ALBERT RECKITT ARCHAEOLOGICAL LECTURE

Recovering Maya Civilisation

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THE MAYA CREATED one of the most notable and surprising civilisations of the ancient world, in what are now the Yucatan Pensinsula of southern Mexico and the adjacent countries of Guatemala, Belize, and the western fringes of Honduras and El Salvador. Best known from great cities such as Tikal, Copan, Palenque and Chichén Itzá, which were first explored in the nineteenth century by scholars including John Lloyd Stephens, Alfred Maudslay and Teobert Maler, the Maya reached their apogee in the Classic Period of *c.* AD 250–900, when a multiplicity of small polities ruled by divine kings flourished and fought across this part of tropical Central America (Hammond 2000; Martin and Grube 2000; Sharer 2006; Fig. 1). This was followed by the Postclassic, ending with the Spanish conquest of the mid-sixteenth century, and preceded by a Preclassic (or Formative) period extending back to the beginnings of settled farming villages in the second millennium BC. In this lecture I discuss three successive themes: the origins of a settled society; the emergence of a complex literate civilisation in the latter part of the first millennium BC in the Maya Lowlands; and the wider understanding of that culture's apogee in the middle centuries of the following millennium, before its demise in the tenth century AD.

The Maya area has three major regions: the volcanic and metamorphic highlands of Chiapas and southern Guatemala, extending down to the narrow Pacific coastal plain and dominated by a chain of dormant and still-active volcanoes up to 4,265 m in elevation; the flat, arid limestone platform of the northern Yucatan Peninsula, where annual rainfall

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Figure 1. The Maya Area, with the locations of important sites (from Sharer 2006).

rarely exceeds 500 mm, supporting a low scrub forest, and where the karstic landscape allows access to water only through sinkholes (*cenotes*) and caves reaching the subterranean water table; and the central region of Belize, the Petén of northern Guatemala, and northern Chiapas. In this area of hilly limestone ranges there is abundant rainfall (up to 4,000 mm), mainly in the June–November wet season, large permanent rivers such as the Usumacinta, the Río Hondo, and the Belize River, and a tropical rain forest vegetation with a canopy up to 40 m above the forest floor (Hammond 1982: 67–90).

Initial human penetration of the region occurred around 10,000 years ago, marked by scattered finds of Clovis-style spear-points (Hester *et al.* 1981; Gruhn and Bryan 1977; Zeitlin and Zeitlin 2000). Archaic hunter-collectors in later millennia were detected by MacNeish (Zeitlin and Zeitlin 2000) and subsequently by Rosenswig and Masson (2001) and Lohse *et al.* (2006) in Belize, and documented stratigraphically in Pacific Chiapas by Voorhies (2004). The first forest clearance by maize farmers occurred around 3500 BC on the Pacific coast and 2500 BC in Belize, documented by pollen cores but not so far by settlement sites.

Agriculture began late in Mesoamerica compared with the Old World: the single cereal staple, maize (*Zea mays*), was domesticated from *teosinte* (*Zea mexicana*) in central Mexico, and cultivated by around 5300 BC in Tabasco (Pohl *et al.* 2007), prior to 4000 BC in Oaxaca (Piperno and Flannery 2001) and in the high, dry Tehuacan Valley by 3600 BC, appearing in the humid tropical lowlands of the Maya area shortly thereafter, where farming necessitated forest clearance. Neff and colleagues (2006), coring along the lower Río Naranjo on the Pacific coast of Guatemala have found *landnám* events with dramatic vegetation changes beginning around 3500 BC, and becoming permanent around 1800–1500 BC as settled village culture began, in an era of drier climate. Investigations at Paso de la Amada in coastal Chiapas have documented this process, including early ceramics of the Barra complex, marked by highly decorated jars and bowls, perhaps used for brewing and consuming maize beer (*chicha*) in rites of social solidarity or competitive generosity (Clark and Blake 1994). Blake and Clark (1999) argue that the initial emergence of social inequality is a by-product of powerful men trying to increase their prestige vis-à-vis their local rivals, using material inducements such as feasting to acquire adherents and instil a sense of obligation (the 'big men' of Melanesia and the potlatchers of the Pacific Northwest are noted ethnographic examples, while the social mechanism involved applies almost universally). For such inequality to become hereditary, overcoming the

homœostatic mechanisms that preserve egalitarian societies, symbolic alliances with potential rivals, a reliable surplus to fund continued loyalty, and a move to descent-based vertical, not horizontal association, are needed.

Structures at Paso de la Amada included a large apsidal house platform (Mound 6) with multiple construction phases supporting a timber-framed and palm-thatched superstructure, arguably a chiefly residence rather than a communal building. Lesure and Blake (2002: 21) argue, however, that the status differences indicated by house sizes are 'not linked to the sort of economic powers and privileges with which we might normally expect such a degree of differentiation to appear: the high-status inhabitants of platform buildings did not constitute a fully formed, coercive class'. A large ball court dating to *c.*1400 BC, the construction of which was certainly the result of directed collective action, suggests the emergence of factional and perhaps inter-community competition.

In the Maya Lowlands to the north, this process of settlement seems to have begun around a millennium later: Pohl *et al.* (1996) at Cob Swamp and Pulltrouser Swamp in northern Belize, and Wahl *et al.* (2006) in the Mirador Basin of northern Petén both see a *landnám* horizon around 2600–2500 BC, in which forest disturbance and the pollen of cultigens such as maize and manioc (*Manihot esculenta*) suggest human presence. The Cob-3 pollen core (Pohl *et al.* 1996: fig. 4) shows a dramatic coincident rise in particulate charcoal, diminution of tree pollen, rise in weed pollen and appearance of cultigens around this time: a single grain of manioc pollen at *c.*3500 BC may indicate earlier forest horticulture. A core from Lake Salpetén in the central Petén documents forest loss and soil erosion from 1700 BC onwards (Rosenmeier *et al.* 2002), but for much of the second millennium BC the environmental evidence for Maya occupation, forest clearance and agriculture is not matched by known settlement sites, except for Puerto Escondido on the eastern margin of the Maya area in Honduras, which may be as early as 1600 BC (Joyce and Henderson 2001).

Such villages in the central zone are present by 1200 BC. Cuello in northern Belize remains the earliest so far discovered (Hammond 1991*a*, 2005), although earlier sites undoubtedly exist in the region: Cuello was set in an already open and disturbed agricultural landscape, and its people used pottery in an established and distinctive ceramic tradition (Kosakowsky and Pring 1998) which developed and diversified in similar settlements across northern Belize, such as K'axob (McAnany 2004). Both Blackwater Eddy and Cahal Pech in the Belize River valley have yielded radiocarbon dates in the same late second/early first millennium

BC span, associated with the newly documented Cunil ceramic complex (Garber 2004). A suite of regional pottery styles appears across the Petén and Belize, including the Swasey and Bladen in northern Belize, Cunil on the Belize River, Eb in the northeastern Petén around Tikal, and Xe on the Río de la Pasión at Altar de Sacrificios and Seibal. Yucatán seems to lack village settlements until later in the first millennium BC, but the density and complexity of settlement, with public architecture including many ballcourts, from 700 BC onwards are striking (Andrews and Robles 2004: 8–9).

Cuello, excavated between 1975 and 2002 (Hammond 1991*a*, 2005), documents the development of domestic architecture (Gerhardt 1988), stone-tool technology, pottery (Kosakowsky and Pring 1998), and a subsistence economy based on maize, root crops (Hather and Hammond 1994), deer hunting and domesticated dog (Clutton-Brock and Hammond 1994), in a Middle Preclassic tradition clearly antecedent to the more complex societies of the Late Preclassic and Classic periods. The presence of roller-stamps bearing abstract designs and what may be early forms of notation suggest the emergence of forms of symbolic expression by 900 BC, while the coeval use of bark-beaters indicates the possibility of bark paper as a vehicle for such symbols (Hammond 2006): bark-paper codices are attested from at least the Early Classic period, although the only surviving examples are of Postclassic date, and were used as almanacs and planetary tables; ethnohistoric evidence suggests a wider range of subjects including historical chronicles. The first special-purpose buildings also appeared at Cuello around 900 BC, notably a sweatbath similar to that of some 1500 years later at Cerén in El Salvador, well-preserved under the volcanic ash of an eruption around AD 590 (Hammond and Bauer 2001; Sheets 2006: figs 6–7, 6–8). Such sauna-like structures continued throughout the prehispanic period across Mesoamerica—the Aztec *temezcal* was used for both practical and ritual cleansing, as the earlier Maya examples probably had been also—and are still built today in the highlands of Guatemala. The pattern of village life observed at Middle and Late Preclassic Cuello is one which persisted for more than two millennia and is still visible in many essentials today.

The conflicts of the 1980s over whether the ancient Maya had intensive agriculture have died down, leaving a consensus that shifting slash-and-burn (*milpa*) farming as practised historically was a major subsistence method, albeit with shorter-term fallow and more labour investment per unit area. Maize was the one cereal staple, but so genetically plastic as to allow rapid enhancement of kernel and cob size and overall yield: the

development of the Nal-Tel and Chapalote strains in the Late Preclassic allowed the emergence of larger and more densely populated Maya communities. Although the thesis that breadnut (*ramón*; *Brosimum alicastrum*) was another staple, harvested from urban orchards, has failed from lack of evidence—it seems to have been a famine food at best—root crops were a source of carbohydrates undervalued by scholars because of the difficulty of recovering macroscopic remains, given the loose fibrous structure of the tubers and the traditional methods of preparing and cooking them. Innovative recovery methods developed by Jon Hather led to the recognition of manioc and malanga (*Xanthosoma* sp.), and possibly sweet potato (*Ipomoea batatas*) at Cuello, with the former being present from the early first millennium BC onwards (Hather and Hammond 1994). Beans (*Phaseolus vulgaris*), long assumed to have been of equally early importance from their prominence in the historic Mesoamerican diet, seem to have been a relatively late component, perhaps only from the late first millennium BC (Kaplan and Lynch 1999): their cultivation alongside, and nutritional complementarity with, maize may have been a synergistic development providing enhanced productivity that underpinned the social developments of the Late Preclassic.

The construction of hillside terraces to provide additional planting platforms and impede soil erosion in a clear-cut landscape, proposed by Turner (1974), has proved to be less important than initially thought because of the limited areas in which such terracing was created. The concurrent debate about whether some Maya lowland drained-field complexes (known from at least the sixth century BC) along the edges of rivers and swamps were constructed using transported fill to create island fields capable of perennial cultivation, rather than simply canalised to remove water from wetland margins more swiftly to facilitate seasonal recessional farming, remains unresolved, although the economic and symbolic importance of water management has received increasing attention (Lucero and Fash 2006). Berry's (2008) examination of the Pulltrouser Swamp field systems adjacent to the Late Preclassic site of K'axob in northern Belize now suggests, however, 'that channelising and raising seem to have been practised: a buried canal in the middle of an island field indicates that such islands were reworked and that modification included the transport of fill' (personal communication, 2007). Such artificial econiches contributed to, but turned out in no way to resolve, the provision of sufficient foodstuffs for the expanding Maya populace of the Late Preclassic and subsequent periods. Stable-isotope (SI) analyses of human skeletons from Cuello spanning the period from ~1200 BC to AD 300

by Van de Merwe *et al*. (2000: 29; see also Tykot *et al*. (1996)) show that maize may have provided only a third of the Preclassic diet, the remainder coming from root and tree crops and from animal protein.

The question of protein procurement has been little discussed recently: while white-tailed deer (*Odocoileus virginianus*) remain by far the single most important source of animal protein, measured by both bone frequency, MNI and implied meat weight, suggestions of loose-herding, semi-domestication or any other man : animal relationship closer than opportunistic hunting have received no support. Other animals, including peccary and agouti, were casual and minor contributions to the diet, but Fradkin and Carr (2003) have shown that at Cuello exploitation of nearby wetland environments including marshes and shallow ponds yielded both turtles (notably *Kinosternon* spp.) and freshwater fish such as swamp eel (*Synbranchus marmoratus*) and cichlids (cf. *Cichlasoma* spp.), perhaps collected on a seasonal basis. Coyston (2002) has shown that such freshwater fish, cooked with a root crop such as manioc, may have made an underestimated dietary contribution, detectable by SI analysis of residues on pottery even when the fragile bones do not survive. Estuarine and marine fish were probably not important except near the coasts, although the likelihood of their being traded as dried or salted fillets (thus also providing necessary salt to inland peoples) makes this difficult to assess: a range of species represented by a few individuals each have been identified well inland in both the Preclassic at Cuello and in the Late Classic at Lubaantun, in southern Belize. Wild birds, both forest species and occasional aquatic birds from the wetlands, were hunted; the domestic turkey does not seem to have arrived in the Maya area until the end of the Classic. The importance of domesticated dog (*Canis familiaris*) as a protein source has been demonstrated for the Preclassic by Clutton-Brock and Hammond (1994) and the Postclassic by Hamblin (1984): production was controlled and reliable, with most puppies being killed at the end of their first-year growth spurt.

One noted delicacy of ritual importance that has received renewed attention is cacao (*Theobroma cacao*: Maya *ka-ka-wa*), remarked by the Spanish conquistadors as the source from which a drink reserved for Aztec nobility (Nahuatl *chocolatl*) was made. Classic period Maya use of cacao, and the location of the site of Lubaantun in proximity to a large tract of high-quality cacao-growing soils were noted by Hammond (1975: figs. 8 and 147), and more recently a lock-lid vessel from Tomb 19 at Río Azul in Guatemala was found to have contained a chocolate drink as well as having hieroglyphs spelling out *ka-ka-wa* on its exterior (Adams 1999:

97–8, plate 5). Late Preclassic use was demonstrated at Cuello, Belize (Hammond and Miksicek 1981), and this was pushed back to the Middle Preclassic, *c*.600 BC, by residue analysis of spouted 'chocolate pot' vessels from burials at Colha, also in northern Belize (Hurst *et al*. 2002; Powis *et al*. 2002). It seems likely to have been used, perhaps already a sumptuary divider, from as early as the lowland Maya had ranked societies. Recent dedicated studies have included fieldwork in the modern cacao-growing area of the upper Xibun basin in central Belize (McAnany and Murata 2006) and McNeil (2006) draws together the many strands of current research on cacao in Mesoamerica.

It seems clear that from at least the Middle Preclassic around 600 BC, the Maya subsistence economy was both established and sophisticated in its utilisation of natural resources complemented by cultural enhancement that included landscape engineering. Such complexity existed in the exchange economy also, where procurement of jade from distant sources in the Motagua Valley occurred from *c*.650 BC onwards. Blue as well as green jade was exploited in the Middle Preclassic, and the source of the former was located by Gendron (2002) in 1996 and subsequently explored by Seitz *et al*. (2001). The forms of some early blue jades at Cuello suggest that the raw material was on occasion mediated through craft centres such as La Venta in the Olmec region of the Gulf Coast to the west (Hammond 1991*a*: fig. 9.8n; 1999: fig. 1). Obsidian, initially from the San Martín Jilotepeque (Río Pixcaya) outcrops near Chimaltenango in the Guatemalan highlands, appeared in the Maya lowlands at least this early also, apparently a rarity (an early fragment from Cuello having ended up worked into an ornament—rather like iron when it first appeared in the west Asian bronze age)—but by the Late Preclassic a new and better source, in terms of accessibility and workability of the obsidian nodules, had came on stream at El Chayal to the east, some 25 km north of Guatemala City. These shifts in social and economic patterns suggest that my prediction that 'what happened in the late Middle Preclassic [from 700 to 400 BC], and why, is one of the most crucial research topics in Maya archaeology today: here lies the key to the genesis of Maya civilisation' (Hammond 1986: 402) has been more than borne out by the discoveries of the past two decades, including most recently in the area east of Tikal, where work at Cival and other sites in the overall Holmul region (Estrada-Belli *et al*. 2006) has documented substantial architectural construction of later Middle Preclassic date, including the formal building ensemble known as an 'E-Group' (matched also at this period in the Mundo Perdido group of Tikal), with

a square pyramidal western and an elongated eastern structure; whether such groups had any practical function as solar observatories, the received wisdom for some decades although cogently challenged some years ago, is less relevant than their consistent plan and location in Middle Preclassic ceremonial precincts, where their function was clearly of general and not local significance. Cival has also yielded a formally arranged cruciform cache including numerous blue jade axes and pebbles (Bauer 2005), and, like the Late Preclassic stela dedicated on the same axis a few metres away and a few centuries later, may show influence from the Olmec area of the Gulf Coast, several hundred kilometres to the west: Mesoamerica in the middle centuries of the first millennium BC was already an emergent *oikumene*.

At the beginning of the 1980s it was already clear 'that to talk of "Preclassic Maya civilisation" is no longer a contradiction in terms: the outward and visible signs of Classic civilisation emerge from an already complex society' (Hammond 1980: 189). This was as apparent at small sites such as Cuello as at larger centres in the Petén, where truly astounding discoveries had been made. Although Coe (1965) had already made the case for a substantial Preclassic architecture underlying the Great Plaza and North Acropolis of Tikal, and Smith (1982) had by 1968 documented impressive coeval construction at Seibal, it was revelations from the Mirador Basin in the far north of Petén that caused the most surprise. Initial reports by Matheny (1980) and others on the colossal site of El Mirador have been followed by large-scale investigations there (Hansen 1998) and at neighbouring Nakbe that have documented the largest structures ever raised in the Maya area, with the Danta pyramid at El Mirador reaching a height of 72 m and with a footprint that would engulf the entire Great Plaza area of Tikal or the whole central precinct of Late Classic Copán. By the second century BC there were monumental centres as grand as or grander than those in any Classic-period city.

This was a society that clearly commanded enormous and disciplined human and material resources, but its rulers were apparently anonymous: no dated texts were known prior to Tikal Stela 29 (AD 292), and the few undated ones were on portable objects assigned to the Late Preclassic on stylistic grounds only. The art of the Late Preclassic had public, visible portrayal of gods on the broad façades of temples, which at El Mirador and Nakbe bore impressive and enormous masks of avian deities, but the explicit and human portrayals that might give some understanding of how Late Preclassic Maya rulers thought and acted were lacking. All that changed in 2001, with the discovery of San Bartolo.

This relatively small site, located in the northeastern Petén near the much larger Classic city of Xultún, was discovered in 2001, when William Saturno noted polychrome mural paintings exposed in the wall of a looters' trench cut into the tall temple pyramid now dubbed Pinturas, at the centre of the site but east of the main plaza with its palace and other Preclassic ceremonial buildings. The murals formed the interior frieze of a low, rectangular structure (Pinturas Sub-1) some nine by four metres in size, butted on to the back of the main pyramid in the first century BC, then largely demolished and buried beneath one of the later phases (Saturno *et al*. 2005). The north wall, the first area to be uncovered, shows an immense plumed serpent emerging from a mountain (*witz*) cave in the form of a monster maw with a stalactite fang; on the serpent's back seven human figures cluster round the Maize God (some of his features clearly derived from Olmec art). Three are kneeling women, naked to the waist, three are men with elaborate body decoration bringing offerings, one of them already kneeling, and the last is a striding figure which may be a corn goddess (Saturno *et al*. 2005: fig. 26). Behind the mountain a second scene has an elaborately decorated and accoutred supernatural confronting a cleft gourd which expels five infants, their umbilical cords still attached. While the significance of this scene remains unclear, some reference to the four world directions and centre, a staple of Mesoamerican iconography, is possible (Saturno *et al*. 2005: 12–13): quadripartition, perhaps associated with directional colours, may be as early as 600 BC on the evidence of the cruciform cache from Cival in the Holmul site complex (Bauer 2006).

More recently the west wall has been uncovered (the south and east walls were demolished, but substantial areas of their friezes have been recovered in fragments from the building infill and await analysis). It has a series of scenes, in each of which a male (deity?) performs penis bloodletting with a long perforator, in front of an offering and a tree in which sits the Principal Bird Deity seen also on the temple masks of Nakbe and El Mirador. The figures are in water, on land, and in the air, and their offerings also vary, from a fish to a deer to a turkey to perfumed flowers: the domains of the waters, earth, sky and heavens may be intended, and the ceremonies match to a surprising degree those depicted in the Dresden Codex some seventeen centuries later.

At the north end of the wall is an enthronement scene, in which a ruler seated on a raised throne reached by a ladder is presented with a diadem by an elaborately dressed man: this, together with the standing ruler on Cival Stela 1, is among the earliest examples of explicit royal iconography

in lowland Maya art; a short text includes the glyph for *ahaw*, 'ruler'. Recently a similar but much earlier text also including the *ahaw* sign has been found on a plastered block reused in the construction fill of an antecedent phase of the Pinturas pyramid: dating to the third century BC, its script is already distinctively formed, and suggests that the origins of Maya writing lie in the Middle Preclassic period, and may well be independent of the genesis of writing in other parts of Mesoamerica such as Oaxaca and the Gulf Coast.

The San Bartolo murals, some nine centuries older than those of Bonampak but in a style almost as naturalistic, show that Preclassic Maya art was much more sophisticated than we thought, and with symbolism of an arcane complexity that reflects a well-developed cosmology unsuspected a generation ago, but now increasingly revealed to us in excavations at Calakmul and Uaxactun as well as in the Mirador Basin (Hansen 1998; Valdés *et al*. 1999). What that cosmology and its iconography lacked was any central focus on the figure of the ruler: at San Bartolo the enthronement scene is tucked into one corner of the frieze, the ruler almost the least noticeable figure in the entire panorama: only with the institution of stela dedication towards the end of the Preclassic, in which carved and inscribed stone pillars were set up in public locales, did the ruler's image become as apparent as the political and economic exercise of his power.

Doubts had been expressed as to whether the dynasts of the Early Classic were real rulers, or the retrospectively promoted humbler ancestors of Late Classic kings: at Copan, Altar Q, dedicated by Yax Pasaj in AD 776 (Sharer 2006: fig. 7.21; Schele and Freidel 1990: fig. 8.3) shows fifteen generations of precursors, few of them until recently otherwise documented. The first of these, Yax K'uk' Mo', is shown handing a sceptre to Yax Pasaj, legitimating the latter's rulership as the sixteenth in the dynasty, while the inscription on top of Altar Q documents Yax K'uk' Mo's arrival and foundation of the dynasty (probably replacing an existing ruling house) in AD 426. Extensive tunnelling into the Copan Acropolis, notably below the focal Temple 16, and below Temple 26 and the Hieroglyphic Stairway just to the north, has revealed some four centuries of continuous buildup (Bell *et al*. 2004; Andrews and Fash 2005) during which separate foci of residential and ritual action fused to create a single massive architectural ensemble. Here I note only three of the numerous important discoveries: first, the eighth-century Temple 16 of Yax Pasaj enshrined a carefully interred sixth-century precursor nicknamed 'Rosalila', its spectacular polychrome stucco decoration making it the best-preserved Early Classic

temple we are ever likely to see (and the full-scale replica in the new Copan Sculpture Museum makes it possible to appreciate the sheer exuberant inventiveness of its creators). Conceived as a smoking censer-mountain, Rosalila commemorates in lavish detail the institutionalised cult of the dynastic founder Yax K'uk' Mo' found also on the effigy censers from the tomb of the twelfth ruler and on Altar Q.

The reason why became apparent as excavations below Rosalila revealed a succession of older and smaller buildings containing tombs. One, dubbed 'Margarita', contained the jade-draped body of a woman of local origin, accompanied by pottery vessels originating from as far away as the central highlands of Mexico, and suggested as having been Yax K'uk' Mo's widow. Below, in the 'Hunal' tomb set inside a small building with central Mexican architectural motifs, was the burial of a middle-aged man plausibly identified as Yax K'uk' Mo' himself (Sharer 2006: figs 7.23, 7.25–7.27). Bone chemistry shows him to have been a 'stranger king', by conquest or recruitment, who had grown up in the region of Tikal in the northern Petén; this origin, perhaps also that of any followers who helped him to establish himself at Copan (and possibly Quirigua as a strategic outpost down in the Motagua Valley) may explain the Petén-like features of both sites' plans and some of their architecture (Ashmore 1991).

Yax K'uk' Mo' appears again in the third discovery, the raised, carved and inscribed stone disc known as the 'Motmot Stone' (Sharer 2006: fig. 7.24) which was dedicated to commemorate the 'Maya millennium' of 9.0.0.0.0. in the Long Count in AD 435. The founder sits opposite his son and eventual successor, with a double column of glyphs between them celebrating this important event. The stone sealed a cylindrical shaft tomb holding the seated skeleton of a young woman whose accoutrements suggest that she was a day-keeper, a calendar priest of a type still surviving in highland Guatemala. She was accompanied by a puma skeleton, probably her *way* or familiar, and when the tomb was reopened for a purificatory fire ceremony—something reflected in the ritual phrase 'the fire enters his house' often found in Classic texts—a deer skull and a decapitated human head with vertebrae attached were added to its contents. When the stone was later buried under new construction, it was capped with an astonishing layered offering including pigments, feathers, marine *Spondylus* shells and jade earflares. The ceremonial world of Copan's early kings was as complex in its intellectual structure as that adumbrated on the San Bartolo murals half a millennium earlier.

Much of Early Classic Copan is buried under later construction, as is that of Tikal (summarised in Sabloff 2003), but the village of Cerén

under its blanket of volcanic ash preserves features not surviving elsewhere, while the small northeastern Petén city of Rio Azul presents an Early Classic cityscape relatively unencumbered by Late Classic buildings (Adams 1999), as does the trading community of Chunchucmil in Yucatan which lies exposed by the sparse vegetation of this arid zone. While Chunchucmil had Preclassic origins, its major florescence was after AD 300, when an extraordinarily dense community with a population estimated at 39,000 flourished; the central 9.4 km^2 mapped in detail had an estimated population of 25,000 (Hutson *et al*. 2006). Surface visibility has revealed numerous élite residential quadrangles, walled houselots, and the dendritic *albarrada* road network that linked them. The largest quadrangles clustered near the centre, although no civic core of public buildings is apparent. Each had a prime residence, ancillary structures, and an eastern pyramidal shrine, the latter a feature found also in the much more numerous house compounds. Most of these enclosures were between 700m^2 and 10,000m^2 in area, averaging 4,000m^2 apart from eight exceptionally large examples. Each household had one cooking area, documented by phosphorus analysis of occupation soils, suggesting a tightly knit family structure: involvement in the salt trade based on the nearby coastal *salinas* seems a likely source of Chunchucmil's prosperity and lack of élite public buildings. The Puuc city of Oxkintok, to which Chunchucmil perhaps owed allegiance, was the principal Early Classic and early Late Classic polity in the region, and shows the presence of southern lowland characteristics such as Long Count monuments from at least AD 475. Recent work at other Early Classic sites in Yucatan, including Acanceh, Aké and Izamal, is beginning to put our knowledge of this under-investigated period on a par with that current in the southern lowlands. In the latter region there is also a continuing debate as to why so many prosperous Late Preclassic sites, such as Seibal, Cerros and Nohmul, underwent quasi- or total abandonment early in the Classic: it is not a point I will pursue here, beyond noting that climatic change, and specifically drought, is one strongly asserted explanation, as it is for the end of Late Classic civilisation six centuries later, something I discuss below.

Before that, however, I want to discuss briefly recent developments in the study of Maya hieroglyphic writing. As I noted above, the short texts on the San Bartolo murals document the public use of script (its private use on personal possessions comes rather later) from the fourth or third century BC onwards, and in the highlands the dedication of inscribed stelae dates from at least the late first century BC. In the lowland zone the oldest firmly dated monument is still, after half a century of further

exploration, Tikal Stela 29 at AD 292, although Late Preclassic monuments are known from Nakbe, El Mirador, Tintal, Polol, Cuello, and probably Actuncan and Blackman Eddy in the Belize Valley. While increasing numbers of Early Classic stelae are coming to light, the overwhelming majority of monumental texts date to the Late Classic after AD 600, and appear in a wide variety of contexts that includes not only stelae and their accompanying altars, but also hieroglyphic stairways, wall panels, less accessible places such as lintels over temple doorways, and totally concealed locations such as the sarcophagus of K'inich Janab Pakal (reigned AD 615–83: recent studies of Pakal's skeleton have confirmed his age at death as being 80, as specified in the sarcophagus text (Greene Robertson 1983; Tiesler and Cucina 2006)) in its vault below the Temple of the Inscriptions at Palenque. Some monuments were for overt public perusal, image and text complementing each other in proclaiming the triumphs and virtues of the reigning king and his ancestors, while others were archives for the ages.

Decipherment has progressed with increasing rapidity: in AD 1800 only a few glyphs had been drawn by early explorers, and none published. By 1900 the working structure of the Maya Long Count had been elucidated by Ernst Förstemann and others, and the Maya calendar correlated with the Christian by Joseph T. Goodman. After half a century of frustrating attempts to understand non-calendric hieroglyphs, notably by J. E. S. Thompson (1950), three breakthroughs in the 1950s transformed our understanding: Yuri Knorosov showed that the Maya script had a large phonetic and syllabic component, Heinrich Berlin's identification of the Emblem Glyph as a placename or polity identifier showed that texts dealt with places in the real world and not the heavens, and Tatiana Proskouriakoff's recognition of historical patterning in the inscriptions of Piedras Negras showed that they also recorded the actions of real people in real time, not the stately movements of the cosmos (see Coe 1982 for a useful though partial summary; Houston *et al*. 2001 reprint many of the crucial studies for these and later developments). By 1960 we had the beginnings of a Maya political history and historical geography, and by the mid-1970s detailed dynastic structures for a number of Maya polities, notably Palenque and Tikal but also including Yaxchilan and Quirigua. Numerous other dynasties have been elucidated since then, including those of Palenque's rival Tonina and Tikal's great nemesis Calakmul, together with its allies at Dos Pilas and Caracol: we have now reached a stage, at least in the southern lowlands where both monuments and the use of Emblem Glyphs are prolific, where we can chart both the trajecto-

ries of individual Classic polities and the complex interactions between them (Martin and Grube 2000: 21), a fruitful combination of history and process.

At the same time, the linguistic understanding of Maya hieroglyphic writing has progressed at an encouraging rate: landmark publications during the 'great boom in phonetic decipherment' (Wichmann 2006: 290) include Justeson and Campbell (1984), which signalled the broad acceptance, after two decades, of Knorosov's ideas, Bricker (1986), which codified then existing knowledge, and Stuart (1987), described by Wichmann (2006: 293) as 'containing some of the most beautiful demonstrations of decipherment methodology ever published'. These were followed by interpretive works such as Houston and Stuart (1989), which elucidated an entire new category of Maya supernatural beings as 'co-essences' or 'familiars' of living individuals, and Stuart and Houston (1994), which established local toponymy and showed that individual buildings, even individual monuments, had proper names. Establishment of the language of the glyphs as a form of Ch'olan (Houston *et al*. 2000; Lacadena and Wichmann 2002), possibly a prestige language retaining archaic features no longer in vernacular use, has been an important recent advance, while the fusion of linguistic with iconographic studies, bringing text and image into a synergistic understanding of how the Maya perceived themselves, is analysed in Houston *et al*. (2006). A case study of this, Stuart's (2005) examination of the newly discovered reliefs of Palenque Temple XIX, with their intense naturalism, brings the hitherto little-known ruler K'inich Ahkal Mo' Nahb, (reigned AD 721–*c*.737), grandson of the famed K'inich Janab Pakal, and members of his court into sharp focus, and adumbrates royal rituals previously unknown such as Salaj Bolon's engagement in a 'rope-taking' ceremony.

Maya royal courts, based in sprawling palace complexes such as Palenque's or Cancuen's and Tikal's Central Acropolis, and portrayed in the Bonampak murals and other media, have been the subject of widespread recent attention (Inomata and Houston 2001), and the origins of Maya royal palaces in the Preclassic are being investigated at San Bartolo, Holmul, and elsewhere. Varied and informative scenes of courtly life such as those illustrated by Reents-Budet (1994) and Kerr (2000), for example, on Late Classic polychrome vases are, unfortunately, almost all on looted vessels, not only lacking provenance but with the attendant risk of falsification: sufficient evidence can however be extracted from *in situ* sculpture and architecture to construct a scenario of the royal palace as a machine for rulership, which can be compared with the better-documented courts

of other pre-industrial societies, in medieval and Renaissance Europe (Steane 2001) and western Asia, to reach a deeper understanding of how the divine kings of the Maya governed the secular state. We have in recent years gone from a static to a dynamic vision of Maya polities, their functioning and their interactions, which is based largely on advances in hieroglyphic decipherment and iconographic analysis, but which has also begun to illuminate the beginnings of the Maya state in the text-deficient period of the Preclassic.

At the other end of the social and architectural scale from the royal courts in the polity capitals, settlement archaeology, the mainstay of Maya research in the latter part of the last century, has continued with numerous surveys: at a few sites, exceptional circumstances of history and preservation have resulted in unexpectedly illuminating snapshots of Classic Maya society. At Cerén in El Salvador, close to the southeastern limit of Maya culture, a small village overwhelmed by volcanic eruption in the seventh century AD was preserved by ashfall: dishes of food ready to serve, young corn plants growing beside the houses, and both domestic and ritual utensils stored inside them have been recovered; among the most interesting structures was a domed sweatbath built from adobe and latticed branches (Sheets 2006: 96–100). Little of this would have survived under normal circumstances. The small lowland city of Aguateca was stormed and burned by enemies around AD 800: while the ruling élite had time to conceal ritually important objects in a sealed niche and flee, probably with personal jewellery, the rest of their moveable property was found in place on the floors or fallen from shelves in the palace and adjacent buildings (Inomata 1997; Inomata *et al*. 2002).

A different kind of visibility has allowed extensive settlement research in Yucatán, where the paucity of rainfall and vegetation results in even low walls being easily visible and mappable: aerial photography and more recently satellite imagery have considerably aided in this, in a way difficult in the rainforest zone to the south (although extensive mapping of Palenque by Ed Barnhart has shown what can be accomplished by traditional methods using EDM technology (Sharer 2006: fig. 8.35)). A systematic survey southwest of Mérida by Andrews and Robles (2004) revealed an unexpected density and complexity of early settlement dating to the Middle Preclassic period, including a large number of ball-courts. Understanding of the distribution, density, internal structure and historical trajectory of ancient Maya settlement in northwestern Yucatán has undergone drastic change in recent years, and there is no reason to suppose that similar work across the north and northeast of the peninsula

will not improve our knowledge commensurately. Of the many architecturally notable Classic Maya centres in Yucatán, only the surrounding settlements of Sayil (Sabloff and Tourtellot 1991) and more recently parts of Chichén Itzá (Cobos 2003) have been analysed, together with some smaller sites such as Xculoc (Michelet *et al*. 2000), although new maps have been made of Oxkintok, Uxmal and other sites. Kepecs (2005: 115–20) notes the complexity of the prehispanic Maya economy in Yucatán, an area of investigation that has lagged behind studies of architecture and material culture but which is now receiving new attention. As can be seen from these few examples, the Late Classic remains for good reason a focus of much Maya research, with dozens of new sites and important monuments being recorded in regions such as northwestern Belize and southern Campeche (Šprajc 2004) in the past decade alone.

The notorious 'collapse' of the Classic Maya in the ninth and tenth centuries has remained a similarly perennial subject of interest (reviewed most recently by Webster 2002), with some scholars attempting to substitute a terminology of 'transformation' for the more dramatic 'collapse' to mark the fact that substantial, although less urban, populations remained in parts of the southern lowlands, and that the polities of Yucatan continued to flourish into the early second millennium AD and were still functioning in some form at the time of the Spanish conquest, albeit from different capitals and with a less complex political structure.

The great cities of the tropical forest were, whatever terminology is applied, abandoned in the ninth century: construction of public buildings including palaces and temples, patronage art on both the communal and personal scale, and dedication of dated monuments bearing the images and deeds of divine kings all ceased: few cities have Long Count dates after 10.3.0.0.0. (AD 889). Explanations range from the political — invasion, insurrection, internecine warfare and social decay — to the natural, the latter including soil exhaustion and crop failure; combination theories include larger, and more closely packed cities overstretching both the productive capacity of the landscape and the managerial capacity of the Maya political structure to deliver enough sustenance to increasingly stressed urban populations.

A group of theories that have received renewed attention and some cautious acceptance as at least partial explanation involve climate change, especially severe episodic drought leading to subsistence failure. The notion of catastrophic climate change as a salient cause of the Maya collapse had been mooted earlier, but discounted: Maya historical records had indeed complained of episodic droughts and crop failure, but the

Maya had survived to tell the tale. Then, a decade ago, oxygen-isotope data from cores in Lake Chichankanab in Yucatan suggested a two-century drought from AD 800–1000, the period of the collapse (Hodell *et al*. 1995; Gill 2000). There was one major problem, however: this was just when cities such as Uxmal and Chichén Itzá in the driest part of the Maya area reached their apogee. How could these disparate data be reconciled, if at all?

The alternating seasons of the Maya year are governed by the migration of the meteorological equator, when the tropical trade winds shift north and south, giving a dry season from January to May and a wet one from June to December, with as much as 90 per cent of the rainfall within a three-month period of that. The effect of this has been documented in a recent 170 m core from the Cariaco basin off Venezuela, where anoxia has left the thin laminae of annual deposits undisturbed by burrowing marine organisms (Haug *et al*. 2003; Peterson and Haug 2005). Shifts in titanium and iron levels stand proxy for the amount of seasonal runoff—effectively an ancient rain gauge. The Cariaco core showed a broad band of low rainfall over the AD 800–1000 period, but also four short periods of intense drought within that, each lasting five to six years and separated by around half a century; Hodell *et al.* (2005), working with further data from Lake Chichankanab, have refined their thesis of a decade earlier to suggest two major droughts, one from AD 770–870 with two half-century cycles, the second from AD 920–1100 in four similar cycles, separated by a moister interval. During these intense droughts, groundwater sources would have been vital for community survival, since reservoirs could not have been replenished. In the wetter southern part of the Maya lowlands, where the great cities were abandoned earliest, the water table lies deeply buried. Only in Yucatan does it come close enough to the surface to be accessible through caves and cenotes, which might explain the continued existence (though not the evident prosperity) of the Puuc cities and Chichén Itzá.

Gill's (2000) model of these phases of collapse, based on the latest dated monuments at sites, fits quite well into this more precise model, with its drought maxima around AD 760, 810, 860, and 910. The first of these coincides with the estimated maximum Maya population, when more people were crammed into more and larger cities, more closely packed into the landscape than ever before and competing more ferociously for resources of land and labour. The failure of crops may have been seen as a failure of the divine kingship to protect the people from the malignity of personified nature. People voting with their feet—moving

out to find subsistence in the countryside—would rapidly remove the underpinnings of élite urban culture. Construction of temples and dedication of monuments would cease before actual abandonment and appear more precipitate, as we have found at La Milpa in northwestern Belize, where several major royal construction projects including enlargement of the palace and a new temple-pyramid were left uncompleted with apparent, but perhaps deceptive, suddenness (Hammond *et al*. 1998). The evidence for climatic as well as demographic and political causes for the end of Classic Maya civilisation gives a new dynamic to our research and leads us to seek similar environmental factors behind earlier cultural perturbations, as has been suggested by Hodell *et al*. (2007).

Maya civilisation began to emerge, we now know, as far back as the seventh century BC, when the differentiation of an élite became marked by access to exotic goods such as jade and in burial practices—a layering of Maya society into strata which became increasingly rigidly divided by ascription instead of achievement (Rathje 1970; Hammond 1991*b*: 267–72). Shortly after this, special-purpose public buildings rapidly became the vehicles for large-scale sculpture encoding the iconography of the ruling ideology. Hieroglyphic writing to facilitate rulership and government existed by at least the third century BC, more than a millennium before the Classic apogee: the transparency that many Classic texts have now achieved has revolutionised our understanding of Maya society, while at the latter end of the Maya cultural tradition there is striking continuity through the Classic collapse into the contact and colonial periods. In the sacrifices of the fifteenth-century Dresden Codex we can see reflected the rituals used at San Bartolo seventeen centuries before; in traditional Maya dwellings we see the same environmentally adapted technology and materials that were used at Cuello three thousand years ago; and the Maya people today have preserved many of the concepts that guided the first Maya farmers, artists, and priests. Prehispanic Maya culture lasted for more than two millennia—less, perhaps, than in Egypt, Mesopotamia, or China, but still giving the lie to notions of New World civilisations as short-lived and less complex than those of Eurasia. We still see the ancient Maya through a glass darkly, but we see them more clearly, much more clearly, than we did before.

Note. My title is both 're-covering Maya civilisation', in that the only previous treatment of this at the British Academy has been in William R. Coe's (unpublished) Reckitt Lecture of 1973, and 'recovering' in the sense of reporting on some aspects of recent Maya research. I am grateful to several colleagues for the provision of unpublished

data, and especially to William Saturno for the use of unpublished images from San Bartolo in my lecture. Many topics had to remain unremarked both there and here, but the abundant literature on Maya archaeology is sampled in the excellent bibliographic summaries and bibliography of Robert J. Sharer's *The Ancient Maya* (6th edn., 2006: 785–888), which also has numerous useful illustrations: Figure 1 is reproduced from it, with grateful acknowledgement. The principal journals covering the field and reporting recent research include *Ancient Mesoamerica, Estudios de Cultura Maya, Latin American Antiquity*, and *Mexicon*, while recent survey articles with extensive bibliographies include Love (2007) and Marcus (2003). Current research is reported with admirable despatch in the annual volumes of the *Simposio de Investigaciones Arqueológicas en Guatemala*, for Mexico in the annual *Investigadores de la Cultura Maya* (Universidad Autónoma de Campeche) and the slightly less frequent *Memorias del Congreso Internacional de Mayistas*, and for Belize by the annual *Research Reports in Belizean Archaeology*.

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