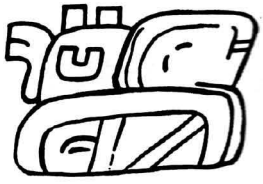
Chapter Ten



Praise the Gods and Pass the Obsidian? The Organization of Ancient Economy in San Martín Jilotepeque, Guatemala

Geoffrey E. Braswell

In 1972, the book *Contemporary Archaeology: A Guide to Theory and Contributions*, edited by Mark Leone, was published. Although the title of this thirty-year-old gem no longer is apt, one contribution to it, "Praise the Gods and Pass the Metates: A Hypothesis of the Development of Lowland Rainforest Civilizations in Mesoamerica," by William Laurens Rathje, still is widely cited today. Three aspects of this work strike me as particularly noteworthy. First, it drew attention to the noneconomic aspects of trade by positing that information, particularly ideology, plays an important role in interaction. Second, it focused not only on the lowlands, where most Maya archaeologists work, but also on the highlands, the location of many important resources exploited in ancient times. A third important contribution was the introduction of core-periphery perspectives on ancient economy. Although there are certain aspects of his hypothesis that I cannot accept—for example, that the highlanders were ideological consumers rather than producers—Rathje's substantivist and interregional approach was a refreshing challenge to both environmental determinism and isolationist models that ignored the importance of the Guatemalan highlands to broader Maya and Mesoamerican economies.

A key resource in Rathje's model—as well as in other economic scenarios (e.g., Santley 1983, 1984, 1989a)—is obsidian, a volcanic glass prized throughout ancient Mesoamerica. Three important obsidian source areas, as well as many more minor sources, are located in the

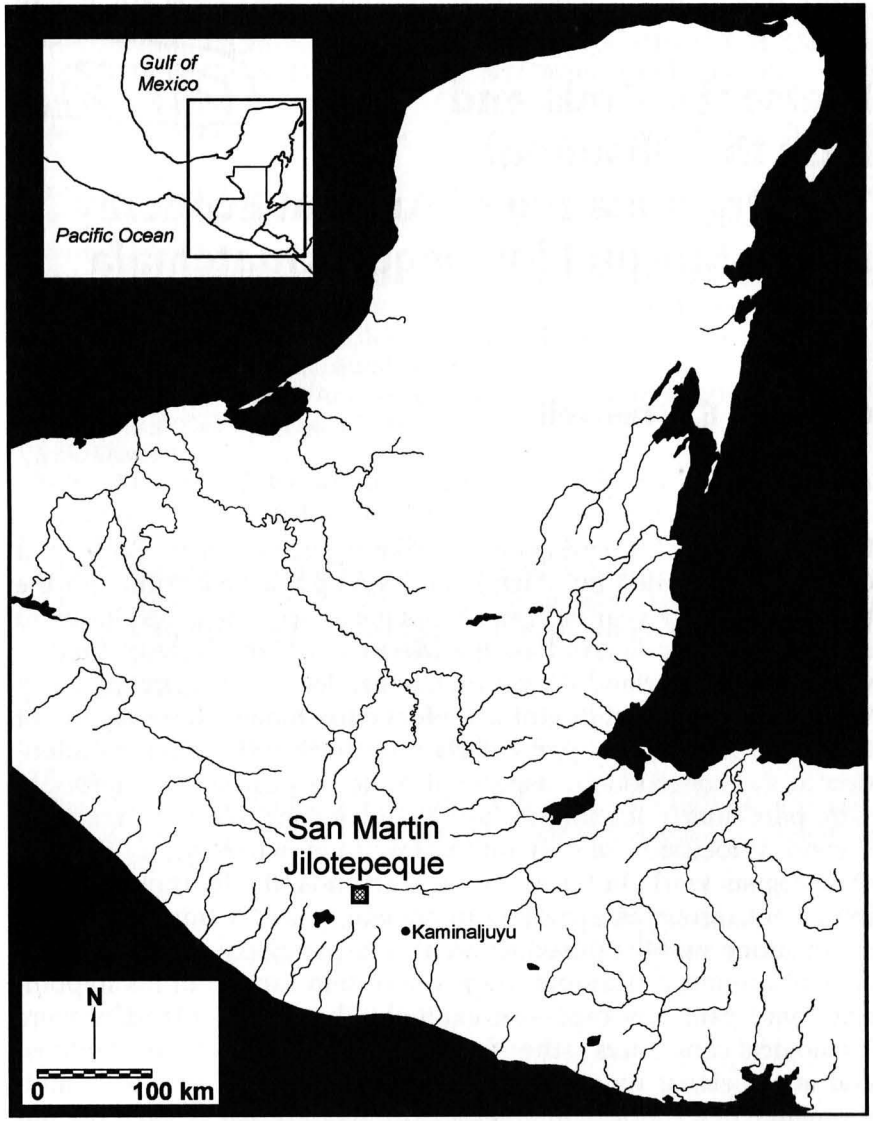


Fig. 10.1. Location of San Martín Jilotepeque obsidian source and settlement region.

highlands of southern Guatemala. One of these is San Martín Jilotepeque (SMJ), department of Chimaltenango, Guatemala (figures 10.1 and 10.2). During the Middle Preclassic period, SMJ was the most important obsidian source in southeastern Mesoamerica, supplying most of the high-quality volcanic glass used in the Maya lowlands, the western highlands, and the Pacific Coast. Material from SMJ was traded as far away as La Venta, where it accounts for more than 28 percent of the Middle Preclassic obsidian at that Olmec site (Hester et al. 1971: table 8, "Chemical Type C"). In later periods, the importance of the SMJ source to the Maya lowlands waned, but it continued to be a critical resource for inhabitants of the southern Maya area.

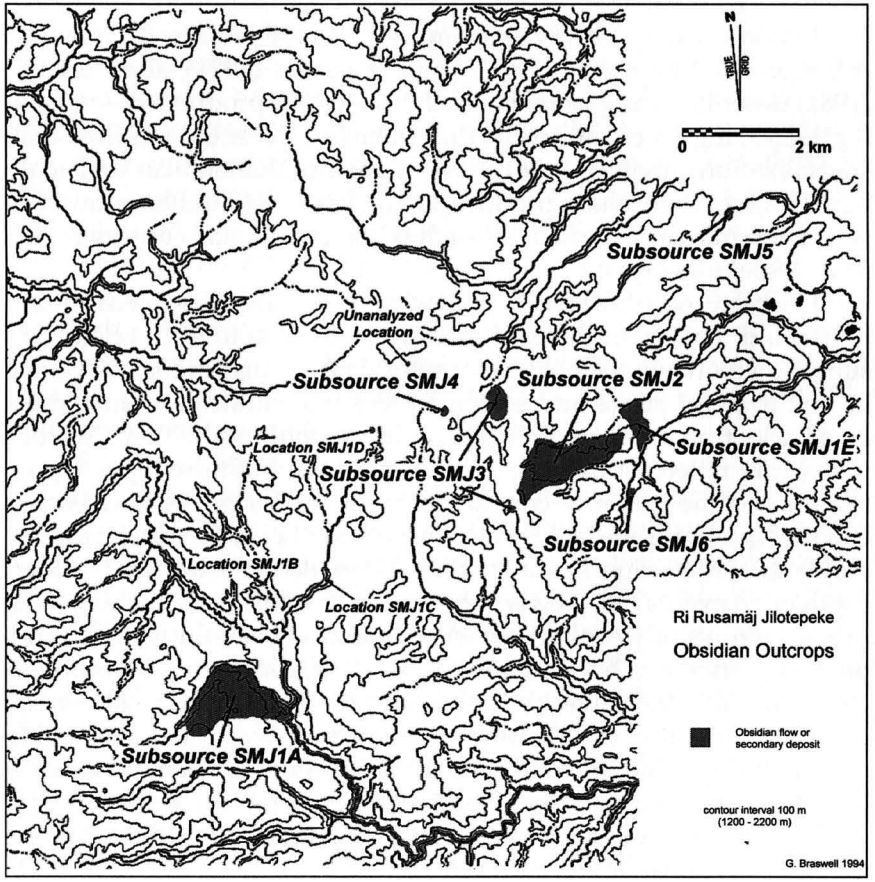


Fig. 10.2. Obsidian outcrops and chemical subsources within the San Martín Jilotepeque source area.

From 1990 to 1993, I directed an integrated program of geological survey, geochemical research, settlement survey, and excavations in and around the SMJ obsidian source (Braswell 1996a, 1998; Braswell and Glascock 1998). My investigations focused on the economic organization of the region. Questions central to the research include: (1) How were production and exchange organized? (2) What was the relationship between settlement, resource exploitation, and social hierarchy in the region? and (3) How did prehistoric production and exchange change over time?

Economic Models

Modes of Production

Two key aspects of any economic system are production and distribution. Santley (1989b, 1994), van der Leeuw (1976), and Peacock (1982) describe three organizational "modes" of production—reflecting increasing levels of production intensity, potential surplus, and specialization—that are relevant to highland Guatemalan archaeology. These are household production, the household industry, and the workshop industry. As with all such typologies, actual cases may not fit a single, ideal type.

The purpose of *household production* is to meet the needs of the household. That is, the level of production is equal to the level of consumption by the household. A farmer carving a digging-stick handle so he can plant maize and a woman weaving clothes for her family on a back-strap loom are examples of household production. Production waste reflects typical household goods in both the types represented and the quantity consumed by members of the household. Product quality is variable, reflecting the skill of individual producers. Since production is aimed at maintenance and demand is low, production events may be very infrequent. For this reason, household production usually occurs as part of typical household routines and often is carried out by women (Arnold 1987; Santley and Kneebone 1993: 39). Thus the context of household production for most nonagricultural goods is the house lot. Production waste is mixed with general household trash and because the level of production is quite low, little may be present. Finally, production loci are scattered throughout the settlement area, creating a pattern of mechanical repetition from house lot to house lot.

In a *household industry*, a small surplus of typical household goods is produced for trade or social purposes. The context of craft production is the house lot, but small, specialized facilities may be built in order to increase productivity. Most potters produce ceramics as a household industry; drying, firing, and storage spaces within the residential compound are examples of such facilities (Arnold 1987). The range of goods that are produced for exchange usually is small, reflecting part-time specialization. Product quality is variable but may be standardized, particularly in households where a relatively large surplus is generated. Refuse from a household industry displays increased production of certain everyday goods, with the result that assemblages look quantitatively—but not qualitatively—different from those of households that do not practice a household industry (Deal 1983; Krotser 1974; Santley and Kneebone 1993). Thus, as the intensity of production increases, a household industry becomes easier to identify in the archaeological record. Production waste may be discarded with general household trash or deposited in small, specialized dumps within or near the house lot. As with household production, production loci are scattered throughout the settlement area.

When production becomes a full-time occupation, a *workshop industry* is present (Santley and Kneebone 1993: 41). Production levels are increased not only by intensification but also by specialization. Full-time specialization may not occur without social stratification because the distribution systems that typify egalitarian and ranked societies are not sufficiently integrated (Smith 1976a). The presence of a workshop industry, then, has definite sociopolitical correlates. The surplus generated by a workshop industry may be manipulated by elite nonproducers as well as by producers.

Production levels in a workshop industry are much higher than in either household mode because producers must meet all their subsistence needs through exchange. Efficiency of production, therefore, is an important factor in a workshop industry. Efficiency may be increased in several ways: "(1) by spatial segregation and routinization of production tasks; (2) by specialization in the manufacture of a limited number of commodity types; (3) by improvements in technology; or (4) by some combination of these" (Santley and Kneebone 1993: 41). The first leads to the creation of workshops, or specialized production loci. These are often, but not necessarily, segregated from household space. The use of space within a workshop may become specialized, with certain rooms or areas set aside for specific purposes or stages of production (Arnold 1987; Santley and Kneebone 1993). One effect of increased efficiency and the routinization of tasks is standardization of the product. When a workshop is removed from

a household context, its location may be determined by factors that increase production efficiency. Ease of access to required natural resources, distribution facilities, and disposal sites are examples of such factors. Workshops, therefore, may not be evenly distributed throughout a settlement area, but may cluster in *barrios*. In the case of lithic production, workshops often are found near exploitable outcrops of raw material, or near the residential groups of the elites who control the distribution of raw material and finished products.

Because production levels are high, the waste generated by a workshop industry is too abundant to dispose in residential contexts. Instead, specialized dump sites are used. The distance between specialized disposal areas and residences increases when workshop refuse is potentially hazardous, as is the case with lithic debitage (Santley and Kneebone 1993). Because of segregation from household contexts, an archaeological assemblage recovered from a specialized disposal area does not quantitatively or qualitatively resemble typical household waste. The internal diversity of such an assemblage is low, reflecting tasks related to specialized production and not to the full spectrum of household activities. The examination of such debris is often the easiest way to identify the presence of a workshop industry.

Much has been said about the misidentification of lithic workshops as *contexts* of production (e.g., Clark 1986, 1989a, 1989b; Moholy-Nagy 1990). What should be stressed is that it is not necessary to find the exact location of a lithic workshop to demonstrate the practice of a workshop industry. The identification of a specialized disposal area removed from household contexts is sufficient for this purpose.

The Spatial Organization of Distribution Systems

Smith (1976b) has identified two spatial patterns for uncommercialized economies. These correspond with different types of exchange within the regional system. In *extended network systems*, exchange is conducted between several equivalent spatial units, be they households or communities. Exchange is dyadic and tends to be poorly organized, largely because of the nonhierarchical, almost random pattern of the network. For this reason, there is little feedback between demand, production, and supply (Smith 1976a: 315). In fact, production levels of a given commodity at a particular location often are determined not by demand for that product at another

location, but by local demand for the commodity for which it is exchanged (Rappaport 1967). There is little or no specialization in the nodes of an extended network system, and economic integration is minimal. Thus, the household industry is the mode of production generating exchangeable surplus. For these reasons, such systems do not support stratification (Smith 1976a: 315–318). The lack of stratification is reflected in settlement patterns; sites tend to be dispersed evenly across the landscape and show little differentiation in size or function. Although organization is minimal, the open, extended pattern of such systems allows down-the-line exchange over great distances. For this reason, nodes in extended network systems can be considered open corporate communities (Smith 1976a, 1976b). An important archaeological correlate is that imported goods from other regions may be present in such systems, but their distribution does not reflect preferential access or social stratification.

A second distributional pattern is the *bounded network system*. These are well ordered according to a local hierarchy, but exchange outside of the system is very limited (Smith 1976a: 315). Such systems also have been called bounded hierarchical networks (e.g., Santley 1994: 244–245) because of the linkage of households or communities to a nodal center that allocates some degree of specialization. Within the bounded system, exchange has a polyadic aspect, particularly if workshops are present. The majority of the population, however, is engaged in subsistence food production and are not full-time specialists. This not only keeps production levels low, but also limits demand. Furthermore, the lack of articulation and integration of different bounded network systems also acts to keep demand low, prohibiting the development of markets. For this reason, bounded network systems are somewhat more specialized and stratified than extended network economies but also are uncommercialized. In bounded network systems, elites are found at sites dispersed throughout the countryside (organizational nodes) but are not found at the majority of sites (production nodes). Bounded network systems are relatively small. There should be two or three levels in the settlement hierarchy.

The bounded nature of the network implies that such systems form closed corporate groups (Santley 1994: table 1; Smith 1976a: table 2). An important archaeological correlate is that very few imported goods can be found at sites in a bounded network system. Typically, bounded network economies support complex "chiefdoms" and some simple states (Santley 1994; Smith 1976a, 1976b). To the extent that

interaction beyond the boundary of the network does occur, exchange is dyadic. Such interregional interaction involves the exchange of small quantities of status goods among elites.

Survey and Excavations in San Martín Jilotepeque

Systematic survey of an area of 138 km^2 surrounding the prehistoric quarries of SMJ discovered 147 sites, including residential locations, quarry-workshops, secondary workshops, and workshop disposal areas. A three-level hierarchy was developed for habitation sites, based on factors including site area and the presence and quantity of

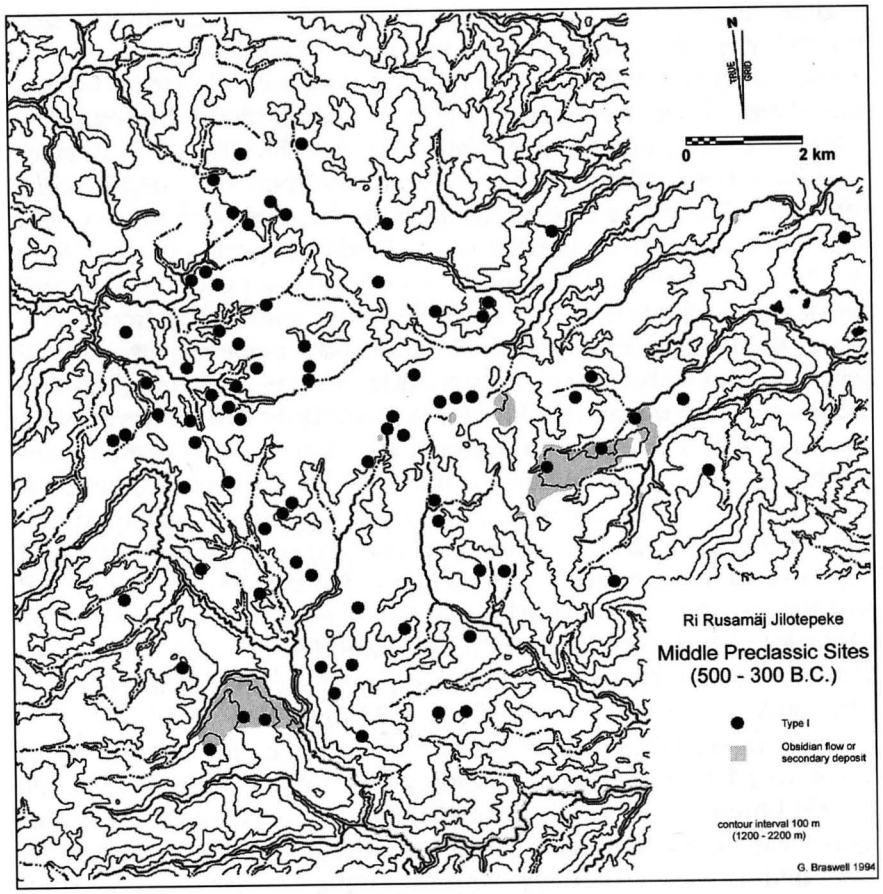


Fig. 10.3. Middle Preclassic settlement in San Martín Jilotepeque.

mounds, sculpture, and imported goods (Braswell 1996a: chapter 5). In addition, test-pitting excavations were conducted in selected habitation and special-function sites.

Middle Preclassic (500–300 B.C.)

Permanent occupation of the region began in the late Middle Preclassic period. A total of seventy-seven habitation sites dating to that period were identified (figure 10.3), and occupation is best characterized as broadly distributed but low in density. No earthen mounds or sculptures date to this period and all habitation sites are small. Most, in fact, probably represent one or two house lots. The two largest sites (measuring 1.0 and 3.3 ha in area) might be small villages, but site formation processes are not well understood and the dispersed pattern of artifacts on the surface may be caused by more recent land-use strategies. It is interesting that these two sites are located in strategic positions. The largest is situated on an open plain ideal for agriculture. The second site is located near the Pachay obsidian quarries, suggesting that obsidian extraction was a motive for settlement. Nearest neighbor analysis indicates that sites are spaced randomly with regard to each other, but a slight tendency for habitation sites to cluster near exploited obsidian quarries was noted (Braswell 1998). Despite the presence of two sites that may have been small villages, the Middle Preclassic settlement hierarchy consisted of only one level, which I call Type I sites.

Test pits in sites with Middle Preclassic components failed to recover imported artifacts. Instead, all ceramics are of a local tradition and belong to the Sacatepéquez complex identified by Shook (1952). Despite many shared similarities with Providencia-phase material from Kaminaljuyu, the Middle Preclassic pottery of SMJ is less diverse and lacks many of the more elaborate forms. Moreover, no ceramics belonging to Pacific Coast traditions were recovered. Given the widespread distribution of SMJ obsidian throughout southern Mesoamerica during the late Middle Preclassic period, the economic isolation of the region is somewhat surprising.

Late Preclassic (300 B.C.–A.D. 250)

Only twenty-four sites dating to the Late Preclassic period were identified (figure 10.4), and Late Preclassic sherds account for just 0.8 percent of the diagnostic ceramics recovered from these sites. It seems likely that this pottery represents lingering Middle Preclassic

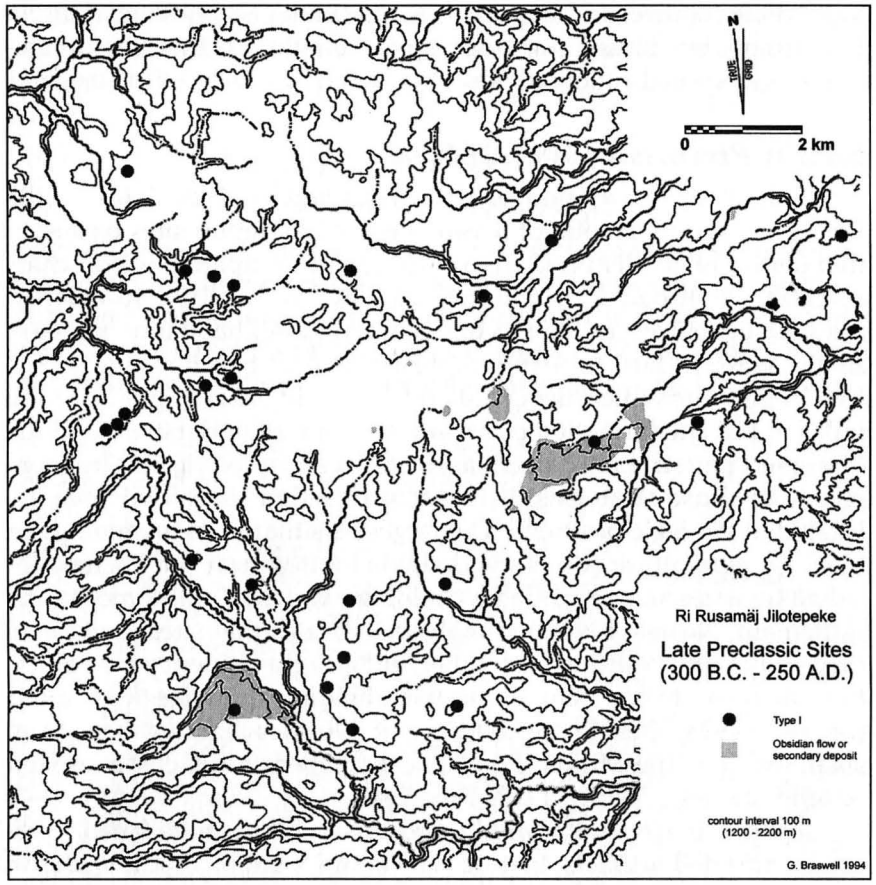


Fig. 10.4. Late Preclassic settlement in San Martín Jilotepeque.

settlement or precocious Early Classic reoccupation. That is, SMJ probably was abandoned for much of the Late Preclassic period. I have no explanation for the abandonment of the region during this interval, but the decline in the importance of SMJ obsidian in the Maya lowlands during the Late Preclassic period probably was related to population loss near the source. As in the Middle Preclassic period, the settlement hierarchy consisted of only one level, and habitation sites were positioned randomly with regard to each other on the landscape. No imported artifacts dating to the Late Preclassic period were recovered, and local ceramics reflect continuing divergence from the pottery-making tradition of Kaminaljuyu (see Popenoe de Hatch 1997).

In contrast, several large sites with both visible architecture and important Preclassic components are found in the valleys between the modern towns of San Andrés Itzapa, Chimaltenango, El Tejar, and Parramos. The most important sites are Durazno, Cerritos Itzapa, and San Lorenzo (Richardson 1938; Shook 1952). These sites, although located well beyond survey boundaries, are only some 15–20 km south of SMJ. No doubt the rich soils and open, flat plains of the south promoted early intensive settlement, while the poor soils, harsh terrain, and occasional frosts of the SMJ area were inhibiting factors. The chronologies of these early valley sites are not well known. Although all have strong Middle and Late Preclassic components, Classic period ceramics also are found in abundance on their surfaces. Dating

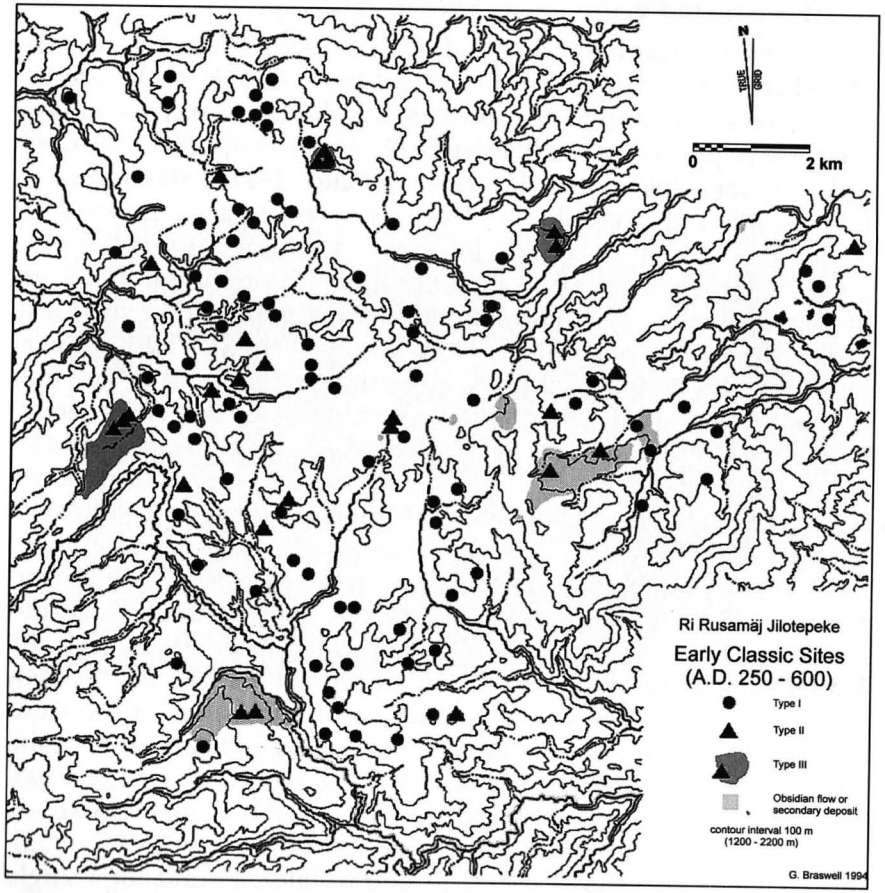


Fig. 10.5. Early Classic settlement in San Martín Jilotepeque.

the construction of the mounds from surface collections, therefore, is problematic. Test excavations were conducted recently at San Lorenzo. Although a Middle Formative burial was discovered at a depth of 3.0–3.4 m below the surface, contexts related to the mound itself were either stratigraphically mixed or inverted (Eugenia J. Robinson, personal communication 1994). The Late Classic seems to have been the period of heaviest occupation in the Itzapa region (Shook 1952). I conducted a brief reconnaissance of Finca Durazno in 1990, and most of the ceramics I found there are Early Classic in date. Thus, although the valleys south of SMJ were inhabited during the Middle and Late Preclassic, it is quite possible that Type II sites did not develop in that region until the Early Classic period.

Early Classic Period (A.D. 250–600)

The Early Classic was a period of heavy occupation (figure 10.5). Elsewhere, I have argued that the new Early Classic settlers of the region were ancestral to the modern Kaqchikel speakers who now occupy this portion of the highlands (Braswell 1996a, 1998; Braswell and Amador 1999; see also Popenoe de Hatch 1997, 1998). A total of 107 habitation sites have Early Classic components, and a three-tiered settlement hierarchy developed during this period. This indicates a qualitative change in the sociopolitical complexity of the SMJ area. In fact, the level of settlement complexity at SMJ during the Early Classic period is greater than in other surveyed areas of the Kaqchikel highlands. Mound architecture and sculpture (Braswell 1996b) first appear in the Early Classic period, as do specialized obsidian activity areas removed from quarry contexts. The largest Type III sites (figure 10.6a), at the top of the settlement hierarchy, consist of multiple courtyard groups and scattered isolated mounds covering areas of 10 to 90 ha.

Nearest neighbor analysis reveals several interesting patterns in the Early Classic data. First, there is a tendency for specialized obsidian activity areas—either off-quarry workshops or, more likely, workshop dumps—to aggregate around the larger and more elaborate Type II and Type III habitation sites. Debitage recovered from these obsidian activity areas is highly specialized, demonstrating the production of bifacially retouched tools on macroblade blanks. Second, Type III sites are regularly spaced between exploited quarries. But Type II sites—intermediate-sized habitation sites with a few imported goods, occasional sculpture, and isolated mounds or a single mound group—show a tendency to cluster near exploited outcrops.

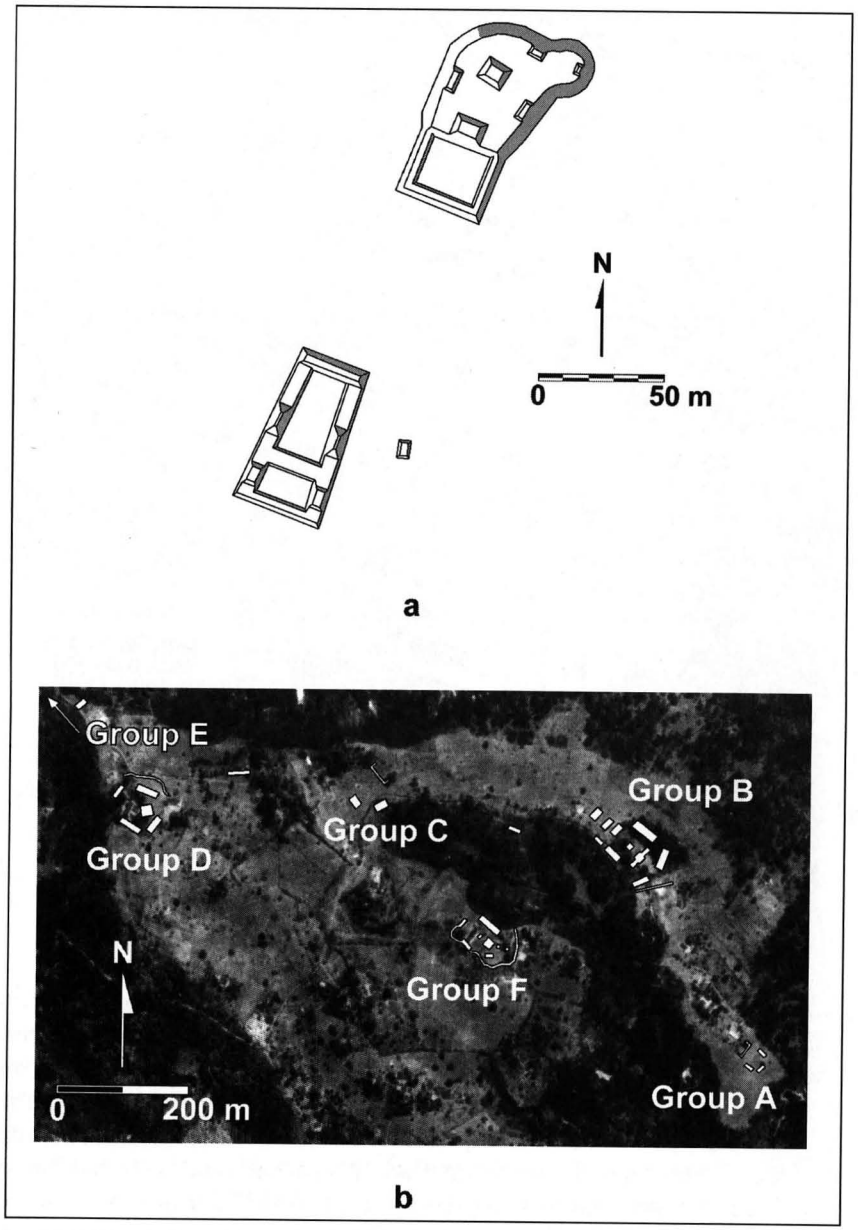


Fig. 10.6. Examples of Type III habitation sites in San Martín Jilotepeque: (a) mound structures at El Perén, a single-component Early Classic site (an additional mound is located southwest of the two groups shown); (b) O'ch'al K'abowil Siwan (Chuisac), showing Postclassic mound structures at the site (Group E is located northwest of the area shown in the photograph).

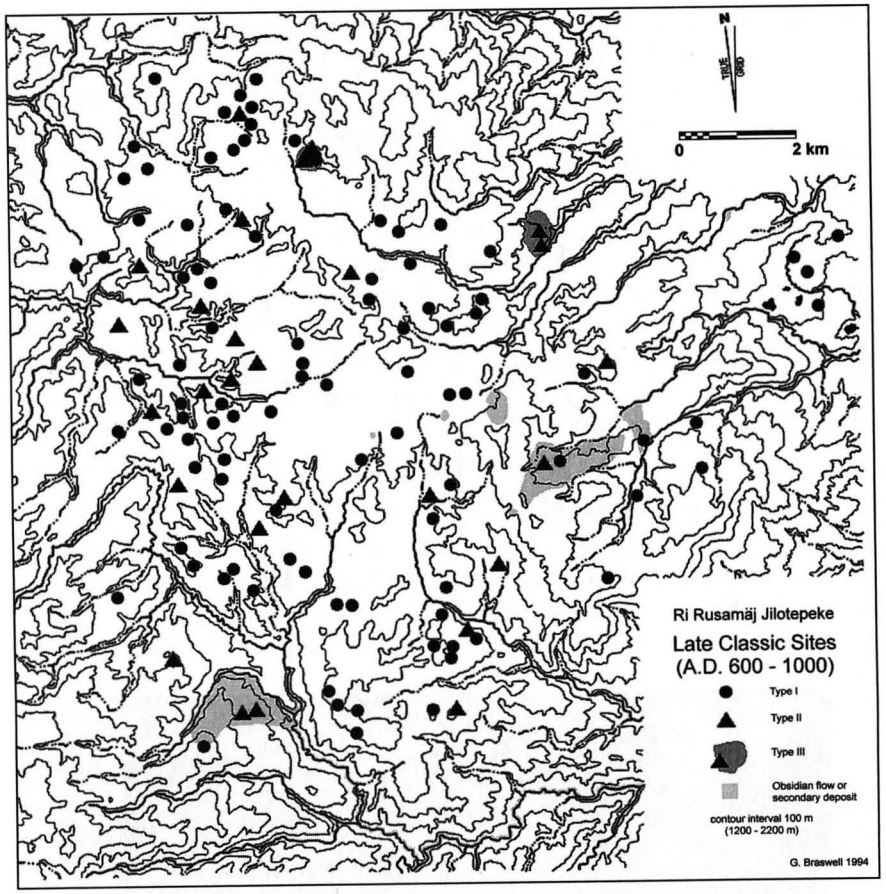


Fig. 10.7. Late Classic settlement in San Martín Jilotepeque.

Construction sequences are not sufficiently fine-grained to determine if these Type II sites began as simpler Type I communities or were founded and built as intermediate-ranked sites. Thus, the clustering of Type II sites around exploited outcrops may suggest an attempt by elites to control obsidian quarries. Alternatively, the inhabitants of Type II sites may have owed their prosperity (relative to that of Type I site occupants) to the proximity of obsidian quarries.

Late Classic (A.D. 600–1000)

The Late Classic was the period of heaviest occupation in the SMJ region. Late Classic components are present at 119 of the 147 sites

sampled by the survey (figure 10.7). The three-tiered hierarchy of settlement continued in the Late Classic period, but two of the largest Type III sites, El Perén and Quimal, were abandoned by or shortly after the beginning of the Late Classic. Occupation and construction continued at the third Type III site, La Merced, with the addition of another group of mounds. The erection of tenoned sculpture and blank stelae persisted in the Late Classic period but was less frequent than in Early Classic times.

Nearest neighbor analysis indicates that intermediate-level Type II sites were spaced at regular intervals from the larger Type III sites, something to be expected if they were politically subordinate. Seven off-quarry obsidian activity areas—again, workshops or workshop dump sites associated with biface production—were located within the survey zone. Nearest neighbor analysis demonstrates an extremely strong pattern of aggregation of these activity areas with intermediate-ranked Type II sites, but they are randomly distributed around the Type I and Type III sites. In addition, Late Classic Type II sites tend to cluster near obsidian quarries. Thus, during the Late Classic period, biface production was a specialized activity associated with small mound sites. These intermediate-ranked sites also tend to be located near exploited outcrops.

Postclassic (A.D. 1000–1550)

The transition from Classic to Postclassic is the least understood period in the prehistory of the central Guatemalan highlands. At this time, Kaminaljuyu and the Valley of Guatemala were largely abandoned, but regions to the west, including SMJ, were not. Ceramic and settlement data from SMJ strongly suggest that the Classic to Postclassic transition was gradual, and do not support the arrival of conquering groups. There are very few diagnostic types of the Early Postclassic period, and supposedly diagnostic Late Classic and Late Postclassic wares were found together in middens radiocarbon-dated to the Early Postclassic period (see Braswell 1996a: chapter 6). Moreover, there is a remarkable continuity of settlement between the Late Classic and the Postclassic period; fully 87 percent of the eighty-two Postclassic sites in SMJ also have Late Classic components.

The three-tiered settlement hierarchy continued into the Postclassic period (figure 10.8), although a new paramount site, O'ch'al K'abowil Siwan, emerged as the dominant center (figure 10.6b). O'ch'al, a large site containing at least forty-two mounds and terraces arranged in six groups, is known from ethnohistorical

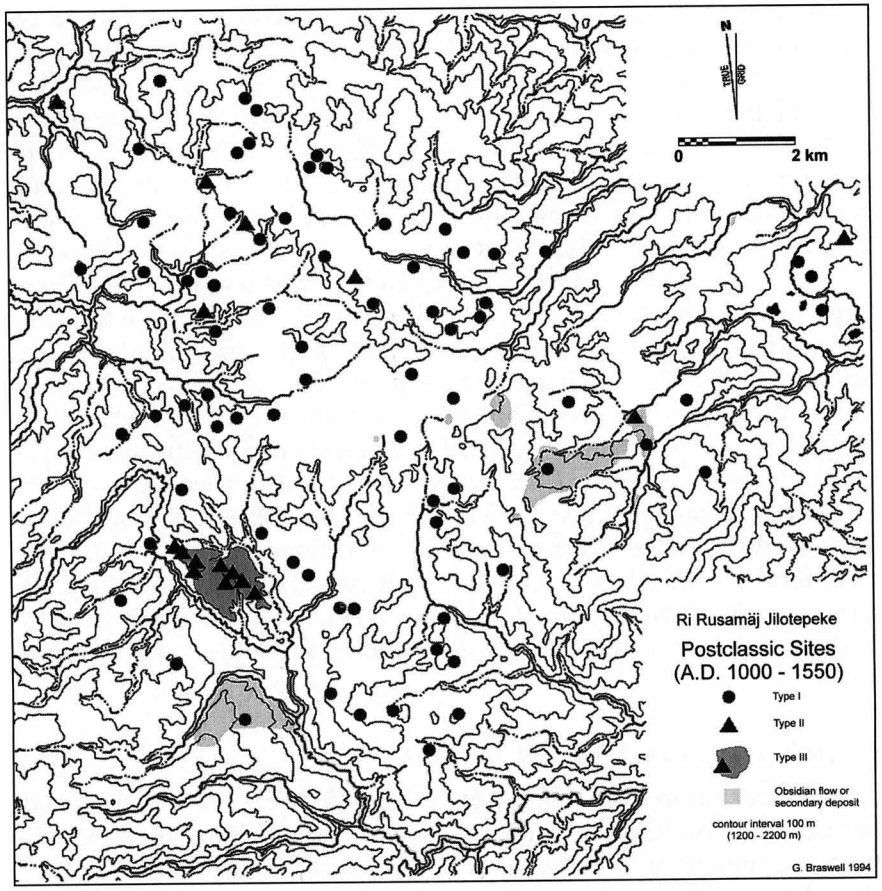


Fig. 10.8. Postclassic settlement in San Martín Jilotepeque.

documents to have been founded by the Xpantzay faction. Later it served as the first capital of the Chajoma', who eventually moved to the site erroneously called "Mixco" Viejo (Carmack 1979). Three obsidian activity areas with Postclassic components were located, and nearest neighbor analysis demonstrates a reversal of Classic period trends. These activity areas tend to aggregate with Type I sites rather than with the larger Type II or Type III sites. Thus, it appears that Postclassic workshop production was more closely associated with small habitation sites lacking mound architecture. Also in contrast with the Classic period, Type II habitation sites are spaced at regular intervals from obsidian quarries, and Type I and III sites appear to be randomly spaced around exploited outcrops.

Conclusions

What do these settlement data tell us about the organization of production and distribution in ancient San Martín Jilotepeque? During the Preclassic period, lithic extraction and production was organized on the household level and distribution was structured as an extended network. During the Classic and Postclassic periods, the economy of SMJ was a bounded network and at least one lithic industry, biface production, was practiced as a workshop industry.

When I began research, I expected to find evidence dating to the Preclassic period for trade with the Gulf and Pacific Coasts and with the Maya lowlands. Following Rathje (1972), I thought I might find items that indicated participation in a cult originating in, or at least with important ties to, these other areas. I even joked about finding an Olmec head or a low-relief sculpture in the pan-Mesoamerican "Olmecoid" style, as have been found at Middle to Late Preclassic sites in the Pacific piedmont of Guatemala. Minimally, I thought I would find evidence of a ranked or stratified society, where social differences were supported by surpluses generated by trading obsidian. Instead, all lines of data support the existence of simple, egalitarian communities in SMJ during the Middle and Late Preclassic periods. Lithic extraction and production were organized at the household level, with only very low levels of part-time specialization. Given the lack of evidence for social stratification—or even data suggesting social ranking—exchange probably was conducted between equal partners. The economic system is best categorized as a simple, extended network system. Compared to much of Middle and Late Preclassic Mesoamerica, SMJ seems to have retained a relatively low level of political, social, and economic complexity. SMJ was not the center of an important chiefdom, as some investigators have suggested.

The implication, then, is that obsidian from the SMJ source probably left the regional system through acts of dyadic exchange conducted in a down-the-line fashion. Given the complete lack of evidence for imported goods and ideas—even from regions as close as the Pacific Coast and the Valley of Guatemala—it does not seem likely that local inhabitants viewed the resource as particularly valuable. Specifically, obsidian was not traded for exotic, status-endowing materials. We may imagine that perishable items and ground stone tools were received from other neighbors in the highlands, but whatever these items were, they do not seem to have been manipulated in ways that bestowed status on their owners. I can see no

evidence for even the most incipient of aggrandizing behavior, and prefer to view the Middle to Late Preclassic inhabitants of SMJ as simple farmers who occasionally exchanged obsidian for other quotidian goods produced by their neighbors. Thus, it does not seem likely that demand from outside of the system—which must have been substantial—played any role in determining the organization of obsidian production within SMJ.

Two alternative scenarios require additional exploration. First, access to the quarries may have been open, and parties from other regions may have obtained their obsidian directly from the SMJ source. Although occasional visitors would not have left many traces of their presence, no Preclassic ceramics or other goods produced outside of the region were recovered, even from the comparatively large site of Pachay 2, located next to the most important quarry zone utilized in the Preclassic period. Excavations and survey of that site failed to reveal any traces of a foreign presence, however fleeting. Second, the SMJ region may have been the periphery of a larger chiefdom, centered some 15–20 km to the south. Although there are indications of an important Preclassic occupation in that region, there are as yet no convincing data that settlements were larger or politically more complex than in SMJ itself. A few mounds in the Chimaltenango-Itzapa-El Tejar region may date to the Preclassic, but most appear to have been built during the Classic period. Thus, this second alternative also seems unlikely.

In the Classic and Postclassic periods, the political and economic organization of SMJ was somewhat more complex. A three-tiered site hierarchy existed, and truly stratified society emerged. At least one lithic industry, biface production, was practiced as a workshop industry. Classic period biface workshops are associated with intermediate-rank habitation sites, which usually have at least one mound, perhaps a few pieces of sculpture, and may have obsidian or ceramics imported from another part of the Guatemalan highlands. In addition, intermediate-rank sites seem to cluster near obsidian quarries, suggesting a relationship between status and production.

In the Postclassic period, workshop production was not associated with intermediate-rank sites, but with habitation sites of the lowest tier in the hierarchy. Apparently, specialization in lithic production either no longer presented opportunities for social mobility or no longer was limited to practitioners of elevated status.

What kind of distribution system existed in Classic and Postclassic times? A three-tiered settlement hierarchy is consistent with a bounded network system of the type typically associated with chiefdoms. The lack of long-distance—or even medium-distance—exchange goods in SMJ also is evidence for the existence of a bounded network. Very few imported artifacts were recovered from Classic or Postclassic contexts, and what little that was found came from regions less than 50 km away, such as the Lake Atitlán area and the Valley of Guatemala. An elite burial offering from the late Early Classic Type III site of El Perén, for example, contained locally made pottery, native mica, and a necklace made of clay beads painted green in imitation of jade. Despite the relative proximity of Kaminaljuyu and the central Escuintla region, late Early Classic SMJ did not participate in an interaction sphere in which ideas and goods from central Mexico circulated. There is no *talud-tablero* architecture, no "Teotihuacanoid" ceramics, and no green obsidian from the Pachuca, Hidalgo, source in SMJ. As in earlier periods, the regional economy remained essentially independent.

Alas, Rathje's (1972) core-periphery model of Maya highland-lowland relations is not supported by data from SMJ, although other regions in southern Guatemala may have been more articulated with regional economies to the north. Contrary to Rathje's predictions, there are no imported items suggesting that highland goods were exchanged for lowland esoteric knowledge and symbol sets loaded with ideological content. The pattern of economic autonomy—perhaps best described as relative isolation—from larger trading spheres persisted from Preclassic to Postclassic times. To my knowledge, fragments of just two vessels subject to long-distance exchange have been found at Postclassic sites in the Guatemalan highlands. The only Classic to Postclassic good that may have been imported to SMJ over significant distances was *pom* (copal incense), which I found in many excavated contexts. If the elite of SMJ were passing the obsidian and praising the gods, as posited in Rathje's model, they did so with copious quantities of incense.

References

Arnold, Philip J. III
1987 "The Household Potters of Las Tuxtlas: An Ethnoarchaeological Study of Ceramic Production and Site Structure." Ph.D. dissertation, Department of Anthropology, University of New Mexico. Ann Arbor: University Microfilms.

Braswell, Geoffrey E.
1996a "A Maya Obsidian Source: The Geoarchaeology, Settlement History, and Ancient Economy of San Martín Jilotepeque, Guatemala." Ph.D. dissertation, Department of Anthropology, Tulane University. Ann Arbor: University Microfilms.
1996b "The Sculpture of San Martín Jilotepeque: Cotzumalguapan Influence in the Highlands or Highland Influence on the Pacific Coast?" Pp. 441–451 in *Eighth Palenque Roundtable, 1993*, edited by Martha Macri and Jan McHargue. San Francisco: Pre-Columbian Art Research Institute.
1998 "La Arqueología de San Martín Jilotepeque, Guatemala." *Mesoamérica* 35: 117–154.
Braswell, Geoffrey E., and Fabio E. Amador Berdugo
1999 "Intercambio y producción durante el Preclásico: la obsidiana de Kaminaljuyu-Miraflores II y Urías, Sacatepéquez." Pp. 905–910 in *XII Simposio de Investigaciones Arqueológicas en Guatemala, 1998*, volumen 2, edited by Juan Pedro Laporte, Héctor Escobedo, and Ana Claudia Monzón de Suasnávar. Guatemala: Museo Nacional de Arqueología y Etnología.
Braswell, Geoffrey E., and Michael D. Glascock
1998 "Interpreting Intrasource Variation in the Composition of Obsidian: The Geoarchaeology of San Martín Jilotepeque, Guatemala." *Latin American Antiquity* 9: 353–369.
Carmack, Robert M.
1979 "La verdadera identificación de Mixco Viejo." Pp. 131–162 in *Historia Social de los Quiches*. Editorial José de Pineda Ibarra, Ministerio de Educación, Guatemala.
Clark, John E.
1986 "From Mountains to Molehills: A Critical Review of Teotihuacan's Obsidian Industry." Pp. 23–74 in *Economic Aspects of Prehispanic Highland Mexico*, edited by Barry L. Isaac. Research in Economic Anthropology Supplement No. 2. Greenwich, Conn.: JAI Press.
1989a "Fifteen Fallacies in Lithic Workshop Interpretation: An Experimental and Ethnoarchaeological Perspective." Paper presented at the Pedro Bosch-Gimpera Symposium on Ethnoarchaeology, August 1988, México, D. F.
1989b "Hacia una definición de talleres." Pp. 213–217 in *La Obsidiana en Mesoamerica*, edited by Margarita Gaxiola G. and John E. Clark. Instituto Nacional de Antropología e Historia, México, D. F.
Deal, Michael
1983 "Pottery Ethnoarchaeology among the Tzeltal Maya." Unpublished Ph.D. dissertation, Simon Fraser University, Burnaby, British Columbia.
Hester, Thomas R., Robert N. Jack, and Robert F. Heizer
1971 "The Obsidian of Tres Zapotes, Veracruz, Mexico." *Contributions of the University of California Archaeological Research Facility* 13: 65–131.
Krotser, Paula H.
1974 "Country Potters of Veracruz, Mexico." Pp. 131–146 in *Ethnoarchaeology*. University of California Institute for Archaeology Monograph 4. Los Angeles: University of California Institute for Archaeology.

Leone, Mark, editor
1972 *Contemporary Archaeology: A Guide to Theory and Contributions*. Carbondale: Southern Illinois University Press.
Moholy-Nagy, Hattula
1990 "The Misidentification of Mesoamerican Lithic Workshops." *Latin American Antiquity* 1: 268–279.
Peacock, D. P. S.
1982 *Pottery in the Roman World: An Ethnoarchaeological Approach*. London: Longman.
Popenoe de Hatch, Marion
1997 *Kaminaljuyú/San Jorge: Evidencia arqueológica de la actividad económica en el Valle de Guatemala 300 a.C. a 300 d.C.* Guatemala: Universidad del Valle de Guatemala.
1998 "Los k'iche's-kaqchikeles en el altiplano central de Guatemala: evidencia arqueológica del período clásico." *Mesoamérica* 35: 93–115.
Rappaport, Roy A.
1967 *Pigs for the Ancestors*. New Haven, Conn.: Yale University Press.
Rathje, William L.
1972 "Praise the Gods and Pass the Metates: A Hypothesis of the Development of Lowland Rainforest Civilizations in Mesoamerica." In *Contemporary Archaeology: A Guide to Theory and Contributions*, edited by Mark Leone. Carbondale: Southern Illinois University Press.
Richardson, Frederick B.
1938 "Study of Maya Sculpture." *Carnegie Institute of Washington Year Book* 37: 20–23.
Santley, Robert S.
1983 "Obsidian Trade and Teotihuacan Influence in Mesoamerica." Pp. 69–124 in *Highland-Lowland Interaction in Mesoamerica: Interdisciplinary Approaches*, edited by Arthur G. Miller. Washington, D.C.: Dumbarton Oaks.
1984 "Obsidian Exchange, Economic Stratification, and the Evolution of Complex Society in the Basin of Mexico." Pp. 43–86 in *Trade and Exchange in Mesoamerica*, edited by Kenneth G. Hirth. Albuquerque: University of New Mexico Press.
1989a "Obsidian Working, Long-Distance Exchange, and the Teotihuacan Presence on the South Gulf Coast." Pp. 131–151 in *Mesoamerica after the Decline of Teotihuacan, A.D. 700–900*, edited by Richard Diehl and Janet C. Berlo. Washington, D.C.: Dumbarton Oaks.
1989b "Residential Site Structure in the Basin of Mexico During the Formative and Classic Periods." Pp. 398–406 in *Households and Communities*, edited by S. MacEachern, D. J. W. Archer, and R. D. Gavin. Calgary: Archaeological Association of the University of Calgary.
1994 "The Economy of Ancient Matacapan." *Ancient Mesoamerica* 5: 243–266.
Santley, Robert S., and Ronald R. Kneebone
1993 "Craft Specialization, Refuse Disposal, and the Creation of Spatial Archaeological Records in Prehispanic America." Pp. 37–63 in *Prehispanic Domestic Units in Western Mesoamerica: Studies of the Household, Compound, and*

Residence, edited by Robert S. Santley and Kenneth G. Hirth. Boca Raton, Fla.: CRC Press.

Shook, Edwin M.

1952 "Lugares arqueológicos del altiplano meridional central de Guatemala." *Antropología e Historia de Guatemala* 4(2): 3–40.

Smith, Carol A.

1976a "Exchange Systems and the Spatial Distribution of Elites: The Organization of Stratification on Agrarian Societies." Pp. 390–474 in *Social Systems*, edited by Carol A. Smith. Regional Analysis, Vol. 2. New York: Academic Press.

1976b "Regional Economic Systems: Linking Geographic Models and Socioeconomic Problems." Pp. 3–63 in *Economic Systems*, edited by Carol A. Smith. Regional Analysis, Vol. 1. New York: Academic Press.

van der Leeuw, Sander E.

1976 *Studies in the Technology of Ancient Pottery*. Amsterdam: Organization for the Advancement of Pure Research.