THE ORIGIN AND DEVELOPMENT OF LOWLAND CLASSIC MAYA CIVILIZATION

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ABSTRACT

The southern Maya lowlands present a largely redundant environment which does not possess the potential for major internal symbiotic regions or for irrigation. In fact, the interior of this region is uniformly deficient in resources essential to the efficiency of every individual household engaged in the Mesoamerican agricultural subsistence economy: mineral salt, obsidian for blades, and hard stone for grinding. Yet, in the core of this rain forest region, the basic elements of Classic Maya civilization first coalesced. A model involving methods of procuring and distributing the resources necessary to the efficiency of an agricultural subsistence economy explains the loci of lowland Classic Maya development and the order in which these loci developed. This model can also be applied to the Olmec civilization.

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A MAJOR ARCHAEOLOGICAL PROBLEM today seems to be—why did the lowland Maya civilization evolve in its ecological setting? This paper will develop a hypothesis to explain the evolution of lowland Classic Maya civilization.

Since I subscribe to cultural ecology, the environmental configuration of the Petén rain forest is an obvious beginning. This expansive ecological zone has been characterized as lacking developmental potential because: (1) the environment is redundant in access to resources; (2) transportation of goods is difficult; and (3) slash-and-burn agriculture is the main subsistence technique. As a result, it is thought that there was little stimulus toward trade and redistribution; nucleated centers were rarely maintained and a scattered light settlement was typical; and there were no obvious changes in the subsistence system through time which would have required community efforts and caused increasing ceremonialism (Meggers 1954; Palerm and Wolf 1957; M. Coe 1961; Sanders 1964; Webb 1964).

Sanders (1964:236) concludes that there were few integrative factors operating in ancient Maya society and many disruptive ones. Accepting this characterization of the rain forest environment, how can the inception of lowland Maya civilization be explained?

The stress of Meggers (1954:817), Sanders (1964:238), and Sanders and Price (1968:142-145) upon a diffusion of civilization into the lowland rain forest raises a major issue. Since acceptance usually occurs only where the diffusing complex is useful, what was the function of that complex? By Sanders' own admission, there would have been little advantage to sustain a well integrated organization in the Maya lowlands.

Most other hypotheses propose that the Maya cult developed, not out of economic need, but merely to glorify itself (Webb 1964:420-422). I find this an ineffective hypothesis. Therefore, the function of socio-political integration in lowland rain forest environments is a crucial question.

In solving this problem, an understanding of the conjunction of environment and technology is significant. Every household (the minimum production-consumption unit, i.e., extended family, nuclear family, etc.) needs basic resources to efficiently exploit a given eco-zone. I define basic resources as those which are present archaeologically, ethnohistorically, and ethnographically, in every household participating in a specific subsistence configuration, in this case the maize agriculture complex. I will discuss three resources here: igneous or hard stone metates, razor-sharp obsidian tools, and salt.

The metate is found in every household in Mexico. Because stones wear and leave grit in ground corn, the harder the stone the more efficient the metate. Data on excavated metates in the Maya area indicate that subcrystalline limestone metates are rarely found, as natural limestone is too soft to be efficient. Limestone metates occur abundantly only in areas close to major sources of semi-crystalline limestone, such as on the upper Usumacinta and near the Sierra de Yucatán. In

areas where both igneous rocks and limestone were readily available, metates were almost exclusively made from the igneous stone. In areas where major deposits of semi-crystalline limestone and igneous rock were lacking, specifically in the northeast Petén, domestic metates were made of imported stone.

Over 2000 metates have been excavated at Tikal. Only 15% were of native limestone. Eighty-five percent were made of imported stone: quartzite, granite, travertine, etc. (Culbert 1970). In addition, Fry, in his excavations for the Tikal sustaining area survey, found that metates were made of igneous materials as far from the site center as 3.5 km and as early as the Preclassic (Fry 1969:86, personal communication). For the central Petén, the nearest source of igneous stone is the Maya Mountains of Belize. The distance from Tikal to this source is at least 90 km. Whether or not the Tikal population could have survived without imported metates is a moot point: the data indicate massive importation of igneous metates from distant sources by at least the Preclassic.

Obsidian blades with razor-sharp cutting edges are another basic resource. Although obsidian sources are only found in the highlands, flake-blades of obsidian are abundant everywhere in the lowlands. Housemound excavation data from the Maya lowlands indicate that: there is no area where flint served alone in the production of cutting tools; obsidian was utilized everywhere, in some places exclusively; the amount of obsidian in the tool complex was a direct function of the distance from obsidian sources. Therefore, obsidian seems to have been needed, at the very least, to supplement flint tool complexes and was imported everywhere in quantity.

Salt is as essential as water and for precisely the same reason. The chemical requirements of the human body demand that the salt concentration in the blood be kept constant. In areas depending primarily on a vegetarian subsistence diet, a human being needs a minimum of 2-5 g of mineral salt per day (Bloch 1963).

Salt was one of the most important items of trade in precolumbian Mexico (McBryde 1945:46, 72, 60). After the conquest, traffic in feathers and gold ceased, but the salt trade continued (Thompson 1964:20). The Petén is completely without a local mineral salt source. During the sixteenth century, salt for the northwest Petén had to be imported from northern Yucatán (Scholes and Roys 1968:59). Salt for the Usumacinta drainage and Belize was obtained from northern Yucatán and from beds on the upper Chixoy in the Guatemalan highlands (Thompson 1964:20-22).

The point of these data is, given that certain household tools and condiments were considered crucial enough through time to be imported everywhere in the lowlands in quantity and over vast distances, they must have been highly desired by the local populace and must be considered basic resources essential to the efficiency of the practiced subsistence economy.

Most areas of highland Mesoamerica are not far away from one or more sources of these essentials. In the lowlands, however, these resources are few and far between. Because of this highland/lowland dichotomy of resource distribution, there is also a highland/lowland dichotomy in the way in which these goods are mined, worked, collected, and redistributed (Wolf 1967; Nash 1967).

Today, in the highlands where different resource zones are closely spaced, a network of local markets provides for distribution of essential goods. In this system, the unit of production, consumption, and market interaction is the household (Tax and Hinshaw 1969:84; Nash 1967; Wolf 1967). In the lowlands, many resources are not within local reach. The highland household's market function is replaced in the lowlands by supra-household organizations. Instead of a market interaction network, there are hacienda supply stores, local shops, emporiums, and traveling merchants, all depending heavily upon long-distance freight transport provided by postconquest means—mules, trucks, motorboats, and airplanes. Ultimately, as Redfield put it, today the city and its complex organization make trade accessible to small store owners and itinerant merchants by bringing large quantities of goods within their reach (Redfield 1941:156; Wolf 1967).

This present-day highland-household/lowland-supra-household dichotomy in methods of resource distribution seems to have been equally valid before the conquest. Thompson concludes that this is because lowland long-distance travel calls for larger and more organized bodies than does highland travel over shorter routes (Thompson 1964:2). Lowland trade was not merely an

extension of face-to-face exchanges common in the highland market system (Chapman 1957:115). The prerequisites of long-distance trade were capital accumulation of available produce and complex organization for security and leadership far above that which a single household could muster.

In pre-mule days, the upper limit a single cargador could carry was 100 lbs, or 2 metates and 6 manos (McBryde 1945:73). The utter impossibility of door-to-door selling of highland resources into an area stretching several thousand square miles is apparent. Trade as an extension of the lowland environment required an elaborate system of redistribution. Obviously, evenly distributed bases where goods could be concentrated as sources of supply for individual households would be advantageous in the rain forest environment. The lowland ceremonial center provided the supra-household capital, organizational potential, integration of scattered population, as well as bases of distribution and supply for preconquest trade; the ceremonial center was the minimal unit of autonomous economics (Leone 1968:127-128).

The need within every household for basic resources therefore created a bridge between ecology and socio-political organization (Sahlins 1958, 1963; Fried 1967). Such organization functioned to insure procurement and distribution of needed resources. Households are quite capable of autonomous direction of their own production. Therefore, one measure of the integrative potential of socio-political organization is decided in how much autonomy the household must give up to secure basic resources.

Independently, a lowland household would have a difficult time obtaining the items necessary to its economic success. For trade in basic resources to reach every household consistently, goods and authority, extracted at the expense of every household, had to be concentrated into a very few hands. This situation selected for lowland developments in socio-political interaction and organization. The advantage of a consistent supply of basic resources and therefore of complex organization, major capital expenditure, and distributional centers provided a way to invest resources and administrative ability in a fashion that brought political, economic, and social integration and control. Those people who could key into long-distance trade successfully would have restricted access to basic resources that could increase efficiency of every household unit and thus they would become integrative nuclei to scattered household populations.

We have considered the lowlands as a whole; now sectors within the lowlands deserve attention. Large lowland areas can be divided into two parts: (1) an outer buffer zone which borders the highlands or major transportation systems; and (2) an inner core or central area, landlocked and secluded from resources by the buffer zone. The division is between areas near to, and areas removed from, highland resources; however, there are no major differential distributions of resources within the lowlands which create this division. Thus, although the core area is more remote from strategic resources, it can only offer the same environmental produce as the closer buffer zone in exchange for them.

An important aspect of the differences in highland and lowland internal trade is the fact that the highland regional diversity and resulting market system provides a network through which scarce goods can easily move. A metate maker can exchange his product for salt, obsidian, pottery, and wood products, thus distributing metates to areas with salt, obsidian, clay, and wood resources. In the lowlands, the number of interactions are severely limited by the lack of differentially distributed resources. There is little economic motivation for the buffer zone to pass on scarce highland resources to the core area in exchange for the products which the buffer zone already has in quantity (see Fig. 1). Since neither the core environment nor technology can increase the dependability of supply, the rudiments of human interaction become crucial in consistently obtaining needed resources.

The core environment and geographic position selects for the development of complex organization that can maximize its potential to compete with the buffer zone in highland trade—including the ability to mount large trading expeditions, support factories in resource areas, maintain trade routes, and schedule its efforts in terms of dealing with numerous areas. If complex organization is necessary to obtain resources, then community ceremonial interaction and luxury paraphernalia are equally necessary to maintain stratification and organization (Flannery 1968:100; Fried 1967:32; Rappaport 1967:105-109; Binford 1962; Sabloff and Tourtellot 1969). The

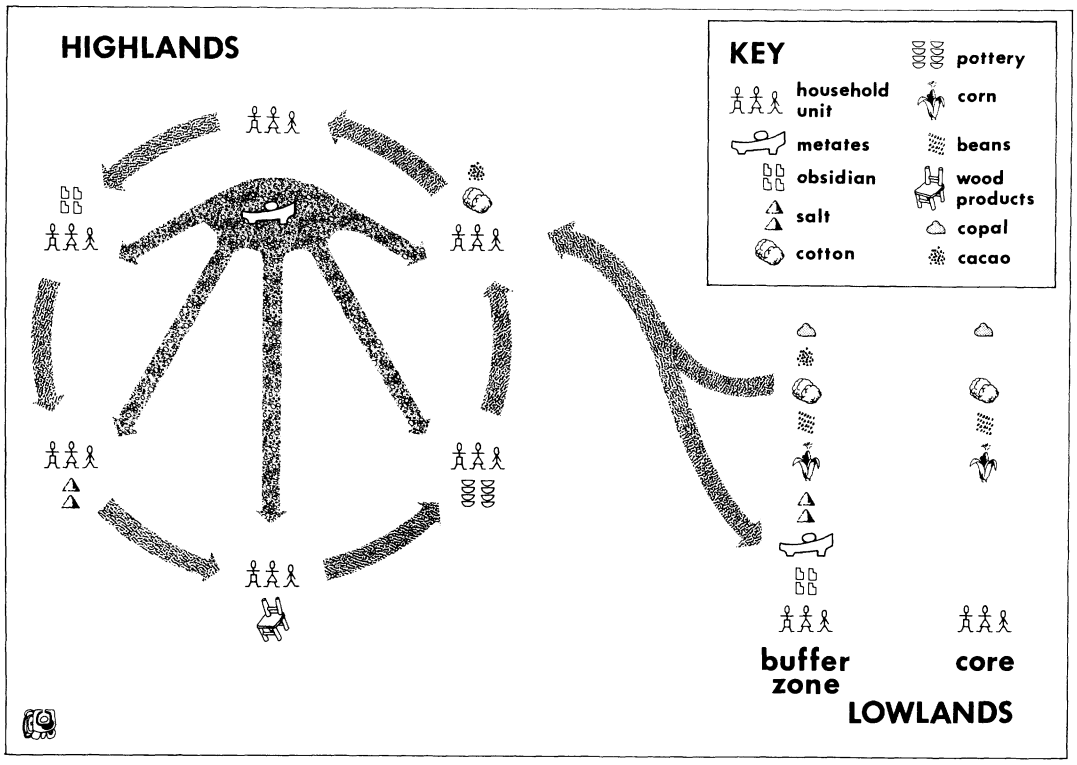

Fig. 1. A model of the exchange potential of natural resources between highland, buffer zone, and core areas.

environment and geographic position of the core, thus, also select for the elaboration of services and products that reinforce community integration. Such services and commodities are the only scarce resources the core area can tap; its exports will therefore be the by-products of community stratification–a specific ceremonial configuration producing access to the supernatural in terms of temples, altars, ritual and astronomical knowledge, polychrome pottery, ceremonial paraphernalia, and other items of status reinforcement (see Figs. 1 and 2).

Several factors are obvious: There is a limit on socio-political development in rain forest environments; the only scarce resources that lowland core areas have to market for strategic goods are the by-products of superior socio-political organization. Therefore, if the buffer zone is socio-politically developed, the best a core area can do is compete on an equal organizational base. Because of spatial proximity the buffer zone will obviously maintain control over strategic resources. Thus, the core area's advantage cannot develop if, at the time of settlement, competing and resource areas are already developed to or beyond the potential of the rain forest.

I hypothesize that given the preconditions of environment, subsistence base, technology, and the existence of basic resources not located in the lowlands, complex socio-political organization in the rain forests of Mesoamerica developed originally in response to the need for consistent procurement, importation, and distribution of non-local basic resources useful to every household. This is a specific formulation of a more general explanatory statement previously proposed by Sahlins (1958), Fried (1967), Hill (personal communication), and others: complex socio-political organization rises in response to the need for procurement and allocation of critical resources or services.

This hypothesis must be tested with available archaeological data. The data utilized in this paper are from the Maya area, although data from the Olmec area provide an equally valid test (Rathje, n.d.). Using the hypothesis, I predict the earliest evidence of complex socio-political organization will occur in the resource deficient core area of the Maya lowlands. No sites of equal complexity will be found in the buffer zone.

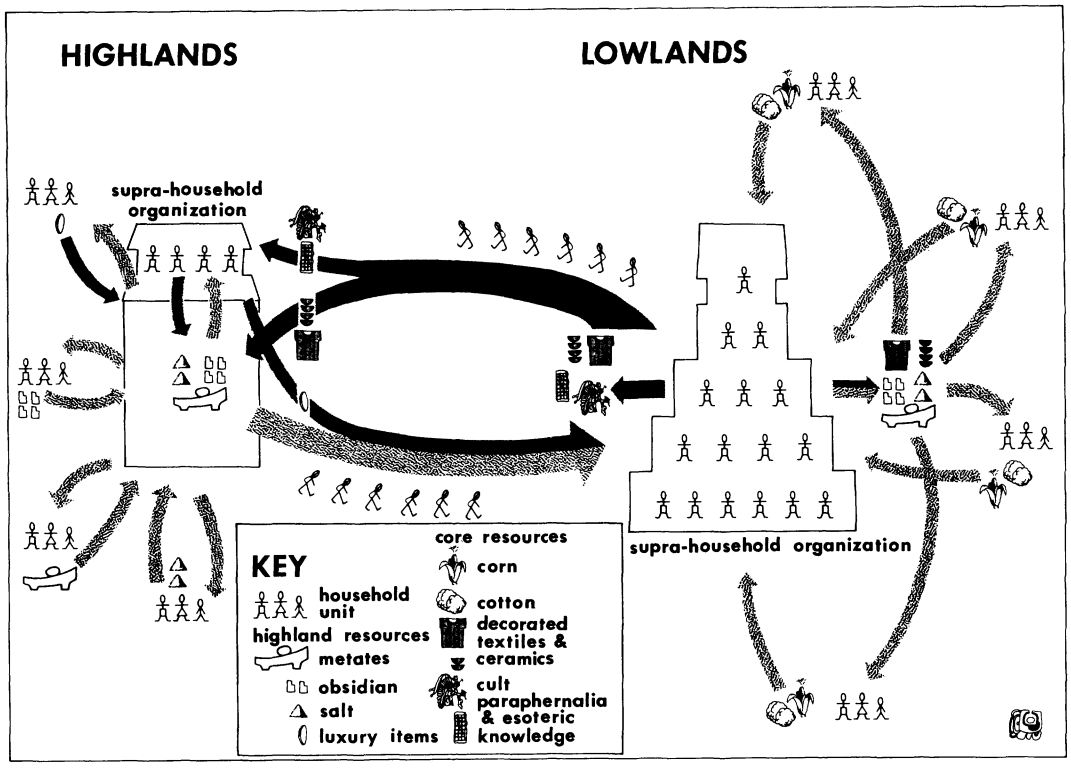

Fig. 2. A model of the exchange functions of the core's cult organization.

Here is a good opportunity to compare hypotheses. Sanders and Price (1968) predict sociopolitical development where zones of differing production are closely spaced, especially in alluviated floodplains. Thus, the first cult developments should, according to Sanders and Price (especially as interpreted by Adams 1969), occur in the buffer zone.

Granted, the first known heavily populated settlements of the Maya lowlands are located along rivers, but Sanders and Price (especially as interpreted by Adams 1969) are not predicting the location of settlements however early. They are predicting the location of the first development of the Maya cult, for which I do not feel Xe or any other buffer zone Early Preclassic settlements qualify. In fact, most of the buffer zone did not develop complex organization until the late Classic. These data do not deny the importance of economic symbiosis in stimulating sociopolitical development, especially in the highlands; they do show that additional factors have effected lowland cultural development.

If the chiefdoms and cult of the lowland Maya did not develop in the buffer zone, did they develop in the core as I predict? First, the core area of least resource exchange potential must be defined. Because of the ethnohistoric record, it is possible to plot postconquest Yucatán population distributions (Fig. 3). The only area that can be confirmed as largely vacant by the records is the center of the northeast Petén (Thompson 1951:390, 1966:29; Scholes and Roys 1968:463-464; MacNutt 1908:2:29; Means 1917:124-129). This pattern is supported archaeologically (Bullard 1960, 1970). The northeast Petén is one of the areas most distant from salt, obsidian, and igneous stone resources. Obviously, it was not an area with any special tradeable environmental resource not found abundantly in the rest of the Maya lowlands (Sanders and Price 1968:169). This then I define as the lowland core area, the area hardest to reach, with the least economic potential; the one area that was too much trouble to settle and supply with basic resources in the sixteenth century (Fig. 4).

Most Mayanists today believe that the Maya cult complex, in a recognizable constellation, crystallized first within the lowland core area, the northeast Petén (Willey 1966:117; Thompson

1967:35; W. Coe 1965). The 2 largest sites of the Maya cult, Mirador (Figs. 3, 4, site 28) and Tikal (Figs. 3, 4, site 6), are within this core area. One confirmation of the prediction is provided by stela inscriptions, the earliest of which occur within the core area (Morley 1937-38; I. Graham, personal communication).

A second prediction is that: (1) core area influence will spread into areas vital to the procurement of basic resources—into buffer zones, along trade routes, and into resource areas; and (2) this influence will take the form of wholesale importation of the by-products of complex socio-political organization—cult ideology, cult technology, and manufactured cult commodities from the core area.

After the original appearance of the cult in the northeast Petén, it spread into the buffer zone (see Fig. 5). The Usumacinta-Pasión drainage, which was a major sixteenth century trade route, produced Piedras Negras (Fig. 5, site 13), Yaxchilan (Fig. 5, site 12), and Altar de Sacrificios (Fig. 5, site 11) as cult members. Altar's river junction location stands in a special relationship to the Guatemalan highlands. The only salt sources near the lowlands are located up the Chixoy River from Altar. During the Early Classic, strong influences from the Petén spread over the highlands. Most interesting is the fact that later, when much of the highlands became isolated from core area influences, the salt producing Chixoy area remained within the Petén diffusion sphere and in the Chama district (Fig. 5, no. 30) one of the great polychrome styles of Mesoamerica emerged (Rands and Smith 1965:131, 144). All of these influences from the Petén passed through strategically located Altar into important highland resource areas. Altar was the only one of the major tested Usumacinta-Pasción sites with an Early Classic cult development of consequence.

Another important buffer zone cult center developed at Copán (Fig. 5, site 10), an area geographically in the highland resource zone near obsidian sources and on a Postclassic trade route.

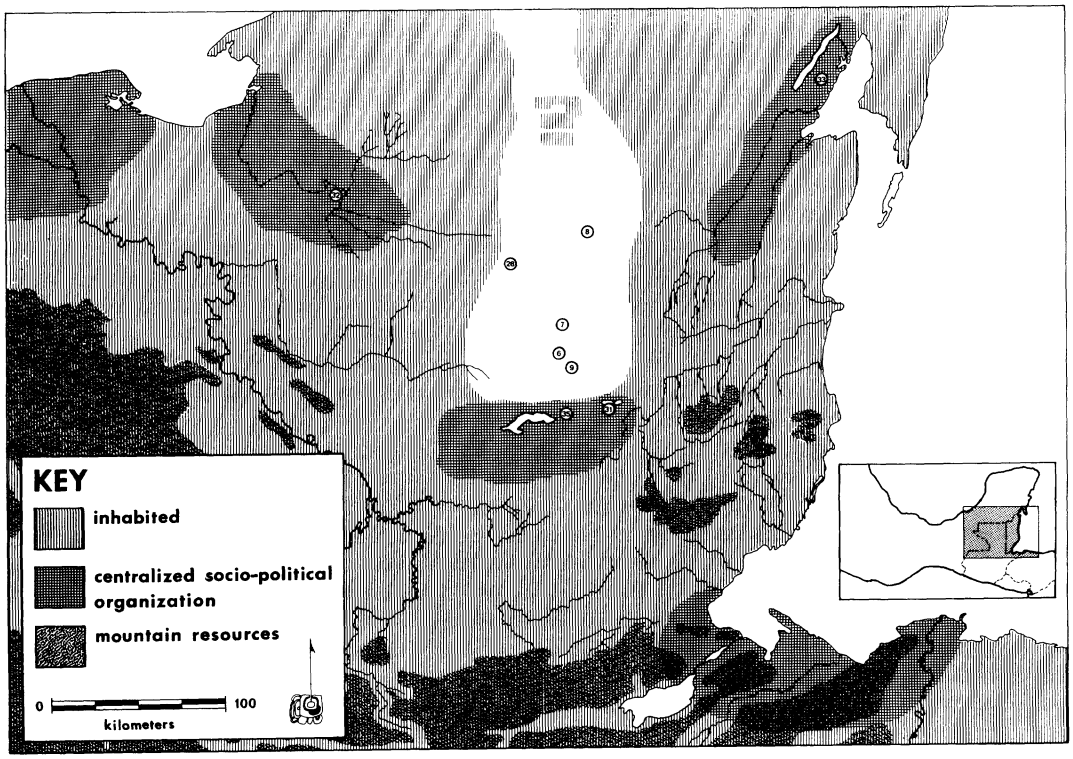

Fig. 3. Sixteenth century population distributions in central Yucatán (after Scholes and Roys 1968; Thompson 1967). The numbered sites are: Tikal, 6; Uaxactun, 7; Balakbal, 8; Uolantun, 9; Mirador, 28; Tapoxte, 31; Itzamkanac, 32; Chetumal, 33; El Zapote, 35.

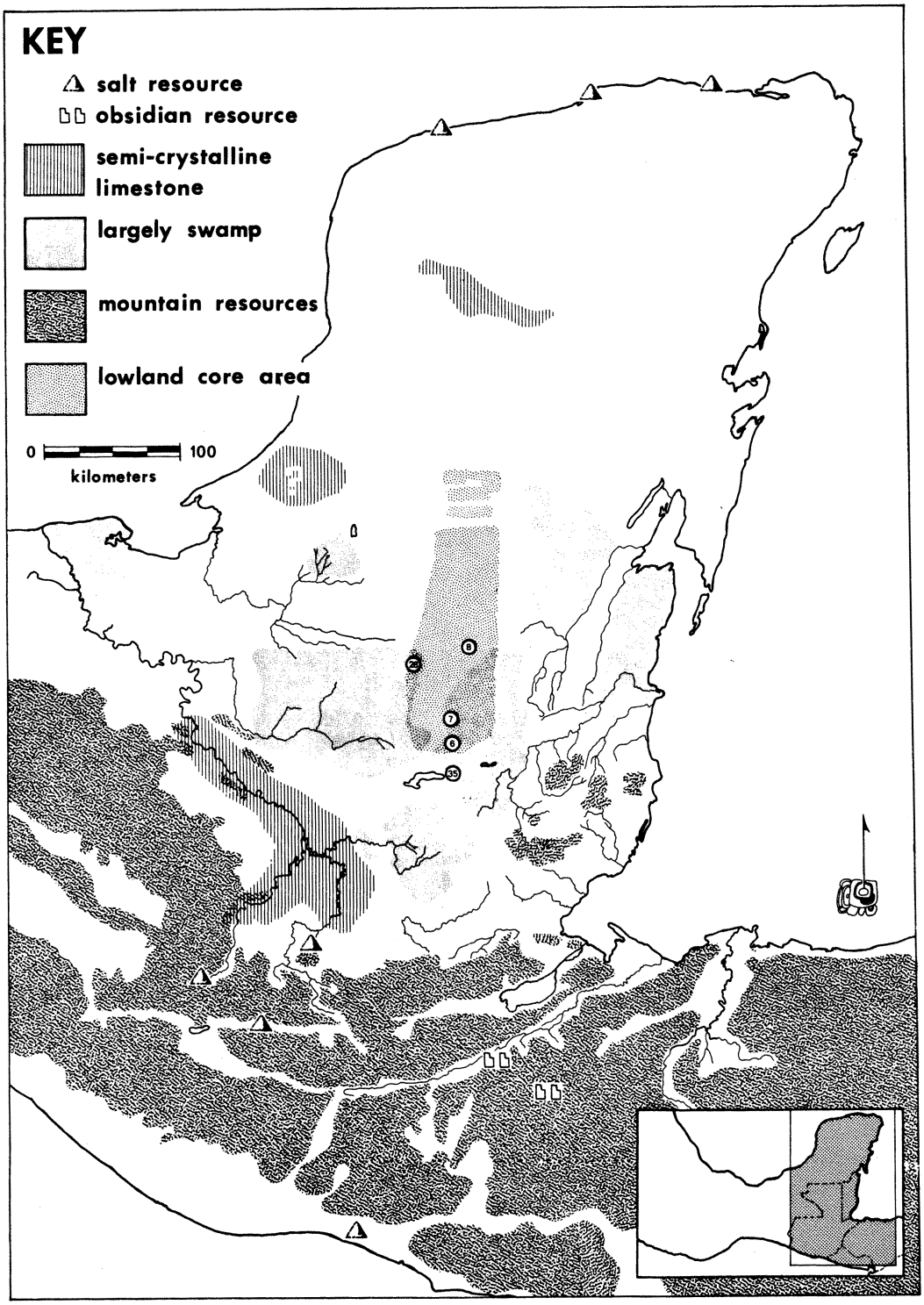

Fig. 4. The central Yucatán core area and surrounding resource zones (after Thompson 1964; Dirreccion General de Cartografis 1964; Blom 1932; Graham 1967). The numbered sites are: Tikal, 6; Uaxactun, 7; Balakbal, 8; Mirador, 28; El Zapote, 35.

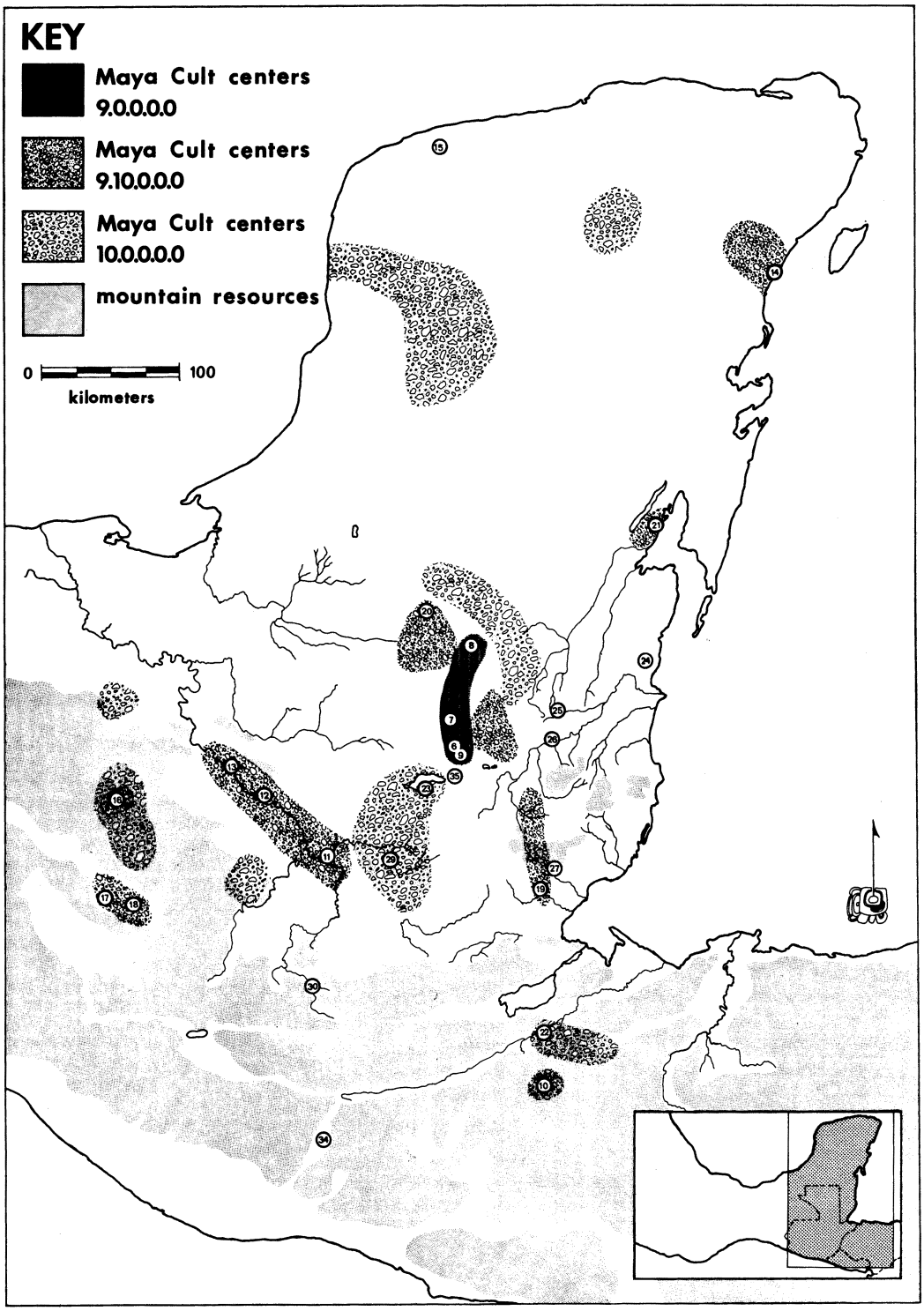

Fig. 5. The spread of the Maya cult as represented by the spread of the stela cult (after Morley 1937-38). The numbered sites are: Tikal, 6; Uaxactun, 7; Balakbal, 8; Uolantun, 9; Copan, 10; Altar de Sacrificios, 11; Yaxchilan, 12; Piedras Negras, 13; Tulum, 14; Dzibilchaltun, 15; Tonina, 16; Comitan, 17; Chinkultic, 18; Pusilha, 19; Calakmul, 20; Ichpaatun, 21; Quirigua, 22; Tayasal, 23; Altun Ha, 24; San Jose, 25; Barton Ramie, 26; Lubaantun, 27; Seibal, 29; Chama Valley, 30; Kaminaljuyu, 34; El Zapote, 35.

During the Copán archaic, a minimal population of farmers and gatherers had only sporadic contact with the outside. Suddenly, in the Early Classic, the Maya cult arrived. Trade with outside regions increased including the wholesale importation of ceremonial items from the central Petén (Longyear 1952:32, 68, 70).

Another possible cult member was Tulum (Fig. 5, site 14), located directly across from Cozumel, the island stopping point in the Postclassic salt trade between northern Yucatán, Belize, and Honduras. Also of note is the seemingly one-way trade between the Petén core area and Dzibilchaltun (Fig. 5, site 15), where according to Andrews (1965:305) literally thousands of Petén trade pieces pepper the Early period deposits. The Yucatec were enthusiastic customers for the decorated polychromes of Guatemala. Perhaps these data form part of the early development of a Petén-Yucatán salt trade.

Obviously, from its complexity, the spread of the cult required importation of specialists and skilled craftsmen or training of buffer zone individuals at centers in the Petén. Socio-technic and ideo-technic cult products were subject to wholesale importation. The following are typical assessments of the distribution of core area ceramics during the cult's early development:

1. Beginning with the Protoclassic and continuing into the Early Classic. . .is a trend toward massive production and extensive distribution of Petén Gloss Ware (Rands and Smith 1965:533).
2. Decorated and monochrome black ware types from the environs of the Petén ceremonial centers reached Barton Ramie in abundance or were imitated by craftsmen who must either have been schooled in the Petén or instructed by persons directly emanating from Petén sources (Willey and others 1965:350).

The ideology and technology of temple architecture, glyphic writing, astronomical knowledge, stela erection, carved eccentrics, and jades diffused similarly. Morley and Brainard conclude:

> The area of Classic Maya culture constituted nearly 100,000 square miles, a major segment of Mesamerica. Over this region there is evidence of a rapid spread of calendric innovations and an identity of religious symbolism as well as a series of concurrent changes in pottery. . . .This remarkably wide-spread homogeneity occurred in an area notable nowadays for its nearly impassible terrain [1946:46].

Thus, the disadvantages of dispersed settlement, great distance from resources, poor transportation, and central location in an area whose redundancy mitigated against local exchange all worked toward integrating communities; and complex socio-political organization in the lowland Maya rain forest developed originally in response to the need for consistent procurement, importation, and distribution of basic resources useful to every household.

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