner settlements near Xunantunich, Belize. In Lohse, J., and Valdez, F. (eds.), *Ancient Maya Commoners*, University of Texas Press, Austin.