

# Temple mountains, sacred lakes, and fertile fields: ancient Maya landscapes in northwestern Belize

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'Intimate knowledge of historical sources, archaeological sites, biogeography and ecology, and the processes of geomorphology must be fused in patient field studies, so that we may read the changes in habitability through human time for the lands in which civilization first took form'

SAUER 1955: 61

## Introduction

Forty-three years later these words still ring true, but are too seldom followed (Fedick 1996). For several years, we have been engaged in a multi-disciplinary programme of research in northwestern Belize and neighbouring areas of Guatemala, eliciting a comprehensive, integrated picture of changing ancient Maya landscapes (Scarborough & Dunning 1996; Valdez *et al.* 1997). Our goals include a reconstructive correlation of environmental and cultural history, including the relationship between changes in water and land management and political economic organization. This work is still in progress and our understanding is far from complete (Dunning & Scarborough 1997).

This article centres on changing landscapes at the major centres of La Milpa and Dos Hombres and surrounding lands (FIGURE 1). These centres lie within the Three Rivers region, where the Río Azul, Río Bravo and Booth's River converge to form the Río Hondo on the eastern periphery of the Central Maya Lowlands (Adams 1995a). Recent work, partly covered here, focuses on the course of human-environment

interactions in this region. However, in studying human-environment relationships 'nature' cannot be taken only as a self-evident object available for human management. Nature as an object for human action is mediated by culture. In turn, culture cannot be seen as unitary, bounded and internally homogeneous. Both individual and group perceptions shaped human-environment actions and may be manifest in the landscape. How nature was rendered culturally intelligible by landscape manipulation had important consequences for whose 'voices' are heard and whose claims are legitimated amid struggles over the control of vital resources (Bender 1992; Thomas 1993).

The ancient landscapes created by the Maya included both intentional and unintentional environmental changes. Intentional changes included the centrally directed erection of monumental architecture as well as the accretionary engineering of the landscape by generations of farmers. Unintentional effects included sometimes devastating soil loss and hydrological changes. Both the intentional and unintentional must be read for the landscape to provide a more comprehensive picture of Maya civilization.

Our research views landscape as a layered artefact, reflecting cumulative processes of human action and environmental change. The later phases of modification will generally be the most readily discernable to investigators.

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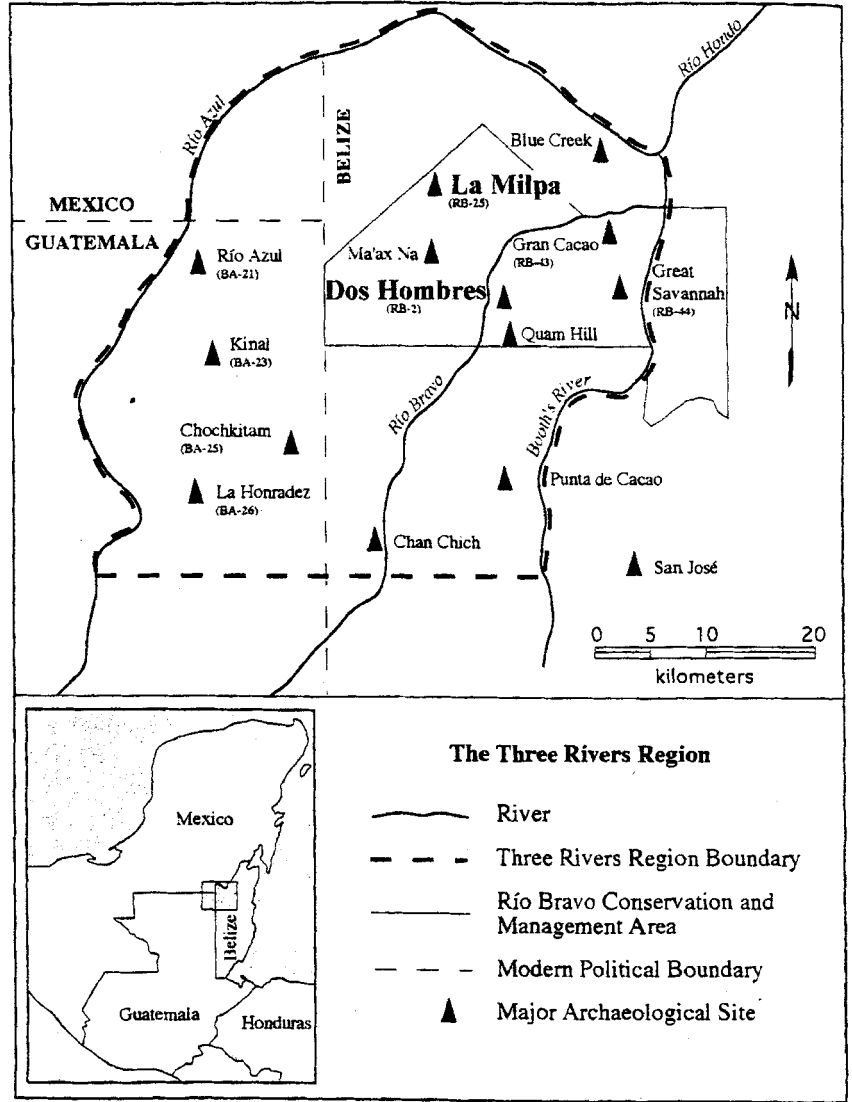


FIGURE 1. Map of the Three Rivers region showing the locations of major ancient Maya centres (modified from Houk 1996).

Thus, our discussion here gives particular emphasis to the landscape which took shape between AD 700 and 900 (the later part of the Late Classic and first part of the Terminal Classic periods).

**The Three Rivers region**

The Three Rivers region includes the eastern margins of the large Peten karst plateau, a hydrologically elevated limestone area characterized by rugged free-draining uplands and seasonally-inundated, clay-filled depressions (*bajos*) (Dunning *et al.* in press). It also includes the generally low-lying valleys of the Río Bravo

and Booth's River that encompass low, limestone ridges and large, perennial wetlands. The La Milpa site centre is situated on a topographically prominent ridge of the upland plateau; the Dos Hombres site centre occupies a low, but locally prominent rise amid the Río Bravo lowlands.

Soils on the limestone uplands are fertile, but shallow clay mollisols or *rendzinas*, which are vulnerable to erosion where they occur on sloping terrain (Dunning 1992a). Bajo and lowland soils are deep clay vertisols, mollisols and organic mucks (histosols). These soils are also often fertile, but subject to significant drain-

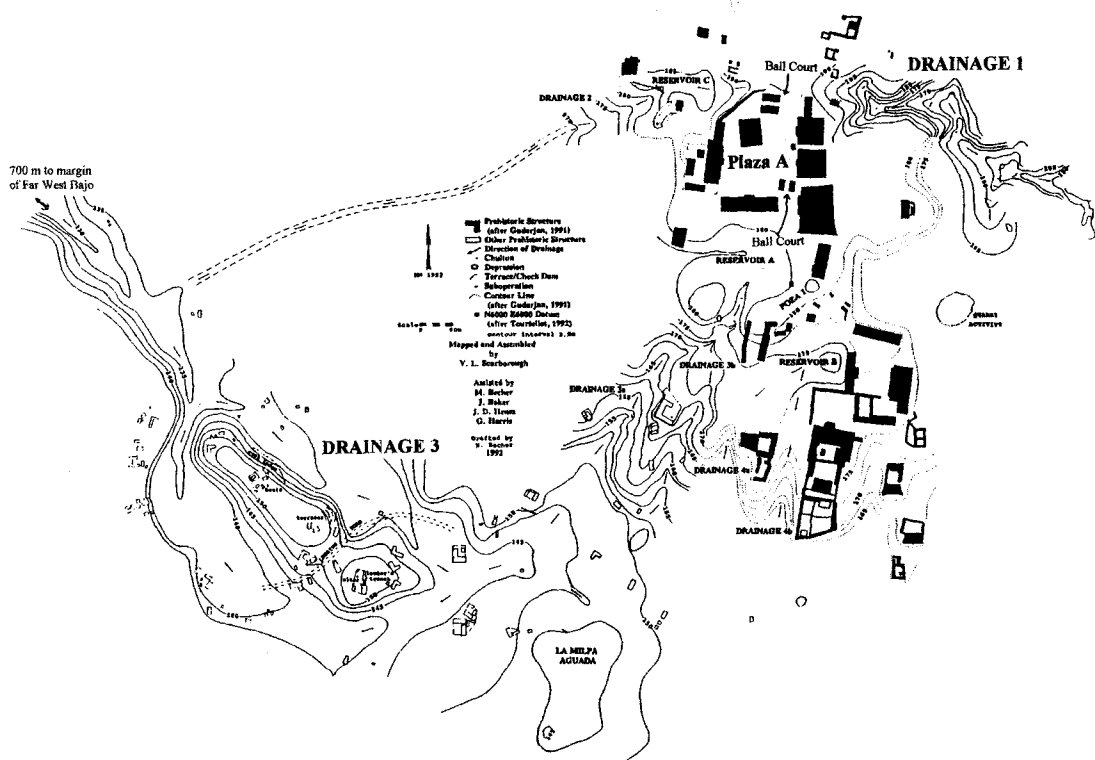


FIGURE 2. Map of the La Milpa site centre and major drainages (modified from Scarborough *et al.* 1992; 1995).

age limitations or shrink-swell (argilloturbation) problems.

Regional native vegetation ranges from perennial Swamp Forest and grasslands in the lowlands to Tropical Wet/Dry Deciduous Forest across the uplands (Brokaw & Mallory 1993). The latter reflects the powerful influence of a regional climate that includes a prominent June–December wet season which typically sees about 90% of the average annual rainfall of 1500 mm, and a January–May dry season. The severity of this dry season poses a significant obstacle to human occupation of the karstic uplands, where perennial water sources are few and far between.

### Pre-classic developments

The earliest cultural remains uncovered in the Three Rivers region are ephemeral, non-structural artefact deposits dating to the Middle Preclassic period (900–400 BC). Based on comparative data from other parts of the Maya Lowlands, this period was characterized by small

groups of farmers, who may already have begun significantly altering the local environment by clearing large areas of forest using swidden cultivation.

Urbanization and associated landscape modifications came to the region during the Late Preclassic–Protoclassic (400 BC–AD 250) (Adams 1995a). At La Milpa, a significant investment in monumental architecture took shape around Plaza A (the Great Plaza), including multiple construction phases on Structure 1, a large pyramid-temple (FIGURE 2; Guderjan 1991; Hammond *et al.* 1996). At Dos Hombres, monumental architecture appeared, similarly clustered in the northern site core or Group A (FIGURE 3; Houk 1996). These large northern plazas continued to be the foci of funerary monument construction throughout the subsequent occupation of these sites. A primary impetus towards settlement concentration at this time may be described as a desired proximity to the sacred (Wheatley 1967: 25). However, more mun-

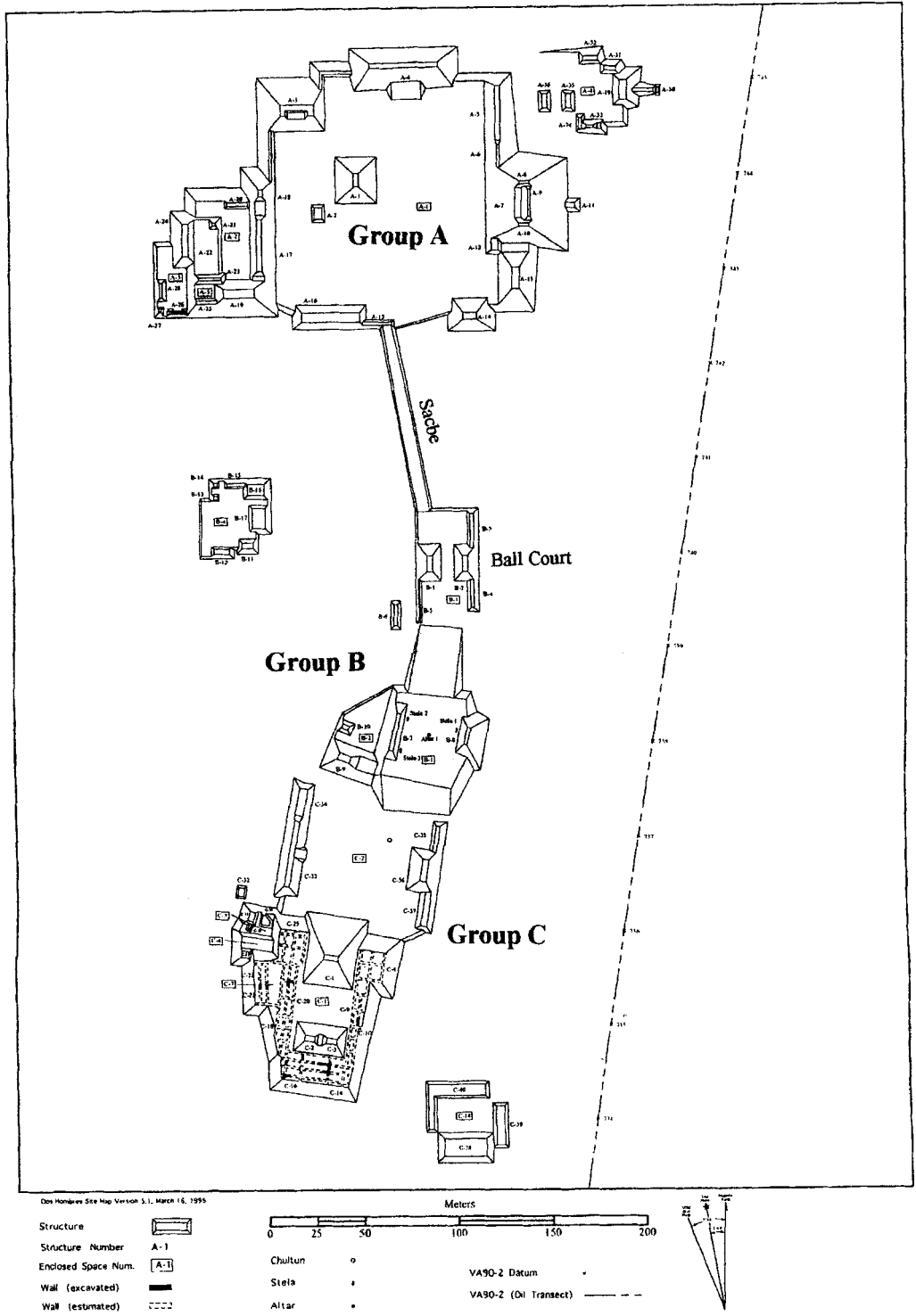


FIGURE 3. Map of Dos Hombres site centre (modified from Houk 1996).

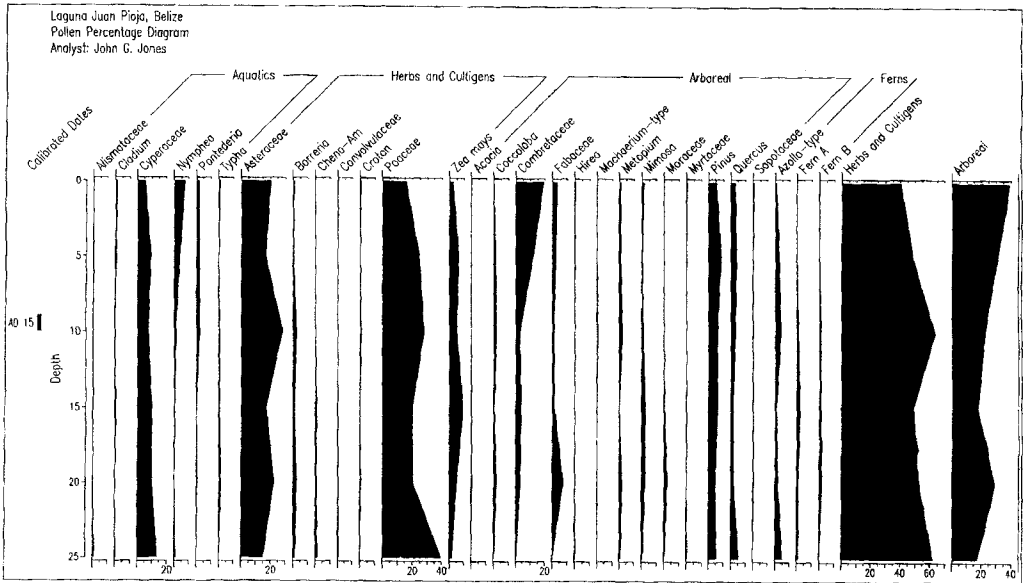


FIGURE 4. Summary pollen diagram for 1998 Core 1 from Laguna Juan Piojo near Dos Hombres (prepared by John G. Jones, Texas A & M University).

dane factors undoubtedly were involved in this process, including the concentration of population in areas where the environment had been 'tamed'. It was during the Late Preclassic that the institution of Maya divine kingship first emerged (Schele & Freidel 1990). The relationship of Maya rulers with gods and the celestial realm was highly complex, including impersonation rituals and the exclusive possession by rulers of special imagery believed to be receptacles of divine forces. The settlement cores of both La Milpa and Dos Hombres appear to have remained quite small during the Late Preclassic, apparently clustering around the small concentration of monumental architecture, accompanied by light, dispersed rural population.

Our understanding of environmental change in the Three Rivers region is limited because our most comprehensive pollen record is from a highly compressed sediment core (FIGURE 4). The core was taken from Laguna de Juan Piojo, an apparent oxbow lake situated in the Río Bravo floodplain west of Dos Hombres. The upper approximately 50 cm of sediment consisted on unconsolidated organic ooze (*gyttja*) that compressed into a mere 1–2 cm. The base of the core was oxidized lacustrine clay devoid of pollen, charcoal from which produced a calibrated radiocarbon date of 910–790 BC (Beta-118303). A calibrated radiocarbon date of 60

BC–AD 90 (Beta-120942) was obtained from organic sediment at a depth of 10 cm. We interpret the 25-cm pollen record shown in FIGURE 4 to represent the period from approximately 500 BC to AD 1000. All strata show disturbance indicators typical of the Maya Lowlands: e.g. Poaceae (grasses) and Asteraceae (asters), associated with *Zea* (maize) cultivation. Maize pollen levels are as high as anywhere in the Maya Lowlands, possibly indicating nearby intensive cultivation. Arboreal pollen levels indicate that deforestation was widespread throughout the period, but with patches of tree cover remaining, including some economic species such as Sapotaceae (Zapote and related species).

Greater understanding of local environmental change derives from geoarchaeological investigations (Dunning *et al.* 1996; Dunning & Scarborough 1997; Dunning & Beach 1996; in press). Our investigations in *bajos* at the mouths of Drainage 1 and 3 at La Milpa revealed significant episodes of disturbance. Trenches in the Drainage 3 *bajo* uncovered a buried peaty layer (FIGURE 5: Unit 5 — dated to Preclassic times) containing pollen predominantly from wetland and aquatic plants. This wetland was eventually aggraded by inwashing mineral sediments (Unit 4). Subsequently, increasingly extreme variation in soil moisture, subsidence

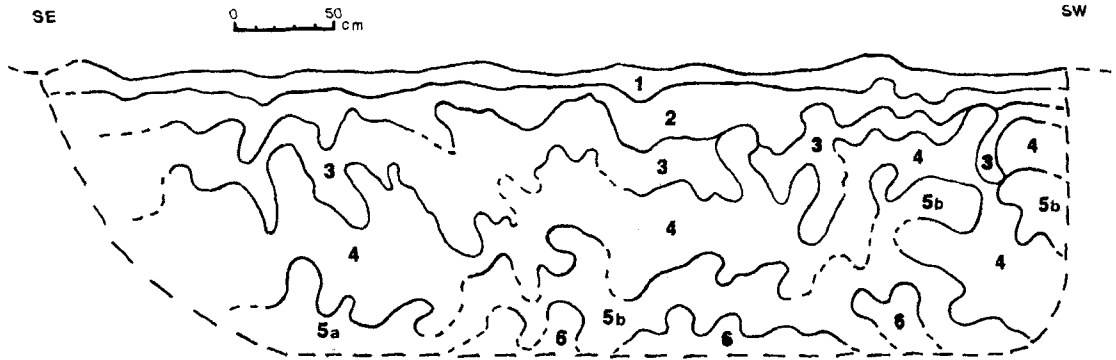


FIGURE 5. Profile of Operation BH9 in the Far Western Bajo at La Milpa. Vegetation: Tintal-scrub forest and sawgrass. Soil units:

- 1 black (5YR2.5/1) clay; large crumb structure
- 2 dark grey (5YR4/1) clay with  $\pm 20\%$  yellowish red mottles (5YR5/8); large crumb structure
- 3 grey (5YR5/1) clay; with  $\pm 40\%$  yellowish red mottles; medium subangular blocky structure
- 4 light grey (5YR7/1) clay with  $\pm 10\%$  yellowish red mottles and  $\pm 5\%$  coarse sand; massive
- 5a very dark grey (7.5YR3/0) clay interfingering with thin bands of sapric material; massive
- 5b very dark grey (7.5YR3/0) clay with  $\pm 20\%$  red and light grey mottles; massive
- 6 white (5YR8/1) clay with  $\pm 30\%$  reddish yellow (5YR7/8) mottles; massive

and compression resulted in substantial clay-heaving, distorting soil strata. By the Early Classic, the *bajos* had been anthropogenically transformed from perennial to seasonal wetlands, spurring the need to develop alternative water sources. We believe the small regional Preclassic population, probably practising extensive forms of forest clearance and agriculture, generated tremendous environmental disturbance. Much of the region's sloping upland terrain was probably greatly denuded of its soil cover. This conclusion corresponds with better-documented findings which suggest that in some areas the Maya of the ensuing Early Classic period may have inherited a severely eroded landscape from their ancestors (Jacob 1995; Dunning 1992b; 1995; Dunning *et al.* in press; Dunning & Beach n.d.; Rice 1993). In some areas like the Nakbe-El Mirador region in northern Peten, environmental degradation may have been severe enough to lead to regional abandonment (Jacob 1995; Hansen 1995).

### Early Classic urbanism

The Early Classic period (250–600 AD) at La Milpa and Dos Hombres remains poorly understood. The focus of monumental construction at La Milpa continued to be Plaza A and the nucleated settlement appears to have remained small (Hammond *et al.* 1996; Tourtellot *et al.* 1995). Dynastic stelae began appearing at La

Milpa and other major lowland centres. Where legible, the texts on such stelae tie the founding of Classic royal dynasties to the first years of the Early Classic, marking a notable shift to political states based on institutionalized royal succession and the increased stability of the political system (Grube 1995).

Early Classic monumental architecture has yet to be detected at Dos Hombres (Houk 1996). This absence may be the result of the limited nature of excavations to date in Group A. The possible presence of an 'E Group' astronomical ritual assemblage in Group A at Dos Hombres suggests continued activity in the Early Classic as the spread of such architectural complexes may be linked to the institutionalization of the Classic period political system at this time (Chase & Chase 1995). In many Maya communities, residential populations became more spatially concentrated during the Early Classic, making it more likely that they will be under-represented in broad sampling programmes (Pyburn 1990). Elite residential activity has recently been found in excavations conducted by Jeffrey Durst in 1997 and 1998 in the group including Structures B11–B17. Rural hinterland populations around Dos Hombres remained sparse, but increased somewhat around La Milpa (Robichaux 1995).

On the other hand, the Three Rivers region centres of Río Azul and Blue Creek grew tremendously during the Early Classic (Adams

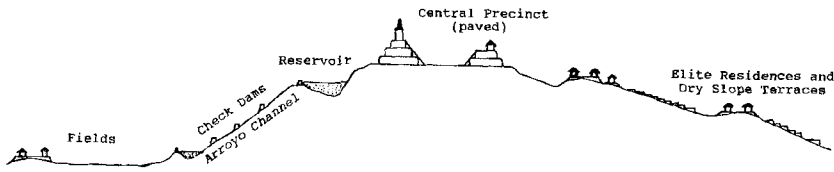


FIGURE 6. *Idealized watershed model (after Dunning 1995, modified from Scarborough 1993).*

1995b; Guderjan 1996). Río Azul in particular saw a huge expansion in urban area and population as well as in monumental construction, growth that may be tied politically to the spread of the Tikal 'super state' (Adams 1995b).

### Urban land and water

The Early Classic growth and transformations occurring at Río Azul, Blue Creek and La Milpa may also relate to changing patterns of basic resource control. A necessary adaptation for urbanization in the seasonally dry Maya Lowlands was toward the use of reservoirs as part of a long-term modification of local watersheds (Scarborough 1993). Taking advantage of heavy rainfall for 7 months of the year, the Maya could impound enough water in urban areas to survive the dry season. In the Preclassic, such reservoir systems typically occupied natural topographic depressions. However, as Classic Maya civilization took shape, reservoir construction shifted to the upper reaches of local watersheds to the rugged karst ridges on which urban centres were being built.

At La Milpa, the upper portions of local watersheds draining the site core were dammed in order to create reservoirs (FIGURE 2). The release of water from these reservoirs may have been controlled through the combined use of sluice gates and check dams (Scarborough *et al.* 1992; 1995). One purpose of this rather elaborate water diversion strategy appears to have been to regulate soil moisture levels in pockets of flatter upland soils which appear to have been used as plots for intensive agriculture (Dunning 1992a). The soils found in such pockets are highly fertile if soil moisture can be effectively regulated and they are highly suitable to intensive cultivation.

As Drennan (1988) has noted, the intensification of land use is often most pronounced in settings like the Maya Lowlands because the naturally dispersed population live in close proximity to their fields and gardens. The prevalence of seasonally arid conditions in the region, however, would have acted to combat the

tendency towards population dispersal by making a secure source of water more desirable — a trend that engendered further intensification of land use. In other words, the need to secure water significantly increased the investment in local, fixed, space or place. Thus, the latter years of the Late Preclassic and beginning of the Early Classic saw a focus of Maya settlements in the Peten on local watersheds. The built environment of temples, palaces and courtyards at the heart of these watersheds came to be the critical source of life-sustaining water (FIGURE 6).

The spatial concentration of population and the 'improvement' of select lands on the flanks of local watersheds would also have significantly affected land values. Following the tenets of 'first founder' theory, the local ruling élite controlled these select lands as their importance increased through water manipulation and enhanced productivity (Dunning 1992c: 114–17; 1995). Spatial concentration and changing land values thus appear to be related to increasing stratification in Classic Maya society (McAnany 1995). While many proponents of a segmentary model for ancient Maya socio-political organization suggest that élite wealth lay principally in the control of labour and its products through ideology and ritual (Ball & Taschek 1991; Demarest 1992; Houston 1992), it is noteworthy that many ethnohistorical sources suggest that ruling lineages had direct control over tracts of valuable land (McAnany 1995). Schele (1995) also notes that much of the emerging system of Classic Maya rulership symbols was linked to ideas of agriculture and environmental control. As the Classic period progressed it is evident that land became more tightly controlled and more often contested (Chase & Chase 1996; McAnany 1995).

Another sign of the incremental growth in importance of centrally located land is the development of agricultural terracing. Such terracing apparently began with check dams and other contouring modifications of natural drainage channels surrounding population clusters

in the Early Classic and then exploded in a proliferation and complex variety of dry slope terracing in the Late Classic (Dunning & Beach 1994). Again we see a pattern of intensifying investment in localized space. At the giant site of Caracol, terracing appears to have facilitated extraordinary urban expansion (Chase & Chase 1987; 1996).

The dating of the construction of the reservoir system at La Milpa and associated dams, weirs and terraces is problematic and the precise nature of these features has been questioned (N. Hammond & G. Tourtellot *pers. comm.* 1998). Evidence recovered to date suggests that portions of the system may have been started in the Late Preclassic and Early Classic. However, the extensive elaboration of the system clearly dates to the Late Classic period (after 700 AD). Through the cutting and filling of the rugged ridgetop landscape, central reservoirs were created (FIGURE 2). While the towering pyramids and palaces of the site centre were visible beacons of Maya political order, the reservoirs created from the quarrying operations to build these monuments became integral parts of the urban design. The political authority of the rulers was manifest not only in the monuments dramatizing the power of the king, but also in the creation of a source of precious water where formerly there was none (Scarborough 1998). This was, in essence, the creation of a ritually regulated ecosystem which both promoted hierarchy and reified rulership. As the Classic period progressed, and elite society became more complex, Maya rulers sought to distinguish themselves further from other elite and the masses by deifying their ancestors and increasingly deifying themselves (Houston & Stuart 1996).

### Sacred centres

A central concept in Maya cosmology is the temple mountain or water mountain (Brady 1997; Freidel *et al.* 1993; Scarborough 1998). Such places are centring points linking multiple layers of the cosmos and the present with the past and future. A fundamental aspect of this concept is the role of water as a transformative boundary, simultaneously separating and connecting cosmic planes. In particular the boundary of the underworld is manifest as a watery surface, reflective of events past, present, and future. The creation of such surfaces within the site centre of La Milpa and

other cities undoubtedly had tremendous symbolic power (Scarborough 1998).

Houk (1996) has noted that during the Late Classic, the site cores of Dos Hombres, La Milpa, and other Three Rivers regional centres were transformed such that they followed a basic 'site planning template' (Type 1) that appears to have originated in the neighbouring Peten. As described by Ashmore (1991), this 'Peten' template included the several key elements:

- 1 emphasis of a north-south axis;
- 2 formal and functional complementarity of north and south nodes (dualism);
- 3 causeways to emphasize certain connections, and
- 4 ball courts marking the north-south transition.

In Maya cosmology the north-south axis is also vertical, with north corresponding to the overworlds and south to the underworlds. Following the Peten template the northern nodes at La Milpa and Dos Hombres, with their royal funerary temples, dynastic stelae and open ritual space became the celestial realm in this architectural recreation of cosmic order. The placement of ball-courts, symbolic portals to the underworld, as linking elements was also obviously intentional. This placement is most obvious at Dos Hombres (FIGURE 3). At La Milpa, the small ball-court at the southeast end of Plaza A was a relatively late addition, perhaps to bring the site centre more in line with the Peten template. At La Milpa, it is also noteworthy that the large watery surfaces of Reservoirs A and B would have separated the northern and southern symbolic realms.

The spread of the Peten 'site planning template' may be related to significant population shifts occurring during the Late Classic period. Much of the Three Rivers region was affected by an apparent 'Middle Classic' hiatus, beginning in the mid 6th century AD and lasting until the mid 8th century. Río Azul was abandoned, then later marginally reoccupied (Adams 1995a; 1995b). Major structures were ritually terminated at Blue Creek and monumental construction ceased although residential populations remained (Guderjan 1996). Dos Hombres may have been temporarily abandoned (Houk 1996). Monumental construction ceased at La Milpa and temporary abandonment may have occurred (Hammond *et al.* 1996). The reason for these transformations is not entirely clear, but may



be related to larger scale conflicts involving the 'super states' of Tikal, Calakmul and Caracol (Adams 1995a; Martin & Grube 1995).

### Apogee & collapse

By the mid 8th century, however, the construction of monumental architecture and stelae erection began again at La Milpa and Dos Hombres on an unprecedented scale, including the incorporation of the Type 1 or 'Peten' site plan. At the same time, the population of these centres grew tremendously, with dense settlement spreading far beyond the site cores and effectively filling large portions of surrounding countryside. Adams (1995a) relates this settlement-pattern change to a dispersal of farmers and feudal overlords directly onto the countryside. Lohse & Hageman (1997) have noted that this settlement transformation was also marked by the appearance of 'Tikal Plaza Plan 2' in urban and rural elite residential architecture across the region. Evidence suggests that the resurrection of La Milpa and Dos Hombres was at least partly the result of a migration of people from the neighbouring Peten region as well as from internal population growth (Tourtellot *et al.* 1995).

As mentioned above, these migrants may have inherited an environment still significantly degraded by Preclassic/Early Classic deforestation and agriculture. Our investigations in La Milpa Drainages 1 and 3, for example, suggest many upland areas were seriously eroded in earlier times and probably only had minimally redeveloped soil cover by the mid 8th century. Settlement mapping and excavations at La Milpa have revealed often extremely high settlement densities and a remarkable array of linear stone features (Tourtellot *et al.* 1994; 1995). These features are generally crude in form, and constructed of rough 'chich' stones. They all appear to date to the last century of the Late Classic and first century of the Terminal Classic (AD 700–900). While some of these stone alignments form apparent residential boundary walls and others comprise simple terraces, many defy easy explanation. This is not the tidy, rationalized, economic landscape documented for terraced lands in the Río Bec (Eaton 1975; Turner 1983). In short, the landscape suggests that by sometime in the Terminal Classic, the farming population of La Milpa were trying to salvage remnants of soil and soil moisture from largely

denuded upland surfaces. What began apparently as a fairly rationally managed or 'engineered landscape' (Scarborough 1993) may have ultimately severely degraded (Tourtellot *et al.* 1995). Where deep clay soil had accumulated in upland depressions, Maya farmers faced other problems: devastating rainy season run-off and flooding and dry season desiccation and clay contraction. These problems were probably exacerbated by deforestation and the creation of a sun-baked, parched *bajo* landscape (Rice 1993). At Dos Hombres, an unusually dense concentration of late settlement on the margins of a large *aguada* (seasonally wet sinkhole) also suggest a growing scarcity of water (Lohse in press). By this point, the maintenance of monuments dedicated to the social and cosmic order became a concern secondary to mere survival. The long-term abandonment of the cities and region attest to the probable severity of environmental degradation and depopulation that occurred in the Terminal Classic.

Some 500–600 years later, La Milpa became the site of renewed ritual activity, including the movement and resetting of ancient stelae, possibly as part of a regional revitalization cult (Hammond & Bobo 1994). This activity attests to the continued influence of a sacred place, long after it was first created or maintained as a synergized union of ritual, architecture and landscape (Thomas 1993). In essence, the 'voices' of the rulers still echo from weathered, graven images and crumbling temples and palaces. The strength of such voices from the past, however, is unequal. The voices of those that toiled in the fields have become even more muted by the centuries and by the shrouding forest. To hear them we must give equal attention to the more humble features of the archaeological record and to soil itself.

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