

Betwixt and Between in the Intermediate Area

Robert D. Drennan¹

The great diversity in early subsistence practices and in the later development of complex patterns of social, political, and economic organization is one of the Intermediate Area's greatest riches for comparative anthropological study. Archaeological research there is now in the midst of the conceptual shift needed to take full advantage of the opportunities offered.

KEY WORDS: Intermediate Area; agricultural origins; complex societies; intensive agriculture; exchange.

INTRODUCTION

It has almost always bothered specialists in the archaeology of the Intermediate Area that the principal defining characteristic of their culture area was its position between Mesoamerica and the Central Andes. Whether the "Intermediate Area" is a particularly useful construct for archaeological research or not has been debated, but it does provide some convenient rough geographic limits for a review of recent archaeological literature. The flow of archaeological information within the Intermediate Area is hampered by modern political, economic, and cultural frontiers. Lower Central America (a bit of Honduras, Nicaragua, Costa Rica, and Panama) is small; the archaeologists who work there are few in number and share a scholarly dialogue on the region (in no small measure owing to Frederick Lange's indefatigable organizing of meetings and compiling of collected volumes of papers). There is considerably less contact between Lower Central American specialists and those who work in Venezuela, Colombia, and Ecuador (variously termed Northern South America, Northwestern South America, the Northern Andes, or the *Andes Septentrionales*). The near-impenetrable

¹Department of Anthropology, University of Pittsburgh, Pittsburgh, PA 15260.

Darién region of eastern Panama and northwestern Colombia seems, almost mystically, as formidable a barrier to communication in the age of air travel, telephone, and e-mail as it was in the age of horse-drawn transport (and perhaps even more formidable than it was in late prehispanic times). Colombia is large, compared to Lower Central America, and it has a large and vigorous archaeological community, but an extraordinary amount of archaeological research conducted there is almost unknown outside the country. There is not as much dialogue between archaeologists working in Colombia, and the smaller numbers working in Venezuela and Ecuador, as there is between those in Lower Central America.

Intermediate Area archaeology is also conceptually in between—between a familiar and comfortable culture historical approach and the more ambitious goal of contributing to understandings of the dynamics of human societies. A goodly number of Intermediate Area archaeologists appear to have grown into the latter kinds of interests but not yet to have entirely grown out of the former way of framing objectives and conducting research. As one anonymous reviewer of this article put it, “too much archaeological research in the Intermediate Area (as elsewhere) has involved some test pits in unmapped sites in regions that have gone unsurveyed.” The topics discussed below illustrate some aspects of this situation, although they necessarily represent a somewhat arbitrary selection enforced by space limitations. Some favorite themes have had to be omitted, as have a number of references. I have not included in the bibliography unpublished theses or conference papers, even though such works are commonly cited in the Intermediate Area literature. They are not generally available—I am not referring to dissertations at universities in the United States available through University Microfilms—and references to them are not helpful to the reader of a review such as this. I have also largely omitted references to works prior to 1987 so as to concentrate on more recent literature.

EARLY INHABITANTS

Study of the initial peopling of the Americas has escaped the fierce regionalization of later periods. Broad reviews appear regularly, including some co-authored by specialists on the Intermediate Area (e.g., Ardila and Politis, 1989; Dillehay *et al.*, 1992). I limit myself here to brief mention of some aspects of the topic of special relevance to the Intermediate Area. Correal (1990b) and van der Hammen (1991, 1992) review and summarize recent evidence on early inhabitants for Colombia as a whole, emphasizing climate reconstruction. They begin the sequence with hunters of megafauna at El Abra ca. 13,000 B.C. and see a shift to small animals and increased

plant gathering at the beginning of the Holocene. Salazar (1988a) attempts a similar reconstruction for Ecuador, although he recognizes the need to lean heavily on data from Colombia and Peru because the Ecuadorean data are so sparse.

The Intermediate Area's position as a funnel through which the earliest inhabitants of South America passed is inescapable (e.g., Gnecco and Illera, 1989a). One implication of this concerns the dependence of Late Pleistocene peoples on big-game hunting. Pollen, phytoliths, and carbon from lakebed sediments in Panama (Piperno *et al.*, 1990, 1991a) suggest that Panama was heavily forested in the Late Pleistocene. If so, then the first entrants into South America must have adapted strongly to tropical forest resources (*contra* Bailey *et al.*, 1989) rather than relying primarily on the megafauna of open savannah environments. The diverse and patchy tropical forest environment would lend itself to considerable subsistence and social flexibility, perhaps preparing early migrants for rapid movement throughout South America.

Direct archaeological evidence of the earliest inhabitants is no more abundant in the Intermediate Area than elsewhere. Out-of-context North American Clovis points overlap with South American fishtail points in the Intermediate area between ca. 9500 and 7000 B.C. (Ranere and Cooke, 1991). The Proyecto Santa María has tested three paleoindian sites in the Panamanian Isthmus (Ranere and Cook, 1991); a radiocarbon date of 8490 ± 650 B.C. is associated with a Clovis-like assemblage at Corono rockshelter (Ranere, 1992).

Various voices across the Intermediate Area have raised strong challenges to what is seen as an obsession with big-game hunting in paleoindian studies resulting from perceptions molded principally by early discoveries in the North American plains and subsequently extended to South America, with insufficient attention to South American environmental or archaeological data (e.g., Dillehay *et al.*, 1992). Ardila (1991, 1992) emphasizes the diversity of environments in which late Pleistocene hunter-gatherers are known to have lived in northern South America, suggesting not only an array of different adaptations by different groups, but probably considerable subsistence flexibility during the course of the year for even a single group. He sees this reflected in the diversity of lithic assemblages in late Pleistocene/early Holocene sites in Venezuela and Colombia. Gnecco and Illera (1989a, b) sound a very similar note in concluding that the adaptation of the inhabitants of La Elvira near the Pleistocene/Holocene transition was probably to a subandean forest zone and likely quite different from that of Colombia's better-known paleoindian sites in the Andean Cordillera Oriental (Fig. 1). Gnecco and Salgado (1989) see considerable variety in adaptations among sites even within the middle to upper Cauca Valley

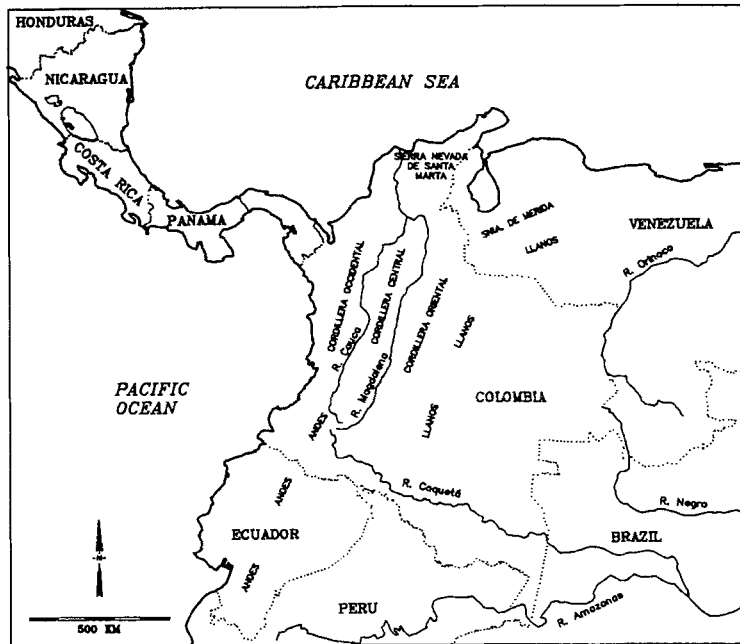


Fig. 1. Map of the Intermediate Area.

where La Elvira is located. And Gnecco (1990) summarizes evidence for South America broadly, arguing that early inhabitants had adapted successfully to such a wide range of environments that tropical forest in Panama unpenetrated by a savannah corridor would have been no barrier to the movement of Late Pleistocene hunter-gatherers into South America.

HUNTERS, GATHERERS, AND CULTIVATORS

Moving into the Archaic, Stothert and Quilter (1991, p. 44) also see "considerable regional variations and . . . divergent patterns of development" during the period between 7000 and 3000 B.C. for the Andean region from Ecuador southward. In coastal southern Ecuador, the Las Vegas Culture (Stothert, 1988) begins at 8000 B.C. and ends at 4600 B.C. (divided into early and late at 6000 B.C.). Although shell is abundant on Las Vegas sites, they are not truly shell middens; faunal remains indicate that, overall, some 54% of the calories from meat came from terrestrial mammals, 35% from fish (primarily coastal and estuary species), and 11% from shellfish.

Terrestrial mammals seem only slightly more important in early Las Vegas; fish and shellfish, in late Las Vegas. Gourd remains date from 8000 B.C., cucurbit phytoliths from 6000 B.C., and maize phytoliths from at least 5000 B.C. There are skeletal remains of some 200 Las Vegas individuals, but isotopic analysis has not conclusively determined the importance of various foods in the diet. Reasonably good health status and life expectancy, however, are indicated—at least when compared to later agricultural populations in the same area—so Stothert concludes that this successful adaptation remained fairly stable for some 4000 years. Houses were small circular structures, less than 2 m in diameter, built relatively quickly to endure for perhaps a few seasons—similar to contemporaneous evidence from coastal Peru and Chile (Malpass and Stothert, 1992).

Colombia's Andean Cordillera Oriental (Fig. 1) continues to be especially productive of evidence of preceramic occupations. At the open-air site of Checua (2600 m above sea level north of Bogotá), four occupations span the period between 6500 and 1000 B.C. (Groot, 1992). Faunal remains indicate deer as the major source of meat, although guinea pig increased in frequency through time. The third occupation (ca. 3000 B.C.) left remains of a circular structure about 3.5 m in diameter. Deer hunting was also a major activity at higher elevations north of Bogotá, as indicated by a group of rockshelter occupations in the páramo at an elevation of 3350 m at Neusa (Rivera, 1992). One radiocarbon date for these earliest short-term occupations was as old as 6420 ± 90 B.C. By ca. 4000 B.C. longer-term occupations occurred that relied much more heavily on plant collecting and on more diversified hunting patterns. South of Bogotá, at 2850 m above sea level, the site of Aguazuque was occupied by about 3000 B.C. by people whose round structures 2.0 to 3.5 m in diameter were built of small posts leaning inward (Correal, 1990a). Once again, faunal remains point to deer as the most important source of meat, with smaller amounts of guinea pig and other species. There were single and multiple burials, including one individual whose head had been removed. Isotopic analysis of human skeletal remains from Tequendama and Aguazuque suggests a gradual shift from mixed hunting and gathering to a much heavier emphasis on plant collecting between 5000 and 1500 B.C. (van der Hammen, Correal; van Klinken, 1990).

Growing Importance of Cultivation in Panama

The appearance in many parts of the Intermediate Area of evidence for plant cultivation at a much earlier date than thought possible until quite recently has made it extremely difficult to separate discussion of the sup-

posed hunter-gatherers of the Archaic from the supposed cultivators of the Formative (as the 8000 B.C. evidence for cultivated plants from Las Vegas sites makes clear).

Perhaps the most abundant evidence, and that published in greatest detail, is from central Panama (Cooke, 1992; Cooke and Ranere, 1992b, c; Piperno, 1989; Piperno *et al.*, 1990, 1991b; Ranere, 1992). Small numbers of grinding implements in the lithic assemblages of occupations between 8000 and 5000 B.C. suggest an increasing emphasis on plant foods. Pollen cores from lakebed sediments include small amounts of carbon interpreted as the result of burning forest vegetation from about 9000 B.C. Ranere (1992, p. 29) attributes this to human disturbance of the vegetation, but "localized around widely dispersed campsites." Maize pollen and phytoliths appear at the rockshelter site of Cueva de los Ladrones at 5000 B.C. and maize phytoliths at SE-149 (another rockshelter) at 5100 B.C. The quantity of carbon in the lakebed sediments increased ca. 4800 B.C., and this is argued to indicate human activity in creating a more open environment through slashing and burning for cultivation on a modest scale [although Ranere (1992) suggests burning may have been more important than slashing since celts or other potential tools for tree felling are rare]. Many more sites are known for the period after 5000 B.C., and they represent larger, denser occupations. A skillfully produced bifacial lithic industry was replaced by much simpler implements, including more milling stones than before. The occupants of Cerro Mangote began to exploit the adjacent estuarine fauna intensively.

At 2000 B.C., a sharp decline in pollen of forest taxa in the lakebed sediments coupled with an increase in grass phytoliths with evidence of burning is cited as evidence for a shortening of fallow periods and much more substantial forest clearance. The number of known sites continued to increase, suggesting substantial population growth, which would be consistent with this interpretation of the environmental evidence. This is also the period when ceramics appeared at Monagrillo.

After 1000 B.C., several large, fully sedentary village sites appeared along the alluvial banks of coastal rivers (sedentary occupation at La Mula-Sarigua began by 870 B.C., Monagrillo had an occupation of 3.1 ha, and Sitio Serra covered 45 ha by about 200 B.C.). Celts, manos, and metates were common artifacts in these villages, and the environmental evidence is interpreted to indicate that populations were creating substantial "agricultural pressure primarily on a landscape of anthropogenic savannah" (Piperno *et al.*, 1991b, p. 245). Sitio Serra's macrobotanical remains were predominantly maize, and human skeletal remains from both Sitio Serra and La Mula-Sarigua have ^{13}C values consistent with maize as a major staple. By 200 B.C. forest destruction appeared to have been widespread

from Panama's western border to the Canal area in the center of the country, although this did not occur on the Atlantic slopes until later.

The evidence from Panama makes it abundantly clear that major transformations of subsistence and settlement systems had a dynamic of their own independent of the "arrival" of particular domesticates. The sequence for Panama, as currently described, is most congenial to the view that maize was incorporated into subsistence systems indigenous to the region by the inhabitants already present, although Cooke (1992) holds out at least for evidence that maize did not arrive with a wave of new migrants. Fully sedentary villages, however, with subsistence systems in which maize farming dominated were not established until more than 4000 years after maize's cultivation can first be documented in central Panama. At the same time, while maize cultivation was clearly far less important at first than it became later on, Piperno *et al.* (1991b, p. 244) argue against interpreting the period following 5000 B.C. as one in which small amounts of maize were just added as supplements to an "Archaic" foraging way of life. They see the landscape modification indicated in the pollen record as too extensive to be consistent with such a scenario. Thus they reject characterizations like "Archaic horticulturalists, incipient agriculturalists, or foraging farmers" for these people.

Piperno (1989) imagines that a growing reliance on slash and burn cultivation, beginning at 5000 B.C., involved maize and quite probably a variety of other cultivars (both indigenous to central Panama and brought already domesticated from other regions). Cooke (1992) is also cautious about overemphasizing the role of maize in this transformation, pointing out that it is especially visible in the archaeological record compared with, for example, a variety of tubers that might have been collected and/or cultivated. Palms and other tree fruits may have been a central element in subsistence systems from 5000 to 1000 B.C. "Considerable variation in subsistence practices probably existed, with economic reciprocity between foragers and farmers occurring that may have further raised the carrying capacity of the region. Local groups no doubt engaged to varying degrees in each economic strategy from one year to the next. Hence the characterization of economies as either agricultural or hunting-gathering during this period probably has little meaning" (Piperno, 1989, p. 548).

For Piperno, the attractiveness of cultivation lay in its contribution to subsistence security. Prehistoric foragers in Panama depended on "wild resources, especially plant carbohydrates, [that] were severely limited, unstable, and unpredictable, making life as a forager tenuous and highly mobile. It is suggested that the initial domestication of indigenous plants and acceptance of introduced cultivars represented a low-cost strategy to buffer resource variation and unpredictability" (Piperno, 1989, p. 539). Since many

of the tropical forest wild plants most useful to humans produce more abundantly during the early stages of succession as cleared forest regenerates, early forest clearance for cultivation also enhanced the productivity of the wild species that recolonized the garden plots.

Such increases in the productivity and security of subsistence are seen as fostering population growth; Cooke and Ranere (1992b, c; Ranere, 1992) offer population growth as the major force behind the emergence of full-blown village agriculture, seeing the period prior to 1000 B.C. as one of gradual filling in of most of western and central Panama, with groups relying on very extensive subsistence strategies mixing diverse farming, collecting, and hunting practices in a variety of ways as described by Piperno. By soon after 1000 B.C., this infilling was largely completed, and continued population growth required the development of more intensive practices capable of producing higher yields per unit area. In these circumstances, much more intensive floodplain agriculture focused heavily on maize was an attractive option, and so, by about 200 B.C., the pattern of large, permanent, maize-farming, floodplain villages crystallized right across western and central Panama. Cook (1988) suggests that coastal fishing may not have played the important role in the transition to sedentism sometimes attributed to it. Remains at several sites indicate to him that intensive, efficient, and specialized fishing developed only in the context of truly agricultural subsistence systems, rather than as a precursor to them.

Cultivators in Other Regions

Although no other sequence of transition from hunting and gathering to full-blown agriculture in the Intermediate Area is as completely or comprehensively documented as that in Panama, there have been numerous recent additions to our knowledge.

The beginning of sedentary agricultural life is placed at 2000 B.C. in the Arenal region of northern Costa Rica (Bradley, 1994; Hoopes, 1991, 1994b; Sheets *et al.*, 1991). (This date is based on calibrated radiocarbon dates, however, which, for this period, are contemporaneous with uncalibrated dates several hundred years later. Most other authors cited here have not calibrated their dates.) Round house floors 5 to 8 m in diameter, nicely preserved under volcanic ashfall, with post holes from adjacent smaller structures are taken to indicate sedentism. Maize was present by this time, although carbon isotope analysis of human skeletal remains suggests it was not a major staple until the first few centuries A.D. This fact, together with the 5000 B.C. dates for maize in Panama, suggests to Hoopes that maize was distributed through Central America in relatively primitive

form, rather than arriving with a wave of immigrating fully agricultural people. It was with these sedentary, apparently "horticultural," villages that the earliest pottery of Costa Rica put in its appearance—the Tronadora complex of finely made elaborate vessels. Corrales (1990) defines a pre-300 B.C. occupation of pottery-making cultivators in the Diquís Valley of southern Costa Rica. He uses small lithic chips (possibly for manioc graters) and ceramic *budares* as evidence to suggest that cultivation was focused on manioc rather than maize.

In Colombia's Cordillera Oriental, the occupation at Aguazuque (Correal, 1990a) continued. Carbonized remains of cultivars (*Oxalis tuberosa* and *Cucurbita pepo*) occurred soon after 2000 B.C., as did a collective burial with 23 individuals (of varying ages, both male and female) arranged in a circle. A round house some 6 m in diameter appeared at around 700 B.C. Carbon isotope analysis suggests that the importance of maize in the diet increased considerably about 1500 B.C. and that it became a major staple after 1000 B.C. (van der Hammen *et al.*, 1990), but the artifact assemblage is still without ceramics at 700 B.C.

Pearsall and Piperno (1990) reexamine and reaffirm the maize phytolith evidence for Las Vegas and Real Alto, placing maize on the south coast of Ecuador by 5000 B.C. At Real Alto beginning before 3000 B.C. there were maize phytoliths, manos, and metates in the artifact assemblage, and representations of maize on ceramics (Pearsall, 1988b). Pearsall estimates maize and manioc yields for a catchment radius of 5 km around Real Alto and concludes that 1500 to 3000 people could be supported in this catchment by agriculture focused on maize as the major staple. This is approximately the population that has been estimated for the site, and thus her estimate might give comfort to those who see sedentary Valdivia period agriculturists filling in the coastal zone to carrying capacity. Pearsall points out, though, that agriculture focused on manioc in the same catchment could support 5600 to 12,500 people, and a combination of maize and manioc cultivation with exploitation of wild species would be able to support many more. It is the latter kind of mixed subsistence strategy that Pearsall argues for—one with considerable seasonal variation and cultivars making a real contribution [as indicated by the botanical remains and inland settlement orientation to productive agricultural soils (cf. Damp, 1988; Raymond, 1988; Stothert, 1992)] but with gathering of many wild species continuing to be very important as well. If this were the case, then population pressure would seem to have had little to do with settlement dispersal along the coast in late Valdivia and Machalilla times.

Reviewing the evidence from phytoliths and plant macroremains at a number of Formative sites in Ecuador, Pearsall (1988a, 1992) does not see a monolithic shift from hunting and gathering to agriculture with the be-

ginnings of maize cultivation but, rather, much subsistence variation from one site to another. In Early Formative times (Valdivia, 3200–1600 B.C.), maize was present at most sites but remains of other species are more abundant (despite the fact that maize is considerably more visible archaeologically than many other species). In Middle Formative times (Machalilla, 1600–1000 B.C.) maize was common enough at some sites to suggest fairly heavy reliance on it but much rarer at others. A certain variety in subsistence, then, seems to persist into times when maize agriculture was well established in the region. Pearsall points out that root crops are very poorly evidenced archaeologically, so the exact relationship between maize cultivation and root crops is difficult to document. Stothert (1992) also stresses that, not only did Formative Ecuadorean subsistence not focus heavily on maize, but also it did not focus strongly on maritime resources as was apparently the case farther south along the northern coast of Peru. Pearsall (1992) does not see the beginning of “fully agricultural subsistence” on the Ecuadorean coast until 500 B.C., by which time complexes of raised fields were being constructed in several localities. This closer reading of the subsistence evidence, independent of other kinds of information, represents a revision of the view that Valdivia communities were agricultural from the initial appearance of pottery-making villages (Marcos, 1988b, 1992).

Maize, then, is seen as present but of minimal importance throughout Ecuador [including the Amazon Basin (Piperno, 1990)] by 5000 B.C., playing varied roles in different agricultural complexes in different zones for thousands of years before subsistence strategies anywhere came to rely heavily on it. As Hastorf (1994) points out, this reconstruction substantially undermines a traditional approach to agricultural origins in South America—the approach that assumes that the mere availability of cultivated maize will spark major changes in subsistence and social organization. The momentum of this (often implicit) assumption is such that a certain amount of research on early agriculture continues to focus largely on the spatial patterning of the earliest dates for different cultivars, especially maize, without really attempting to deal with the subsistence dynamics of any region (Hawkes, 1989; Heiser, 1989; Pickersgill, 1989; Smith, 1988). The botany of the domestication and further evolution of maize and other cultivars has continued to be a subject of considerable interest (Bonavia and Grobman, 1989; Wilkes, 1989), although the recognition of maize’s antiquity in the Intermediate Area and its relative unimportance to people for so long turn the theoretical spotlight more toward the dynamics of changing subsistence systems. Pearsall (1994, pp. 271–272) summarizes a current view thus:

. . . Maize, being a foreign crop introduced into existing foraging/horticultural systems, underwent a long period of low utilization as a vegetable or curiosity. Its transformation into a productive carbohydrate source needs to be modeled on a

regional basis, i.e., what specific crops did it replace or supplement, how productive were they, what landscape modification did maize agriculture require, and what political and/or social forces underlay the cropping transformation? The apparent late dietary importance of maize . . . suggests that indigenous subsistence systems based on cultivation of tubers and use of wild plant and animal resources sustained cultural development in South America for many millennia.

Sanoja (1989, p. 525) has expressed a parallel view with a different vocabulary:

Our position is that it is internal social causes which bring about the abandonment of the hunter-gatherer methods of wild-food procurement, and external social causes which determine the conditions under which the process occurs. Using these assumptions as a starting point, archaeological investigation should first clarify the social contexts in which changes in the uses of labour, the land, and the whole environment are produced. Otherwise, the analysis of the development of agriculture becomes little more than a history of cultivated plants, instead of a history of human labour.

EARLY POTTERY

A rather different perspective on this same period has its strongest expression in the Caribbean coastal plain of Colombia, where attention has been on ceramics more than subsistence. Prospecting and testing have continued to add to the well-known inventory of sites with ceramics at extremely early dates. Simple ceramic forms with very elaborate decoration and both fiber and sand temper are dated to 3270 ± 90 B.C. at Puerto Chacho (Legros, 1989; Legros *et al.*, 1988; Rodríguez, 1988). Fish and shellfish remains are common; terrestrial animal remains, present but rare. There is no evidence of cultivars, but botanical remains are very poorly preserved. The site is interpreted as a seasonal occupation, possibly for specialized exploitation of fish and shellfish as part of a broader adaptation to the Caribbean coastal zone.

Slightly farther from the coast, San Jacinto 1 has produced dates of 3990 ± 60 B.C., 3750 ± 430 B.C., and 3715 ± 75 B.C. for fiber-tempered ceramics, also with elaborate decoration (Oyuela-Caycedo, 1987; Raymond *et al.*, 1994). This site, too, was reoccupied a number of times, apparently on a seasonal basis. Although it remains unclear exactly what subsistence resources may have attracted early inhabitants of the coastal plain to this location, shellfish were considerably less important than they were at some other early sites in the region. The later site of San Jacinto 2 (2615 ± 80 B.C. and 1555 ± 85 B.C.) is taken to be a sedentary occupation.

In a comparison of early pottery in Colombia's Caribbean coastal plain to Valdivia pottery of coastal Ecuador, Raymond *et al.* (1994) conclude that, while there are similarities of decorative motifs, there are also numerous

technological differences in paste, temper, vessel construction, and firing. They advocate independent invention rather than diffusion and try to focus attention on “the technological, social, and economic contexts of ceramic production . . . , which we believe will eventually tell us more about why pottery came into being” (Raymond *et al.*, 1994, p. 34). The relationship among plant cultivation, sedentism, and ceramics is seen as a subject for investigation rather than to be assumed (as, for example, in using the presence of pottery as an indication of sedentism). There seems to be considerable variation in this relationship (Hoopes, 1988, 1992b, 1994a). The early ceramics of the Arenal region of Costa Rica (Hoopes, 1991, 1994b; Sheets, 1994; Sheets *et al.*, 1991) appear in tandem with sedentary agricultural village life (that is, with substantial reliance on domesticates, although maize does not appear to have become the major staple until later). In central Panama, ceramics first appeared long after the date at which cultivation now seems to have begun but well before full sedentism or heavy reliance on plant cultivation. On Colombia’s Caribbean coast, the earliest ceramics seem to have occurred in a context of relatively mobile mixed hunting and gathering and not of sedentary shellfishing as once thought by some. At the southern extremity of the Intermediate Area, the context of Valdivia ceramics seems more like that of the Arenal region of the extreme north—settlement was evidently sedentary and plant cultivation made a significant contribution to the diet at some sites at least. In numerous other regions in the Intermediate Area, of course, ceramics did not put in an appearance at all until after 1000 B.C.—in some cases long after.

In sum, if we needed further evidence to reject the glib assumption that ceramics, sedentism, and agriculture always relate to each other in the same way, the Intermediate Area provides it. The presence or absence of ceramics cannot be used as a shortcut to conclusions about either sedentism or cultivation. The relationships clearly must be investigated utilizing appropriate, independent, direct evidence of subsistence practices and residence patterns. This can be accomplished only by continuing to turn attention away from generalized “Formative” patterns and focusing more closely on the dynamics of these aspects of human societies at a much smaller regional scale (Hoopes, 1988).

COMPLEX SOCIAL PATTERNS

Chiefdoms

Archaeologists interested in the complex social patterns that developed in many parts of the Intermediate Area following the establishment of sed-

entary agricultural villages have long been drawn to the notion of chiefdoms. Spanish Conquest period accounts of the *caciques* and *cacicazgos* of Panama, the Muisca area in the Andean Cordillera Oriental of Colombia, and Colombia's Cauca Valley (Fig. 1) are especially vivid and have always had a strong impact on archaeological reconstructions of Intermediate Area social organization. Recent attention to this ethnohistoric record has placed particular emphasis on the competitive aspects of Intermediate Area chiefdoms (Fowler, 1992). Chiefs are seen as preoccupied with status competition through such means as the acquisition and display of luxury goods from afar (Helms, 1987, 1992a, b, 1994) or the accumulation of the preserved remains of their predecessors (Cárdenas, 1990a, b; Langebaek 1992a). Chiefs were frequently, if not continually, at war with each other (Carneiro, 1990, 1991; Redmond, 1994a, b). These documentary accounts can illuminate the archaeological record, although the presence of a rich ethnohistoric record carries with it the risk that it may simply be substituted for careful archaeological reconstruction of prehistoric social patterns, thereby creating a false sense of knowledge and defeating any attempt at empirical investigation of the dynamics of the development of these societies (Langebaek, 1991a; Mora, 1990).

Perhaps the longest-running attention to the notion of chiefdoms in the archaeology of the Intermediate Area is the Social Archaeology approach (Fonseca, 1988; Molina, 1988; Sanoja, 1988; Vargas, 1988). As applied to Venezuela, this approach sees the "Hierarchical Chiefly Way of Life" as the fourth in a series of stages beginning with the simplest agricultural societies (Vargas, 1990). Although the four stages are seen as necessary, there is considerable variety in the timing of their appearance in different regions, with some regions remaining in the first and simplest stage right up to the Spanish Conquest. Attention is directed strongly to the causes of the social transformations represented by the four stages (Vargas, 1989). The interplay between maize and manioc cultivation is of pivotal importance, with the transition to maize as a major staple firmly associated with the emergence of social hierarchy. Such hierarchies are said to emerge in northwestern Venezuela about 1 A.D. as a consequence of the introduction of maize and new social forms from the Colombian Andes (Sanoja and Vargas, 1987; Toledo and Molina, 1987; Vargas, 1990). In Costa Rica much the same transformation is seen to occur as well, although at somewhat different times in different regions, with the establishment of maize as a major staple and consequent surplus production (Hurtado, 1988; Fonseca, 1992). The development of chiefdoms in Ecuador also has been synthesized in similar terms (Marcos, 1988a; Moreno, 1988).

Following in a tradition pioneered for Central America by Creamer and Haas (1985), some scholars have made a list of characteristics of chief-

doms or ranked societies the central organizing notion for the sequences they have worked with. Using such an approach Snarskis (1987, 1992) identifies the moment of chiefdom emergence as 1 A.D. in eastern and central Costa Rica, based on an increase in the number and size of villages, possible public architecture, and the presence of elaborate burial offerings. Alcina (1988) takes a similar trait-list approach with an emphasis on redistribution to four north Ecuadorean societies; initial chiefdom development came with the shift from sweet to bitter manioc, and the subsequent shift to maize-based agriculture spurred the process further along. Snarskis and Alcina are thus in substantial agreement with the Social Archaeologists about the forces behind chiefdom development, although the vocabulary is different.

Spencer and Redmond (1992; Redmond, 1994a, b; Redmond and Spencer, 1990, 1994; Spencer, 1991, 1993, 1994), using their work in the western Venezuelan Llanos (Fig. 1) as a springboard, show a similar concern with the chiefdom as a particular societal type, qualitatively different from what precedes it, and a similar focus on the processes of the emergence of this distinctive pattern of social organization. The approach to these processes, however, is strongly evolutionary and grounded in the dynamic of competition between chiefs or aspiring chiefs for ascendancy that is so evident in the ethnohistoric sources. They see the critical element in the establishment of a chiefdom to be the means by which a chief transcends the temporary nature of leadership characteristic of "big man" societies and converts his position into a permanently institutionalized and hereditary one. Providing for stable and permanent mobilization of surplus food production inside the chiefly domain is necessary, but Spencer and Redmond do not link this to particular crops. Controlling and manipulating access to luxury goods originating outside the chiefly domain is another essential element. And warfare as a means of subjugating neighboring chiefs and their polities is required for further aggrandizement. Stemper's (1987, 1988, 1993) approach to chiefdom development on Ecuador's southern coast similarly relies on combining control of local agricultural production with control of external exchange as the major source of luxury goods. For Langebaek (1987a, 1991b, 1992b; Lleras and Langebaek, 1987), mobilizing surplus in local agricultural production also supports chiefly authority in the Muisca area, but he sees the use of that surplus in acquiring raw materials from neighboring groups for the manufacture at home of luxury items as the complement rather than the acquisition of luxury goods imported from longer distances.

The notion of the chiefdom also has been used more loosely, not to indicate precise organizational features or archaeological correlates, but simply to designate societies that are larger in scale and more complex

than autonomous egalitarian villages but not so large or so hierarchical as the states of the Mesoamerican Classic or Central Andean Middle Horizon (Drennan, 1991a, b; Drennan and Uribe, 1987). In such an approach, the notion of chiefdom loses its precision as an analytical tool and serves, not as a conclusion about what a society was like, but instead as a starting point to the investigation of the highly varied set of societies included. The variation this approach encourages us to observe between chiefdoms within the Intermediate Area and beyond it is not only in terms of greater and lesser degrees of complexity or hierarchy but also in terms of qualitatively different patterns of organization at similar scales and levels of complexity (Drennan, 1991b, 1993). The demographic patterns of sociopolitical centralization, for example, are varied, as are the patterns of population growth and pressure (Drennan, 1987; Drennan *et al.*, 1989, 1991). While control over prime agricultural resources and local mobilization of surplus food production may be a key to the emergence of chiefs in some regions, it does not seem universal (Drennan and Quattrin, 1995). Use of imported luxury goods by elites, while highly conspicuous in some Intermediate Area chiefdoms, is conspicuously absent from others (Drennan, 1991b, 1995). Shifts in the basis of chiefly power may occur even during the sequence of development in a single region (Drennan, 1995; Llanos, 1990; Uribe, 1988). And instead of merely being able to find archaeological examples of kinds of societies known and typologized ethnographically, the archaeologist might encounter variations unknown in the ethnographic record (Drennan, 1992). Viewed through this lens, the Intermediate Area becomes a richly varied patchwork of societal differences amenable to empirical study, with the objective of delineating the factors that condition those differences (see also Hoopes, 1992b).

Comparisons between Intermediate Area chiefdoms and Mesoamerican or Central Andean chiefdoms from this perspective have suggested that societies in these regions were on different developmental tracks from very early on, and that the key to the old question of why states developed in Mesoamerica and the Central Andes but not in the Intermediate Area may lie, not in conceiving Intermediate Area sequences as somehow "truncated" (Lange, 1992b, p. 439), but rather in attention to the causes of the earlier societal divergences (Drennan, 1991a, b; Hoopes, 1992b; Stothert, 1992).

Just such observations have led Hoopes (1992b, p. 73) to identify "variability [as] a major hallmark of the Intermediate Area" and to wonder whether "a concentration on the identification of the emergence of 'chiefdoms' and centralized authority . . . may well be inappropriate for many parts of the Intermediate Area. Alternative structures, such as decentralized 'complex tribes' . . . and segmentary societies may prove to fit the data better than hierarchical models derived from idealized stages in the

cultural evolution of New World state societies.” Going still farther in this direction, Lange (1992a, p. 11) raises doubts: “What is the archaeological and ethnohistorical evidence for chiefdoms, and has their presence been overrated? Are ‘tribes’ and ‘chiefdoms’ the best way to characterize social organization in the Intermediate Area?” He does, however, focus on the presence of social hierarchies, elites, and the nature of elite control over resources, which are among the central concerns of those who frame their research in chiefdom terms.

Stability

The whole issue of societal complexity has, for some of those working in Central America, become bound up in a sort of inferiority complex about the level of development “achieved” by Central American societies compared to their more “advanced” Mesoamerican neighbors. Lange (1992a) is at pains to dispel this aura of inferiority, although by announcing his preference to call the Central American glass half-full rather than half-empty, he further reinforces the misguided notion of the appropriateness of a metaphor that puts twice as much water in the Mesoamerican glass as in the Central American. Sheets (1992) also aims to overcome this perceived inferiority of Central American social development by arguing for a stability in Central American societies and a resilience in the face of natural disasters that he sees as an advantage over the instability of Mesoamerican states. Sheets does not hesitate to characterize Central American societies as tribes and chiefdoms, but he views Central America’s “avoidance” of state development as a great success. Basing himself primarily on his own work in Costa Rica and El Salvador, in regions periodically devastated by volcanic eruptions (Sheets, 1983; Sheets and McKee, 1994; Sheets *et al.*, 1991), he sees the more hierarchical and more economically interdependent societies of the Mesoamerican periphery in El Salvador as much more vulnerable and less able to provide for the life, liberty, and pursuit of happiness of their citizens.

Exchange

The notion that long-distance exchange has much impact on social change has both adherents and detractors. Briggs (1989) and Hearne and Sharer (1992) have provided fresh information about the spectacular burials at Sitio Conte in central Panama, which has long been cited as a dramatic example of imported luxury goods, but Cooke and Ranere (1992a, p. 287) question the role played by long-distance exchange in the society that pro-

duced these interments. "Interaction spheres" and elite exchange networks are postulated on the basis of stone mortars with feline imagery (Zeidler, 1988), rock crystal beads (Bruhns *et al.*, 1990), *Spondylus* shell (Zeidler, 1991), and jade (Lange and Bishop, 1988). Garber *et al.* (1993), on the other hand, argue that jade objects are actually quite rare in Costa Rica and not concentrated in especially rich graves; they think more of sporadic, irregular, and idiosyncratic contacts with Mesoamerica than of regular elite exchanges. Hoopes (1992a, p. 276), however, probably speaks for the majority, when he says that "interregional trade and exchange . . . in Lower Central America . . . was used to support a complex web of social relationships, bolstering insecure hierarchies and cementing relationships between groups that might otherwise be in conflict."

Creamer (1992) uses lithics, ceramics, and faunal remains to reconstruct reciprocal exchange providing raw materials over distances of 20 to 30 km to island communities on Costa Rica's Pacific Coast. The tiny quantities of materials from longer distances make such exchange seem trivial by comparison; Creamer argues that these items arrived through sporadic contacts rather than via direct elite exchange. Drolet (1992) sees very diffuse and decentralized production of commonly used items in the Diquís region of eastern Costa Rica, although with the emergence of elites around the time of Christ, elaborate goods used as status symbols were produced in an increasingly specialized and centralized way. He attributes this to the creation of new demand for luxury goods by elites rather than to the alternative view that makes control over the production of widely used goods the economic basis for the emergence of elites. Along similar lines, Taft (1993) reconstructs very decentralized production of utilitarian ceramics in the Valle de la Plata (near the headwaters of the Magdalena River in Colombia, see Fig. 1) through a long sequence of chiefdom development, although more centralized control over this craft may have been established late in the sequence.

Consideration of exchange in the southern part of the Intermediate Area is strongly colored by the central Andean fascination with closely spaced but widely differing environmental zones at different elevations. In the Muisca region of Colombia's Andean Cordillera Oriental (Fig. 1), each community directly controlled and exploited the range of environmental zones upon which it relied for food (Langebaek, 1987a, 1992b; Lleras and Langebaek, 1987; Mora, 1993). Exchange between communities involved craft goods, and high maize productivity put highland Muisca chiefs at an advantage in acquiring cotton and gold for status competition (Langebaek, 1987a, 1991b, 1992b). Systems of "micro-verticality" in subsistence production also are seen as fundamental to other regions in northern Colombia (Langebaek, 1987b), especially the Sierra Nevada de Santa Marta (Cárde-

nas, 1988; Groot, 1990) with its elaborate network of roads (Oyuela-Caycedo, 1990). Vertical economies also are often taken for granted as the basis of complex organization in the Alto Magdalena, at the head of Colombia's Magdalena River (Llanos, 1993, p. 12), Nariño in the southwest Colombian Andes (Rappaport, 1988), and the northern and southern highlands of Ecuador (Bruhns, 1989; Buys and Domínguez, 1989; Miller and Gill, 1990; Salazar, 1992).

Agricultural Intensification

An extensive complex of raised fields was constructed in the Guayas Basin of Ecuador's south coast in the Regional Development period (500 B.C.-500 A.D.) (Marcos, 1987; Martínez, 1987). Maize was evidently at least among the crops cultivated (Pearsall, 1987), and both output and labor input were, as expected, quite high (Mathewson, 1987; Muse and Quintero, 1987). Complex social organization depended on this intensive agricultural complex (Buys and Muse, 1987; Stemper, 1987, 1988, 1993), but there is disagreement about the relationships among population pressure, surplus mobilization by elites, and raised-field construction (Mathewson, 1987; Muse, 1991; Stemper, 1993). Raised fields in the western Venezuelan Llanos are attributed by Spencer *et al.* (1994) to chiefs' desires for increased surplus mobilization. A raised-field complex of more than 500,000 ha in the Depresión Momposina, where the Magdalena, Cauca, and San Jorge rivers join within 50 km of Colombia's Caribbean coast (Fig. 1), waxes and wanes with changes in precipitation levels (Plazas and Falchetti, 1987, 1988, 1990; Plazas *et al.*, 1988, 1993). Laborious means of soil enrichment are reported for the Pacific coast of Colombia (Stemper and Salgado, 1993) and the Araracuara region of the Colombian Amazon (Cavelier *et al.*, 1990; L. F. Herrera *et al.*, 1992; Mora *et al.*, 1990, 1991). A plethora of forms of prehistoric landscape modification to increase agricultural production is also known for the highlands of Colombia's cordilleras Oriental and Occidental (Bernal Ruiz, 1990; Broadbent, 1987; Bray *et al.*, 1987; Herrera *et al.* 1990) and the northern highlands of Ecuador (Knapp and Preston, 1987). For this last region, Knapp (1988, 1991) provides particularly detailed information on the technology and its benefits.

DISCUSSION

Several national archaeological syntheses have appeared recently for Costa Rica (Fonseca, 1992; González and González, 1992), Colombia

(Botiva *et al.*, 1989), and Ecuador (Echeverría, 1988; Marcos, 1988a, 1988b; Moreno, 1988; Salazar, 1988b). They provide summaries of archaeological sequences either for their respective countries *in toto*, synthesizing everything into a single sequence, or region by region for an entire country. These perform a useful service, especially in their national contexts, but the national synthesis is an awkward task in at least two respects. First, such a task binds an author to divide up prehistory according to modern political boundaries, which usually cut off discussion in arbitrary and unfortunate places. Second, there is so much variety in sequences of social change from one region to the next in the Intermediate Area that fitting all regions to a single synthetic sequence requires doing too much violence to the information. Even the regions into which a country may be divided for such purposes are usually too large to do justice to the small social scale of the Intermediate Area.

The former awkwardness is avoided by attempts to synthesize culturally meaningful areas that are larger than single countries, such as lower Central America (Lange, 1993), the area of the Chibchoid tradition (Fonseca, 1992–1993) or the Intermediate Area itself (Lange, 1992b). Unfortunately, in such broader syntheses, the second problem looms even larger. It has long been recognized that Intermediate Area polities were of a smaller scale than at least the larger Mesoamerican or Central Andean polities, and that “diversity, rather than similarity, is characteristic” of these polities and of the sequences of their development, as Lange (1993, p. 315) has recently put it. Having recognized this, then, it is backtracking for recent publications to conclude that, in general across the Intermediate Area, agricultural villages were established around 1000 B.C. or greater social differentiation (or the Specialized Farming Chiefly Way of Life) emerged around 500 A.D. (Fonseca, 1992–1993; Lange, 1992b). These broad generalizations bury the more precise and useful observation of wide diversity and variation.

The aims and future directions of archaeological research in the Intermediate Area are not often addressed very explicitly. As is to be expected, there is both general agreement on some points and wide divergence on others. Many (though not all) are willing to echo Lange (1993, p. 317) in eschewing issues of diffusion and cultural influence: “The most important problems for future research have clearly to do with internal development and not external influence.” “Questions of regional development now seem to be more significant than the traditional inquiries regarding ‘Mesoamerica’ or ‘Intermediate Area’ affiliations” (Lange *et al.*, 1992, p. 277). Grappling successfully with such “questions of regional development,” however, requires conceptual constructs adequate to the task; those designed for characterizing external influence and cultural affiliations

are not very suitable. Drawing on 1955 theory to conclude that Mesoamerican influence in Lower Central America was not a "site-unit intrusion" but rather a "trait-unit intrusion" of the "fusion with dominance of the corresponding part of the receiving culture" variant (Lange, 1993, pp. 285–305) is really to fail to make the conceptual shift called for.

Rather than concluding that "in Mesoamerica and the Andes, there are horizons and traditions, while in Central America there are only traditions and no horizons" (Lange, 1993, p. 315), we must go beyond such concepts as horizons, traditions, phases, and ceramic types to other more useful ones focused not on the material culture evidence of archaeology but directly on the characteristics of human societies (cf. Castillo, 1988; Uribe, 1987). Such concepts include tribes, complex tribes, big-man societies, and chiefdoms, as well as specialization, centralization, competition, wealth, prestige, legitimation, adaptation, population pressure, surplus mobilization, agricultural intensification, and many others.

Such terms appear with increasing frequency in the literature on the Intermediate Area, but much archaeological research fits Hoopes's (1994b, p. 5) characterization of Costa Rican archaeology: "Questions of culture history remain at the forefront. . . . The chief methodology is comparative, and seeks to understand the relationships between local assemblages and larger cultural-historical frameworks." This kind of research is not well directed to enlighten us about the issues of "regional development" that seem most interesting. Apologists for such an approach see it as a necessary first step, as Hoopes (1994b, p. 5) goes on to explain, "justified by still limited knowledge of the prehistory of this region, especially as compared to Mesoamerica and the central Andes. We must understand temporal and geographical relationships in detail if we are to address questions about culture change, process, symbolism, and adaptation." As Flannery (1973, p. 49) pointed out many years ago, however, doing culture history per se is not a necessary precursor to reconstructing prehistoric societies. Yes, we do need some degree of chronological control. (Just how much depends on the task.) No, we do not need a comprehensive delineation of the cultural affiliations of every ceramic assemblage.

It is strangely out of sync for Lange *et al.* (1992, p. xviii) to pose research objectives thus: "The principal focus was to gain insights into the nature of western Pacific Nicaragua. Was it a part of Mesoamerica? Was it transitional between Mesoamerica and the Intermediate Area? Was it a part of the Intermediate Area?" Nearly 300 pages later, they do conclude that other questions are more interesting, but they would have gotten farther had they cut right to the chase. Creamer and Haas (1985), for example, had already directly attacked issues of social organization for an overlapping region. We might fault Creamer and Haas for the much-discussed limi-

tations of a trait-list approach to tribes and chiefdoms or for making too much of the mere identification of chiefdoms as a final conclusion (cf. Drennan, 1992). But their study was not limited by a lack of information about cultural affiliations. It took direct aim on questions about sociopolitical organization—questions that had clearly different possible alternative answers (cf. Castillo, 1988; Fernández and Gassón, 1993)—and it explicitly marshalled archaeological evidence to argue for the answers they preferred without getting sidetracked by the Intermediate Area's long tradition of culture historical studies.

Understanding "regional development" in the Intermediate Area requires, not generalizing about Intermediate Area societies, but comparative study of different societies or, better yet, different trajectories of social change. We need to compare *and contrast* (as we usually write it when we are asking students to do it) regional trajectories of social change. This requires comparison of societies or polities, which are not the same things as archaeological culture areas. It is by such comparison that we can put the diversity of the Intermediate Area to good use. Such comparisons make it harder for us to lapse into broad generalizations about the Intermediate Area vs. Mesoamerica or the Central Andes because there were in fact many societies in Mesoamerica and the Central Andes (in all periods) that were more like some societies of the Intermediate Area than they were like the large Classic or Middle Horizon states. And such comparisons enable us to generalize more meaningfully because, instead of a sample consisting of three culture macro-areas, we have dozens, if not hundreds, of regional trajectories of sociopolitical change with which to work as we compare the Guayas Basin, the Alto Magdalena, the Muisca area, the western Venezuelan Llanos, central Panama, the Diquís region, the Arenal region, the Tehuacán Valley, the Valley of Oaxaca, central Morelos, the Casma Valley, the Santa Valley, the upper Mantaro, etc.

To accomplish this we will need to know a great deal more about each of these regions than what their artifacts look like. Descriptions of artifacts will need to be increasingly complemented by serious analytical attention to socially meaningful contexts—houses and households, activity areas of many kinds, workshops, settlements, and the regional landscapes across which the fundamental units of Intermediate Area societies extended. Methodologies for dealing with such contexts archaeologically exist, and many of them have already been applied to some extent within the Intermediate Area. One can expect (or at least hope) that a growing intellectual interest in questions of prehistoric social change among scholars working on the Intermediate Area will be reflected in a corresponding shift in the way in which archaeological data are collected and analyzed as well.

ACKNOWLEDGMENTS

Thanks are due to Floria Arrea, Lilliam Arvelo, Warwick Bray, María Cordero, Richard Cooke, Paul Healy, Mary Helms, John Hoopes, Carl Langebaek, Augusto Oyuela, Anthony Ranere, Elsa Redmond, Charles Spencer, David Stemper, Erika Wagner, and James Zeidler for providing references and copies of publications and to Donald Kerchis for chasing references through the library. Any oversights are, of course, not the fault of these helpful colleagues.

REFERENCES CITED

- Alcina Franch, J. (1988). El modelo teórico de "jefatura" y su aplicación al área andina septentrional norte. In Reichel D., E. (ed.), *Etnohistoria e Historia de las Américas*, Ediciones Uniandes, Bogotá, pp. 97-116.
- Ardila Calderón, G. I. (1991). The peopling of northern South America. In Bonnichsen, R., and Turnmire, K. L. (eds.), *Clovis: Origins and Adaptations*, Center for the Study of the First Americans, Department of Anthropology, Oregon State University, Corvallis, pp. 261-282.
- Ardila Calderón, G. I. (1992). El Norte de América del Sur: Diversidad y adaptaciones en el final del Pleistoceno. In Politis, G. (ed.), *Arqueología en América Latina Hoy*, Biblioteca Banco Popular, Bogotá, pp. 90-115.
- Ardila Calderón, G. I., and Politis, G. G. (1989). Nuevos datos para un viejo problema: Investigación y discusiones en torno del poblamiento de América del Sur. *Boletín del Museo del Oro* 23: 2-45.
- Bailey, R. C., Head, G., Jenike, M., Owen, B., Rechtman, R., and Zechenter, E. (1989). Hunting and gathering in tropical rain forest: Is it possible? *American Anthropologist* 91: 59-82.
- Bernal Ruiz, F. (1990). Investigaciones arqueológicas en el antiguo cacicazgo de Bogotá (Funza-Cundinamarca). *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 5(3): 31-51.
- Bonavia, D., and Grobman, A. (1989). Andean maize: Its origins and domestication. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 456-470.
- Botiva Contreras, A., Cadavid, G., Herrera, L., Groot de Mahecha, A. M., and Mora, S. (1989). *Colombia Prehispánica: Regiones Arqueológicas*, Instituto Colombiano de Antropología, Bogotá.
- Bradley, J. E. (1994). Tronadora Vieja: An Archaic and early Formative site in the Arenal region. In Sheets, P. D., and McKee, B. R. (eds.), *Archaeology, Volcanism, and Remote Sensing in the Arenal Region, Costa Rica*, University of Texas Press, Austin, pp. 73-86.
- Bray, W., Herrera, L., Cardale de Schrimppf, M., Botero, P., and Monsalve, J. G. (1987). The ancient agricultural landscape of Calima, Colombia. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 443-481.
- Briggs, P.S. (1989). *Art, Death and Social Order: The Mortuary Arts of Pre-Conquest Central Panama*, BAR International Series 550, Oxford.
- Broadbent, S. M. (1987). The Chibcha raised-field system in the Sabana de Bogotá, Colombia: Further investigations. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 403-423.

- Bruhns, K. O. (1989). Intercambio entre la costa y la sierra en el formativo tardío: Nuevas evidencias del Azuay. In Bouchard, J. F., and Guinea, M. (eds.), *Relaciones Interculturales en el Area Ecuatorial del Pacífico durante la Epoca Precolombina*, BAR International Series 503, Oxford, pp. 57-74.
- Bruhns, K. O., Burton, J. H., and Miller, G. R. (1990). Excavations at Pirincay in the Paute Valley of southern Ecuador, 1985-1988. *Antiquity* 64: 221-233.
- Buys, J. E., and Domínguez, V. (1989). La arqueología de Cumbayá, provincia de Pichincha, Ecuador. In Bouchard, J. F., and Guinea, M. (eds.), *Relaciones Interculturales en el Area Ecuatorial del Pacífico durante la Epoca Precolombina*, BAR International Series 503, Oxford, pp. 75-95.
- Buys, J. E., and Muse, M. (1987). Arqueología de asentamientos asociados a los campos elevados de Peñón del Río, Guayas, Ecuador. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 225-248.
- Cárdenas Arroyo, F. (1988). Importancia del intercambio regional en la economía del área Tairona. *Revista de Antropología* 4(1): 37-64 (Universidad de los Andes, Bogotá).
- Cárdenas Arroyo, F. (1990a). La momia de Pisba, Boyocá. *Boletín del Museo del Oro* 27: 2-13.
- Cárdenas Arroyo, F. (1990b). Moque, momias y santuarios: Una planta en contexto ritual. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(2): 41-58.
- Carneiro, R. L. (1990). Chiefdom-level warfare as exemplified in Fiji and the Cauca Valley. In Haas, J. (ed.), *The Anthropology of War*, Cambridge University Press, Cambridge, pp. 190-211.
- Carneiro, R. L. (1991). The nature of the chiefdom as revealed by evidence from the Cauca Valley of Colombia. In Rambo, A. T., and Gillogly, K. (eds.), *Profiles in Cultural Evolution: Papers from a Conference in Honor of Elman R. Service*, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 85, pp. 167-190.
- Castillo, N. (1988). Comentario sobre el debate, La arqueología: cultivo de fragmentos cerámicos. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 4(2): 201-206.
- Cavelier de Ferrero, I., Mora Camargo, S., and Herrera de Turbay, L. F. (1990). Estabilidad y dinámica agrícola: Las transformaciones de una sociedad Amazónica. In Mora Camargo, S. (ed.), *Ingenierías Prehispánicas*, Fondo Fen Colombia and Instituto Colombiano de Antropología, Bogotá, pp. 73-109.
- Cooke, R. G. (1988). Some ecological and technological correlates of coastal fishing in Formative Pacific Panama. In Kennedy, B. V., and Lemoine, G. M. (eds.), *Diet and Subsistence: Current Archaeological Perspectives*, Proceedings of the Nineteenth Annual Conference of the Archaeological Association of the University of Calgary, University of Calgary Archaeology Association, Calgary, pp. 127-140.
- Cooke, R. G. (1992). Etapas tempranas de la producción de alimentos vegetales en la baja Centroamérica y partes de Colombia (región histórica Chibcha-Chocó). *Revista de Arqueología Americana* 6: 35-70.
- Cooke, R. G., and Ranere, A. J. (1992a). The origin of wealth and hierarchy in the central region of Panama (12,000-2,000 BP), with observations on its relevance to the history and phylogeny of Chibchan-speaking polities in Panama and elsewhere. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 243-316.
- Cooke, R. G., and Ranere, A. J. (1992b). Precolumbian influences on the zoogeography of Panama: An update based on archaeofaunal and documentary data. In *Tulane Studies in Zoology and Botany*, Supplementary Publication No. 1, pp. 21-58, New Orleans.
- Cooke, R. G., and Ranere, A. J. (1992c). Prehistoric human adaptations to the seasonally dry forests of Panama. *World Archaeology* 24: 114-133.
- Corrales Ulloa, F. (1990). Comentario bibliográfico sobre *La Ocupación Agrícola Temprana del Sitio Arqueológico Curré, Valle del Diquís*, Tesis de licenciatura sin publicar, Departamento de Antropología, Universidad de Costa Rica. *Revista de Arqueología Americana* 1: 215-223.

- Correal Urrego, G. (1990a). *Aguazuque: Evidencias de Cazadores, Recolectores, y Plantadores en la Altiplanicie de la Cordillera Oriental*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Correal Urrego, G. (1990b). Evidencias culturales durante el Pleistoceno y Holoceno de Colombia. *Revista de Arqueología Americana* 1: 69-89.
- Cremer, W. (1992). Regional exchange along the Pacific Coast of Costa Rica during the Late Polychrome period, A.C. 1200-1550. *Journal of Field Archaeology* 19: 1-16.
- Cremer, W., and Haas, J. (1985). Tribe versus chiefdom in lower Central America. *American Antiquity* 50: 738-754.
- Damp, J. (1988). *La Primera Ocupación Valdivia de Real Alto: Patrones Económicos, Arquitectónicos y Ideológicos (Biblioteca Ecuatoriana de Arqueología, Vol. 3)*, Corporación Editora Nacional, Quito, and Escuela Superior Politécnica del Litoral, Centro de Estudios Arqueológicos y Antropológicos, Guayaquil.
- Dillehay, T. D., Ardiña Calderón, G., Politis, G., and Beltrão, M. da C. de M.C. (1992). Earliest hunters and gatherers of South America. *Journal of World Prehistory* 6: 145-204.
- Drennan, R. D. (1987). Regional demography in chiefdoms. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 307-324.
- Drennan, R. D. (1991a). Cultural evolution, human ecology, and empirical research. In Rambo, A. T., and Gillogly, K. (eds.), *Profiles in Cultural Evolution: Papers from a Conference in Honor of Elman R. Service*, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 85, Ann Arbor, pp. 113-135.
- Drennan, R. D. (1991b). Pre-hispanic chiefdom trajectories in Mesoamerica, Central America, and northern South America. In Earle, T. (ed.), *Chiefdoms: Power, Economy, and Ideology*, Cambridge University Press, Cambridge, pp. 263-287.
- Drennan, R. D. (1992). What is the archeology of chiefdoms about? In Embree, L. (ed.), *Metaarchaeology: Reflections by Archaeologists and Philosophers*, Kluwer, Dordrecht, pp. 52-74.
- Drennan, R. D. (1993). Sociedades complejas precolombinas: Variación y trayectorias de cambio. In Uribe, C. A. (ed.), *La Construcción de las Américas*, Universidad de los Andes, Bogotá, pp. 31-49.
- Drennan, R. D. (1995). Mortuary practices in the Alto Magdalena: The social context of the "San Agustín Culture." In Dillehay, T. D. (ed.), *Tombs for the Living: Andean Mortuary Practices*, Dumbarton Oaks, Washington, DC, pp. 79-110.
- Drennan, R. D., and Quattrin, D. W. (1995). Social inequality and agricultural resources in the Valle de la Plata, Colombia. In Price, T. D., and Feinman, G. M. (eds.), *Foundations of Social Inequality*, Plenum Press, New York, pp. 207-233.
- Drennan, R. D., and Uribe, C. A. (1987). Introduction. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. vii-xii.
- Drennan, R. D., Jaramillo, L. G., Ramos, E., Sánchez, C. A., Ramírez, M. A., and Uribe, C. A. (1989). Reconocimiento arqueológico en las alturas medias del Valle de la Plata. In Mora Camargo, S., Cárdenas Arroyo, F., and Roldán, M.A. (eds.), *V Congreso Nacional de Antropología, Villa de Leyva, 1989: Memorias del Simposio de Arqueología y Antropología Física*, Departamento de Antropología, Universidad de los Andes and Instituto Colombiano de Antropología, Bogotá, pp. 117-157.
- Drennan, R. D., Jaramillo, L. G., Ramos, E., Sánchez, C. A., Ramírez, M. A., and Uribe, C. A. (1991). Regional dynamics of chiefdoms in the Valle de la Plata, Colombia. *Journal of Field Archaeology* 18: 297-317.
- Drolet, R. P. (1992). The house and the territory: The organizational structure for chiefdom art in the Diquís subregion of Greater Chiriquí. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 207-241.
- Echeverría Almeida, J. (1988). Los primeros poblados. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 1. Epoca Aborigen I*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 181-222.
- Fernández, F., and Gassón, R. (1993). Población y cambio sociocultural en el Orinoco medio durante la época prehispánica. In Fernández, F., and Gassón, R. (eds.), *Contribuciones*

- a la *Arqueología Regional de Venezuela*, Fondo Editorial Acta Científica Venezolana, Caracas, pp. 93–105.
- Flannery, K. V. (1973). Archaeology with a capital "S." In Redman, C. L. (ed.), *Research and Theory in Current Archeology*, Wiley, New York, pp. 47–53.
- Fonseca Zamora, O. M. (1988). Reflexiones sobre la arqueología como ciencia social. In Fonseca Zamora, O. M. (ed.), *Hacia una Arqueología Social: Actas del Primer Simposio de la Fundación de Arqueología del Caribe*, Editorial de la Universidad de Costa Rica, San José, pp. 13–22.
- Fonseca Zamora, O. M. (1992). *Historia Antigua de Costa Rica: Surgimiento y Caracterización de la Primera Civilización Costarricense*, Editorial de la Universidad de Costa Rica, San José.
- Fonseca Zamora, O. M. (1992–1993). El concepto de área de tradición chibchoide y su pertinencia para entender la Gran Nicoya. *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 18–19: 209–227.
- Fowler, W. R., Jr. (1992). The historiography of wealth and hierarchy in the Intermediate Area. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 357–377.
- Garber, J. F., Grove, D. C., Hirth, K. G., and Hoopes, J. W. (1993). Jade use in portions of Mexico and Central America: Olmec, Maya, Costa Rica, and Honduras—a summary. In Lange, F. W. (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, University of Utah Press, Salt Lake City, pp. 211–231.
- Gnecco Valencia, C. (1990). El paradigma paleoindio en Suramérica. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 37–78.
- Gnecco Valencia, C., and Illera Montoya, C. H. (1989a). El Paleoindio en el Valle de Popayán: anotaciones sobre metodología arqueológica. In Mora Camargo, S., Cárdenas Arroyo, F., and Roldán, M. A. (eds.), *V Congreso Nacional de Antropología, Villa de Leyva, 1989: Memorias del Simposio de Arqueología y Antropología Física*, Departamento de Antropología, Universidad de los Andes and Instituto Colombiano de Antropología, Bogotá, pp. 11–29.
- Gnecco Valencia, C., and Illera Montoya, C. H. (1989b). La Elvira: Un sitio paleoindio en el Valle de Popayán (Informe parcial de investigación). *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá) 4(1): 19–28.
- Gnecco Valencia, C., and Salgado López, H. (1989). Adaptaciones precerámicas en el suroccidente de Colombia. *Boletín del Museo del Oro* 24: 34–53.
- González Chaves, A., and González Chaves, F. (1992). *Poblados Amerindios de Costa Rica: Antecedentes Arqueológicos e Históricos*, Editorial de la Universidad de Costa Rica, San José.
- Groot de Mahecha, A. M. (1990). Panorama etnohistórico y arqueológico de los Taironas en la Sierra Nevada de Santa Marta, Colombia: Evidencias de los siglos XIV y XVI. In *Culturas Indígenas de los Andes Septentrionales*, Sociedad Estatal Quinto Centenario, Madrid, pp. 83–104.
- Groot de Mahecha, A. M. (1992). *Checua: Una Secuencia Cultural entre 8500 y 3000 Años antes del Presente*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Hastorf, C. A. (1994). The changing approaches to maize research. In Oyuela-Caycedo, A. (ed.), *History of Latin American Archaeology*, Avebury, Aldershot, Hampshire, UK, pp. 139–154.
- Hawkes, J. G. (1989). The domestication of roots and tubers in the American tropics. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 483–503.
- Hearne, P., and Sharer, R. J. (eds.) (1992) *River of Gold: Precolumbian Treasures from Sitio Conte*, University Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia.

- Heiser, C. B., Jr. (1989). Domestication of Cucurbitaceae: *Cucurbita* and *Lagenaria*. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 471-480.
- Helms, M. W. (1987). Art styles and interaction spheres in Central America and the Caribbean: Polished black wood in the Greater Antilles. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 67-84.
- Helms, M. W. (1992a). Long-distance contacts, elite aspirations, and the age of discovery in cosmological context. In Schortman, E. M., and Urban, P. A. (eds.), *Resources, Power, and Interregional Interaction*, Plenum Press, New York, pp. 157-174.
- Helms, M. W. (1992b). Thoughts on public symbols and distant domains relevant to the chiefdoms of lower Central America. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 317-329.
- Helms, M. W. (1994). Chiefdom rivalries, control, and external contacts in lower Central America. In Brumfiel, E. M., and Fox, J. W. (eds.), *Factional Competition and Political Development in the New World*, Cambridge University Press, Cambridge, pp. 55-60.
- Herrera, L., Cardale de Schrimpff, M., and Bray, W. (1990). La arqueología y el paisaje en la región Calima. In Mora Camargo, S. (ed.), *Ingenierías Prehispánicas*, Fondo Fen Colombia and Instituto Colombiano de Antropología, Bogotá, pp. 111-150.
- Herrera, L. F., Cavalier, I., Rodríguez, C., and Mora, S. (1992). The technical transformation of an agricultural system in the Colombian Amazon. *World Archaeology* 24: 98-113.
- Hoopes, J. W. (1988). The early Formative period and inland adaptations in lower Central America. In Kennedy, B. V., and Lemoine, G. M. (eds.), *Diet and Subsistence: Current Archaeological Perspectives*, Proceedings of the Nineteenth Annual Conference of the Archaeological Association of the University of Calgary, University of Calgary Archaeological Association, Calgary, pp. 141-148.
- Hoopes, J. W. (1991). The isthmian alternative: Reconstructing patterns of social organization in formative Costa Rica. In Fowler, W. R., Jr. (ed.), *The Formation of Complex Society in Southeastern Mesoamerica*, CRC Press, Boca Raton, FL, pp. 171-192.
- Hoopes, J. W. (1992a). A view from the south: Prehistoric exchange in lower Central America. In Ericson, J. E. and Baugh, T. G. (eds.), *The American Southwest and Mesoamerica: Systems of Prehistoric Exchange*, Plenum Press, New York, pp. 247-282.
- Hoopes, J. W. (1992b). Early Formative cultures in the Intermediate Area: A background to the emergence of social complexity. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 43-83.
- Hoopes, J. W. (1994a). Ford revisited: A critical review of the chronology and relationships of the earliest ceramic complexes in the New World, 6000-1500 B.C. *Journal of World Prehistory* 8: 1-49.
- Hoopes, J. W. (1994b). The Tronadora Complex: Early Formative ceramics in northwestern Costa Rica. *Latin American Antiquity* 5: 3-30.
- Hurtado de Mendoza, L. (1988). Estratificación social en un cacicazgo de Costa Rica: Una aplicación de la inferencia como método de conocimiento in arqueología. In Fonseca Zamora, O. (ed.), *Hacia una Arqueología Social: Actas del Primer Simposio de la Fundación de Arqueología del Caribe*, Editorial de la Universidad de Costa Rica, San José, pp. 46-77.
- Knapp, G. (1988). *Ecología Cultural Prehispánica del Ecuador*, Banco Central del Ecuador, Quito.
- Knapp, G. (1991). *Andean Ecology: Adaptive Dynamics in Ecuador*, Westview Press, Boulder, CO.
- Knapp, G., and Preston, D. A. (1987). Evidence of prehistoric ditched fields on sloping land in northern highland Ecuador. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 403-423.
- Lange, F. W. (1992a). The Intermediate Area: An introductory overview of wealth and hierarchy issues. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 1-14.

- Lange, F. W. (1992b). Summary: Perspectives on wealth and hierarchy in the Intermediate Area. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 423–443.
- Lange, F. W. (1993). The conceptual structure in lower Central American studies: A Central American view. In Graham, M. M. (ed.), *Reinterpreting Prehistory of Central America*, University Press of Colorado, Niwot, CO, pp. 277–324.
- Lange, F. W., and Bishop, R. L. (1988). Abstraction and jade exchange in precolumbian southern Mesoamerica and lower Central America. In Lange, F. W. (ed.), *Costa Rican Art and Archaeology: Essays in Honor of Frederick R. Mayer*, University of Colorado, Boulder, pp. 65–88.
- Lange, F. W., Sheets, P. D., Martínez, A., and Abel-Vidor, S. (1992). *The Archaeology of Pacific Nicaragua*, University of New Mexico Press, Albuquerque.
- Langebaek Rueda, C. H. (1987a). *Mercados, Poblamiento e Integración Etnica entre los Muisca, Siglo XVI*, Banco de la República, Bogotá.
- Langebaek Rueda, C. H. (1987b). Tres Formas de acceso a recursos en territorio de la confederación del Cocuy, siglo XVI. *Boletín del Museo del Oro* 18: 28–45.
- Langebaek Rueda, C. H. (1991a). El uso de adornos de metal y la existencia de sociedades complejas: Una visión desde Centro y Suramérica. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 7(1–2): 71–90.
- Langebaek Rueda, C. H. (1991b). Highland center and foothill periphery in 16th-century eastern Colombia. *Research in Economic Anthropology* 13: 325–339.
- Langebaek Rueda, C. H. (1992a). Competencia por prestigio político y momificación en el norte de Suramérica y el Istmo de Panamá. *Revista Colombiana de Antropología* 29: 7–26.
- Langebaek Rueda, C. H. (1992b). *Noticias de Caciques Muy Mayores: Origen y Desarrollo de Sociedades Complejas en el Nororiente de Colombia y Norte de Venezuela*, Universidad de los Andes, Bogotá.
- Legros, T. (1989). Consideraciones sobre Puerto Chacho, un conchero de las llanuras del Caribe colombiano. In Mora Camargo, S., Cárdenas Arroyo, F., and Roldán, M. A. (eds.), *V Congreso Nacional de Antropología, Villa de Leyva, 1989: Memorias del Simposio de Arqueología y Antropología Física*, Departamento de Antropología, Universidad de los Andes and Instituto Colombiano de Antropología, Bogotá, pp. 65–76.
- Legros, T., Rodríguez, C., and Pauly, C. (1988). Arqueología del Formativo temprano en las llanuras del Caribe colombiano (Departamentos de Bolívar y Sucre). *Boletín del Museo del Oro* 20: 130–132.
- Llanos Vargas, H. (1990). Espacios míticos y cotidianos en el sur del Alto Magdalena Agustiniense. In Mora Camargo, S. (ed.), *Ingenierías Prehispánicas*, Fondo Fen Colombia and Instituto Colombiano de Antropología, Bogotá, pp. 13–45.
- Llanos Vargas, H. (1993). *Presencia de la Cultura de San Agustín en la Depresión Cálida del Valle del Río Magdalena: Garzón—Huila*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Lleras Pérez, R., and Langebaek Rueda, C. H. (1987). Producción agrícola y desarrollo sociopolítico entre los Chibchas de la Cordillera Oriental y Serranía de Mérida. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 251–270.
- Malpass, M. A., and Stothert, K. E. (1992). Evidence for preceramic houses and household organization in western South America. *Andean Past* 3: 137–163.
- Marcos, J. G. (1987). Los campos elevados de la Cuenca del Guayas, Ecuador: El Proyecto Peñon del Río. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 217–224.
- Marcos, J. G. (1988a). Economía e ideología en Andinoamérica septentrional. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 2. Epoca Aborigen II*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 165–188.
- Marcos, J. G. (1988b). El origen de la agricultura. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 1. Epoca Aborigen I*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 129–180.

- Marcos, J. G. (1992). Los agro-alfareros Valdivia de Real Alto: Una síntesis sobre la "revolución neolítica del Nuevo Mundo" en el Antiguo Ecuador. In Politis, G. (ed.), *Arqueología en América Latina Hoy*, Biblioteca Banco Popular, Bogotá, pp. 132-143.
- Martínez, V. L. (1987). Campos elevados al norte del sitio arqueológico Peñón del Río, Guayas, Ecuador. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 267-277.
- Mathewson, K. (1987). Estimating labor inputs for the Guayas raised fields: Initial considerations. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 321-336.
- Miller, G. R., and Gill, A. L. (1990). Zooarchaeology at Pirincay, a Formative period site in highland Ecuador. *Journal of Field Archaeology* 17: 49-68.
- Molina, L. E. (1988). Consideraciones sobre los conceptos operativos en arqueología social: Formación social, modo de producción, modo de vida, cultura. In Fonseca Zamora, O. (ed.), *Hacia una arqueología social: Actas del Primer Simposio de la Fundación de Arqueología del Caribe*, Editorial de la Universidad de Costa Rica, San José, pp. 147-154.
- Mora Camargo, S. (1990). Anotaciones a un modelo: ¿Qué estudia la arqueología en el área muisca? *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 164-169.
- Mora Camargo, S. (1993). Cold and hot, green and yellow, dry and wet: Direct access to resources in Amazonia and the Andes. *Florida Journal of Anthropology* 18:51-60.
- Mora Camargo, S., Herrera, L. F., Cavalier, I. and Rodríguez, C. (1990). Suelos antrópicos amazónicos: Génesis y dinámica de una organización política. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(2): 27-39.
- Mora Camargo, S., Herrera, L. F., Cavalier F., I., and Rodríguez, C. (1991). *Cultivars, Anthropic Soils and Stability: A Preliminary Report of Archaeological Research in Araracuara, Colombian Amazonia*. University of Pittsburgh Latin American Archaeology Reports No. 2, Pittsburgh.
- Moreno Yáñez, S. E. (1988). Formaciones políticas tribales y señoríos étnicos. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 2: Epoca Aborigen II*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 9-134.
- Muse, M. (1991). Products and politics of a Milagro entrepôt: Peñón del Río, Guayas Basin, Ecuador. *Research in Economic Anthropology* 13: 269-323.
- Muse, M., and Quintero, F. (1987). Experimentos de reactivación de campos elevados, Peñón del Río, Guayas, Ecuador. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 249-266.
- Oyuela-Caycedo, A. (1987). Dos sitios arqueológicos con desgrasante de fibra vegetal en la Serranía de San Jacinto (Departamento de Bolívar). *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá) 2(1): 5-26.
- Oyuela-Caycedo, A. (1990). Las redes de caminos prehispánicos en la Sierra Nevada de Santa Marta. In Mora Camargo, S. (ed.), *Ingenierías Prehispánicas*, Fondo Fen Colombia and Instituto Colombiano de Antropología, Bogotá, pp. 47-71.
- Pearsall, D. M. (1987). Evidence for prehistoric maize cultivation on raised fields at Peñón del Río, Guayas, Ecuador. In Denevan, W.M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 279-295.
- Pearsall, D. M. (1988a). An overview of Formative Period subsistence in Ecuador: Palaeoethnobotanical data and perspectives. In Kennedy, B. V., and Lemoine, G. M. (eds.), *Diet and Subsistence: Current Archaeological Perspectives*, Proceedings of the Nineteenth Annual Conference of the Archaeological Association of the University of Calgary, University of Calgary Archaeological Association, Calgary, pp. 149-158.

- Pearsall, D. M. (1988b). *La Producción de Alimentos en Real Alto (Biblioteca Ecuatoriana de Arqueología, Vol. 2)*, Corporación Editora Nacional, Quito, and Escuela Superior Politécnica del Litoral, Centro de Estudios Arqueológicos y Antropológicos, Guayaquil.
- Pearsall, D. M. (1992). The origins of plant cultivation in South America. In Cowan, C. W., and Watson, P. J. (eds.), *The Origins of Agriculture: An International Perspective*, Smithsonian Institution Press, Washington, DC, pp. 173-205.
- Pearsall, D. M. (1994). Issues in the analysis and interpretation of archaeological maize in South America. In Johannessen, S., and Hastorf, C. A. (eds.), *Corn and Culture in the Prehistoric New World*, Westview Press, Boulder, CO, pp. 245-272.
- Pearsall, D. M., and Piperno, D. R. (1990). Antiquity of maize cultivation in Ecuador: Summary and reevaluation of the evidence. *American Antiquity* 55: 324-337.
- Pickersgill, B. (1989). Cytological and genetical evidence on the domestication and diffusion of crops within the Americas. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 426-439.
- Piperno, D. R. (1989). Non-affluent foragers: Resource availability, seasonal shortages, and the emergence of agriculture in Panamanian tropical forests. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 538-554.
- Piperno, D. R. (1990). Aboriginal agriculture and land usage in the Amazon Basin, Ecuador. *Journal of Archaeological Science* 17: 665-677.
- Piperno, D. R., Bush, M. B., and Colinvaux, P. A. (1990). Paleoenvironments and human occupation in late-glacial Panama. *Quaternary Research* 33: 108-116.
- Piperno, D. R., Bush, M. B., and Colinvaux, P. A. (1991a). Paleoecological perspectives on human adaptation in central Panama. I. The Pleistocene. *Geoarchaeology* 6: 201-226.
- Piperno, D. R., Bush, M. B., and Colinvaux, P. A. (1991b). Paleoecological perspectives on human adaptation in central Panama. II. The Holocene. *Geoarchaeology* 6: 227-250.
- Plazas, C., and Falchetti, A. M. (1987). Poblamiento y adecuación hidráulica en el Bajo Río San Jorge, Costa Atlántica, Colombia. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 483-503.
- Plazas, C., and Falchetti, A. M. (1988). Poblamiento prehispánico y adecuación hidráulica en el bajo Río San Jorge. In Reichel, D. E. (ed.), *Arqueología de las Américas (Memorias 45o. Congreso Internacional de las Américas)*, Fondo de Promoción de la Cultura del Banco Popular, Bogotá, pp. 181-191.
- Plazas, C., and Falchetti, A. M. (1990). Manejo hidráulico Zenú. In Mora Camargo, S. (ed.), *Ingenierías Prehispánicas*, Fondo Fen Colombia and Instituto Colombiano de Antropología, Bogotá, pp. 151-171.
- Plazas, C., Falchetti, A. M., van der Hammen, T., and Botero, P. (1988). Cambios ambientales y desarrollo cultural en el Bajo Río San Jorge. *Boletín del Museo del Oro* 20: 54-88.
- Plazas, C., Falchetti, A. M., Sáenz Samper, J., and Archila, S. (1993). *La Sociedad hidráulica Zenú: Estudio arqueológico de 2.000 años de historia en las llanuras del Caribe Colombiano*, Banco de la República, Museo del Oro, Bogotá.
- Ranere, A. J. (1992). Implements of change in the Holocene environments of Panama. In Ortiz-Troncoso, O. R., and van der Hammen, T. (eds.), *Archaeology and Environment in Latin America*, Instituut voor Pre- en Protohistorische Archeologie Albert Egges van Giffen, Universiteit van Amsterdam, Amsterdam, pp. 25-44.
- Ranere, A. J., and Cooke, R. G. (1991). Paleoindian occupation in the Central American tropics. In Bonnicksen, R., and Turnmire, K. L. (eds.), *Clovis: Origins and Adaptations*, Center for the Study of the First Americans, Department of Anthropology, Oregon State University, Corvallis, pp. 237-253.
- Rappaport, J. (1988). Relaciones de intercambio en el sur de Nariño. *Boletín del Museo del Oro* 22: 32-53.
- Raymond, J. S. (1988). Subsistence patterns during the Early Formative in the Valdivia Valley, Ecuador. In Kennedy, B. V., and Lemoine, G. M. (eds.), *Diet and Subsistence: Current Archaeological Perspectives*, Proceedings of the Nineteenth Annual Conference of the

- Archaeological Association of the University of Calgary, University of Calgary Archaeological Association, Calgary, pp. 159–164.
- Raymond, J. S., Oyuela-Caycedo, A., and Carmichael, P. (1994). Una comparación de las tecnologías de la cerámica temprana de Ecuador y Colombia. In Shimada, I. (ed.), *Tecnología y Organización de la Producción Cerámica Prehispánica en los Andes*, Pontificia Universidad Católica del Perú, Fondo Editorial, Lima, pp. 33–52.
- Redmond, E. M. (1994a). External warfare and the internal politics of northern South American tribes and chiefdoms. In Brumfiel, E. M., and Fox, J. W. (eds.), *Factional Competition and Political Development in the New World*, Cambridge University Press, Cambridge, pp. 44–54.
- Redmond, E. M. (1994b). *Tribal and Chiefly Warfare in South America*, Memoirs of the Museum of Anthropology, University of Michigan, No. 28, Ann Arbor.
- Redmond, E. M., and Spencer, C. S. (1990). Investigaciones arqueológicas en el piedemonte y los llanos altos de Barinas, Venezuela. *Boletín de la Asociación Venezolana de Arqueología* 5: 4–24.
- Redmond, E. M., and Spencer, C. S. (1994). Pre-Columbian chiefdoms. *National Geographic Research and Exploration* 10: 422–439.
- Rivera Escobar, S. (1992). *Neusa: 9.000 Años de Presencia Humana en el Páramo*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Rodríguez Ramírez, C. (1988). Las tradiciones alfareras tempranas en las llanuras del Caribe Colombiano (Departamentos de Bolívar y Atlántico): Periodización y comparación cerámica. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá) 3(2): 26–40.
- Salazar, E. (1988a). El hombre temprano en el Ecuador. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 1. Epoca Aborigen I*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 73–128.
- Salazar, E. (1988b). El proceso cultural en el Ecuador aborigen y en América. In Ayala Mora, E. (ed.), *Nueva Historia del Ecuador, Vol. 1. Epoca Aborigen I*, Corporación Editora Nacional and Editorial Grijalbo Ecuatoriana, Quito, pp. 33–71.
- Salazar, E. (1992). El intercambio de obsidiana en el Ecuador precolombino: Perspectivas teórico-metodológicas. In Politis, G. (ed.), *Arqueología en América Latina Hoy*, Biblioteca Banco Popular, Bogotá, pp. 116–131.
- Sanoja Obediente, M. (1988). La inferencia en la arqueología social. In Fonseca Zamora, O. (ed.), *Hacia una Arqueología Social: Actas del Primer Simposio de la Fundación de Arqueología del Caribe*, Editorial de la Universidad de Costa Rica, San José, pp. 123–144.
- Sanoja Obediente, M. (1989). From foraging to food production in northeastern Venezuela and the Caribbean. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 523–537.
- Sanoja Obediente, M., and Vargas Arenas, I. (1987). La sociedad cacical del Valle de Quíbor (Estado Lara, Venezuela). In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 201–212.
- Sheets, P. D. (1992). The pervasive pejorative in Intermediate Area studies. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 15–41.
- Sheets, P. D. (1994). Summary and Conclusions. In Sheets, P. D., and McKee, B. R. (eds.), *Archaeology, Volcanism, and Remote Sensing in the Arenal Region, Costa Rica*, University of Texas Press, Austin, pp. 312–325.
- Sheets, P. D. (ed.) (1983). *Archeology and Volcanism in Central America: The Zapotitán Valley of El Salvador*, University of Texas Press, Austin.
- Sheets, P. D., and McKee, B. R. (eds.) (1994). *Archaeology, Volcanism, and Remote Sensing in the Arenal Region, Costa Rica*, University of Texas Press, Austin.
- Sheets, P. D., Hoopes, J., Melson, W., McKee, B., Sever, T., Mueller, M., Chenault, M., and Bradley, J. (1991). Prehistory and volcanism in the Arenal area, Costa Rica. *Journal of Field Archaeology* 18: 445–465.
- Smith, C. E., Jr. (1988). The recovery of plant remains from Intermediate Area sites. In Kennedy, B. V., and Lemoine, G. M. (eds.), *Diet and Subsistence: Current Archaeological*

- Perspectives*, Proceedings of the Nineteenth Annual Conference of the Archaeological Association of the University of Calgary, University of Calgary Archaeological Association, Calgary, pp. 165–171.
- Snarskis, M. J. (1987). The archeological evidence for chiefdoms in eastern and central Costa Rica. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 105–117.
- Snarskis, M. J. (1992). Wealth and hierarchy in the archaeology of eastern and central Costa Rica. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC, pp. 141–164.
- Spencer, C. S. (1991). Coevolution and the development of Venezuelan chiefdoms. In Rambo, A. T., and Gillogly, K. (eds.), *Profiles in Cultural Evolution: Papers from a Conference in Honor of Elman R. Service*, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 85, pp. 137–165.
- Spencer, C. S. (1993). Human agency, biased transmission, and the cultural evolution of chiefly authority. *Journal of Anthropological Archaeology* 12: 41–74.
- Spencer, C. S. (1994). Factional ascendance, dimensions of leadership, and the development of centralized authority. In Brumfiel, E. M., and Fox, J. W. (eds.), *Factional Competition and Political Development in the New World*, Cambridge University Press, Cambridge, pp. 31–43.
- Spencer, C. S., and Redmond, E. M. (1992). Prehispanic chiefdoms of the western Venezuelan Llanos. *World Archaeology* 24: 134–157.
- Spencer, C. S., Redmond, E. M., and Rinaldi, M. (1994). Drained fields at La Tigra, Venezuelan Llanos: A regional perspective. *Latin American Antiquity* 5: 119–143.
- Stemper, D. M. (1987). Raised fields and agricultural production, A. D. 1400–1600, Río Daule, Guayas, Ecuador. In Denevan, W. M., Mathewson, K., and Knapp, G. (eds.), *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 297–319.
- Stemper, D. M. (1988). Campos elevados y producción agrícola en los siglos XV a XVIII, Río Daule, Ecuador. In Reichel D., E. (ed.), *Arqueología de las Américas (Memorias 45o. Congreso Internacional de las Américas)*, Fondo de Promoción de la Cultura del Banco Popular, Bogotá, pp. 169–180.
- Stemper, D. M. (1993). *The Persistence of Prehispanic Chiefdoms on the Río Daule, Coastal Ecuador*, University of Pittsburgh Memoirs in Latin American Archaeology No. 7, Pittsburgh.
- Stemper, D. M., and Salgado López, H. (1993). Metalurgia prehispánica y colonial-republicana en el Pacífico Colombiano. *Revista Colombiana de Antropología* 30: 59–99.
- Stohtert, K. E. (1988). *La Prehistoria Temprana de la Península de Santa Elena, Ecuador: Cultura Las Vegas*, Miscelánea Antropológica Ecuatoriana, Serie Monográfica 10, Museo del Banco Central del Ecuador, Guayaquil.
- Stohtert, K. E. (1992). Early economies of coastal Ecuador and the foundations of Andean civilization. *Andean Past* 3: 43–54.
- Stohtert, K. E., and Quilter, J. (1991). Archaic adaptations of the Andean region, 9000 to 5000 BP. *Revista de Arqueología Americana* 4: 25–53.
- Taft, M. M. (1993). Patterns of ceramics production and distribution. In Drennan, R. D., Taft, M. M., and Uribe, C. A. (eds.), *Prehispanic Chiefdoms in the Valle de la Plata, Vol. 2. Ceramics—Chronology and Craft Production*, University of Pittsburgh Memoirs in Latin American Archaeology No. 5, Pittsburgh, pp. 106–172.
- Toledo, M. I., and Molina, L. E. (1987). Elementos para la definición arqueológica de los cacicazgos prehispánicos del noroeste de Venezuela. In Drennan, R. D., and Uribe, C. A., (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 187–200.
- Uribe Alarcón, M. V. (1987). El manejo del tiempo en la arqueología. *Revista de Antropología (Universidad de los Andes, Departamento de Antropología)* 3(2): 167–173.
- Uribe Alarcón, M. V. (1988). La estratificación social entre los Protopasto. In Reichel, D. E. (ed.), *Etnohistoria e Historia de las Américas*, Ediciones Uniandes, Bogotá, pp. 89–95.

- van der Hammen, T. (1991). Paleocología y estratigrafía de yacimientos precerámicos de Colombia. *Revista de Arqueología Americana* 3: 57-78.
- van der Hammen, T. (1992). *Historia, Ecología y Vegetación*, Fondo FEN Colombia, Fondo de Promoción de la Cultura del Banco Popular, and Corporación Colombiana para la Amazonia "Araracuara," Bogotá.
- van der Hammen, T., Correal Urrego, G., and van Klinken, G. J. (1990). Isótopos estables y dieta del hombre prehistórico en la Sabana de Bogotá (un estudio inicial). *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 5(2): 3-10.
- Vargas Arenas, I. (1988). Definición de conceptos para una arqueología. In Fonseca Zamora, O. (ed.), *Hacia una Arqueología Social: Actas del Primer Simposio de la Fundación de Arqueología del Caribe*, Editorial de la Universidad de Costa Rica, San José, pp. 155-171.
- Vargas Arenas, I. (1989). Teoría sobre el cacicazgo como modo de vida: El caso del Caribe. *Boletín de Antropología Americana* 20: 19-30.
- Vargas Arenas, I. (1990). *Arqueología, Ciencia y Sociedad: Ensayo sobre Teoría Arqueológica y la Formación Económico Social Tribal en Venezuela*, Editorial Abre Brecha, Caracas.
- Wilkes, G. (1989). Maize: Domestication, racial evolution, and spread. In Harris, D. R., and Hillman, G. C. (eds.), *Foraging and Farming: The Evolution of Plant Exploitation*, Unwin Hyman, London, pp. 440-455.
- Zeidler, J. A. (1988). Feline imagery, stone mortars, and Formative period interaction spheres in the northern Andean area. *Journal of Latin American Lore* 14: 243-283.
- Zeidler, J. A. (1991). Maritime exchange in the early formative period of coastal Ecuador: Geopolitical origins of uneven development. *Research in Economic Anthropology* 13: 247-268.

BIBLIOGRAPHY OF RECENT LITERATURE

- Anawalt, P. R. (1992). Ancient cultural contacts between Ecuador, West Mexico, and the American Southwest: Clothing similarities. *Latin American Antiquity* 3: 114-129.
- Anawalt, P. R. (1993). Reply to Helen Perlstein Pollard. *Latin American Antiquity* 4: 386-387.
- Angulo Valdés, C. (1988). *Guájaro en la arqueología del norte de Colombia*. Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Athens, J. S. (1992). Ethnicity and adaptation: The Late Period-Cara Occupation in northern highland Ecuador. In Schortman, E. M., and Urban, P. A. (eds.), *Resources, Power, and Interregional Interaction*. Plenum, New York, pp. 193-219.
- Baquero, M. A. (1988). Algunos comentarios socioeconómicos sobre los habitantes de los humedales de los ríos San Jorge y Sinú. *Boletín del Museo del Oro* 20: 96-111.
- Baudez, C.-F., Borgnino, N., Lligant, S., and Lauthelin, V. (1992). *Papagayo: Un Hameau Précolombien du Costa Rica*, Editions Recherche sur les Civilisations, Paris.
- Boada Rivas, A. M. (1987). *Asentamientos Indígenas en el Valle de la Laguna (Samacá—Boyacá)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Boada Rivas, A. M. (1988). La deformación craneana en Marín: Un sitio del Valle de la Laguna (Samacá, Boyacá). *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 4(2): 127-141.
- Boada Rivas, A. M. (1989). Elementos de uso cotidiano, elementos de uso funerario. *Boletín del Museo del Oro* 25: 70-91.
- Boada Rivas, A. M. (1990). ¿Hay desnutrición entre "los muiscas" ... o en los modelos? *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 161-162.
- Boada Rivas, A. M., Mora Camargo, S., and Therrien Johannesson, M. (1988). La arqueología: Cultivo de fragmentos cerámicos—Debate sobre la clasificación cerámica del altiplano

- cundiboyacense. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 4(2): 161-197.
- Bouchard, J. F. (1992). El Formativo final y el desarrollo regional en el litoral Pacífico nor-ecuatorial. *Gaceta Arqueológica Andina* 6: 5-21.
- Bouchard, J. F., and Guinea, M. (eds.) (1989). *Relaciones Interculturales en el Área Ecuatorial del Pacífico durante la Época Precolombina*, BAR International Series 503, Oxford.
- Bouchard, J. F., and Scott, D. A. (1988). Orfebrería prehispánica de las llanuras del Pacífico de Ecuador y Colombia. *Boletín del Museo del Oro* 22: 2-16.
- Bray, W. (1991). ¿A donde han ido los bosques? El hombre y el medio ambiente en la Colombia prehispánica. *Boletín del Museo del Oro* 30: 42-65.
- Bray, W., Herrera, L., and Cardale Schimpff, M. (1988). Report on the 1984 field season in Calima. In *Pro Calima: Archäologisches Projekt im westlichen Kolumbien/Südamerika*, Vereinigung Pro Calima, Basel, pp. 2-42.
- Burger, R. L., Asaro, F., and Michel, H. V. (1989). The sources of obsidian from Chobshi Cave, Ecuador. *Andean Past* 2: 33-37. (Cornell University Latin American Studies Program, Ithaca, NY.)
- Cadavid Camargo, G., and Groot de Mahecha, A. M. (1987). Buritaca 200: Arqueología y conservación de una población precolombina (Sierra Nevada de Santa Marta—Colombia). *Boletín del Museo del Oro* 19: 56-81.
- Cadavid Camargo, G., and Ordóñez, H. (1992). *Arqueología de Salvamento en la Vereda de Tajumbina, Municipio de la Cruz (Nariño)*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República and Instituto Colombiano de Antropología, Bogotá.
- Caillavet, C. (1988). Les chefferies préhispaniques du nord de l'Équateur: Formes d'habitat et organisation territoriale. *Bulletin de l'Institut Français d'Études Andines* 17(2): 41-59.
- Cardale de Schimpff, M., Bray, W., and Herrera, L. (1989). Reconstruyendo el pasado en Calima: Resultados recientes. *Boletín del Museo del Oro* 24: 2-33.
- Cardale de Schimpff, M., Bray, W., Gähwiler-Walder, T., and Herrera, L. (1992). *Calima: Diez mil años de historia en el suroccidente de Colombia*, Fundación Pro Calima, Bogotá.
- Cárdenas Arroyo, F. (1990). Mitos y verdades sobre la desnutrición entre los muiscas: Una visión crítica. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 129-139.
- Cárdenas Arroyo, F. (1993). Paleodieta y paleodemografía en poblaciones arqueológicas Muiscas (sitios Las Delicias y Candelaria). *Revista Colombiana de Antropología* 30: 129-148.
- Castaño Uribe, C. (1987). La vivienda y el enterramiento como unidades de interpretación: Anatomía de dos casos de transición del modelo de cacicazgo. In Drennan, R. D., and Uribe, C. A. (eds.), *Chiefdoms in the Americas*, University Press of America, Lanham, MD, pp. 231-249.
- Chaves Mendoza, A., and Puerta Restrepo, M. (1988). *Vivienda Precolombina e Indígena Actual en Tierradentro*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Cooke, R. G., and Ranere, A. J. (1989). Hunting in pre-columbian Panama: A diachronic perspective. In Clutton-Brock, J. (ed.), *The Walking Larder: Patterns of Domestication, Pastoralism, and Predation*, Unwin Hyman, London, pp. 295-315.
- Corrales Ulloa, F., Quintanilla, J. I., and Barrantes, C. O. (1988). *Historia Precolombina y de los Siglos XVI y XVII del Sureste de Costa Rica*, Editorial de la Universidad de Costa Rica, San José.
- Correcha Suárez, H. M. (1991). Reconocimiento arqueológico en el Valle del Río Suaza, Inspección de La Jagua, Municipio de Garzón-Huila. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 6(3): 1-56.
- Cubillos, J. C. (1991). Arqueología de San Agustín: Excavación y reconstrucción del montículo artificial del sitio de Ullumbe. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 6(1): 3-56.
- Cubillos, J. C. (1992). Informe de los trabajos de excavación y reconstrucción de las tumbas no. 9 del montículo 4 del Alto de las Piedras y no. 3 de la Meseta B del Alto de los

- Idolos, en San Agustín (Huila). *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 7(1): 3-36.
- de Hernández, C. (1989). *Excavaciones Arqueológicas en Guaduaero—Cundinamarca*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Denevan, W. M., Mathewson, K., and Knapp, G. (eds.) (1987). *Pre-Hispanic Ridged Fields in the Andean Region*, BAR International Series 359(ii), Oxford, pp. 207-216.
- de Paepe, P., and Cardale de Schrimpff, M. (1990). Resultados de un estudio petrológico de cerámicas del período Herrera provenientes de la Sabana de Bogotá y sus implicaciones arqueológicas. *Boletín del Museo del Oro* 27: 98-119.
- Drennan, R. D., and Uribe, C. A. (eds.) (1987). *Chiefdoms in the Americas*, University Press of America, Lanham, MD.
- Drennan, R. D., Herrera, L. F., and Piñeros, S. F. (1989). Environment and human occupation. In Herrera, L. F., Drennan, R. D., and Uribe, C. A. (eds.), *Prehispanic Chiefdoms in the Valle de la Plata, Vol. 1. The Environmental Context of Human Habitation*. University of Pittsburgh Memoirs in Latin American Archaeology No. 2, Pittsburgh, pp. 225-233.
- Drennan, R. D., Taft, M. M., and Uribe, C. A. (eds.) (1993). *Prehispanic Chiefdoms in the Valle de la Plata, Vol. 2. Ceramics—Chronology and Craft Production*, University of Pittsburgh Memoirs in Latin American Archaeology No. 5, Pittsburgh.
- Duque Gómez, L. (1988). Notas sobre la investigación arqueológica en Colombia en la década de los ochenta. *Boletín Cultural y Bibliográfico, Biblioteca Luis-Angel Arango* 25(15): 3-17.
- Duque Gómez, L. (1990). El oro de los indios en la historia de Colombia. *Boletín del Museo del Oro* 28: 2-13.
- Duque Gómez, L., and Cubillos, J. C. (1988). *Arqueología de San Agustín: Alto de Lavapatas*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Duque Gómez, L., and Cubillos, J. C. (1993). *Arqueología de San Agustín: Exploraciones Arqueológicas Realizadas en el Alto de las Piedras (1975-1976)*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Enciso, B. E. (1993). El Ocaso del Sol de Los Venados: Arqueología de rescate en la Sabana de Bogotá. *Revista Colombiana de Antropología* 30: 149-182.
- Falchetti, A. M. (1989). Orfebrería prehispánica en el Altiplano Central Colombiano. *Boletín del Museo del Oro* 25: 2-41.
- Fernández, F., and Gassón, R. (eds.) (1993). *Contribuciones a la Arqueología Regional de Venezuela*, Fondo Editorial Acta Científica Venezolana, Caracas.
- Giraldo de Puech, M. L. (1988). Investigación arqueológica en los Llanos Orientales, región de Cravo-Norte (Arauca). *Boletín del Museo del Oro* 21: 2-23.
- Graham, M. M. (ed.) (1993). *Reinterpreting Prehistory of Central America*, University Press of Colorado, Niwot.
- Groot de Mahecha, A. M. and Hooykaas, E.M. (1991). *Intento de Delimitación del Territorio de los Grupos Etnico Pastos y Quillacingas en el Altiplano Nariñense*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Guerrero Miranda, J. V., Solís del Vecchio, F., and Herrera Villalobos, A. (1988). Zona arqueológica Cañas-Liberia: Planteamiento de un problema de investigación. *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 14: 67-76.
- Heckenberger, M. J., and Watters, D. R. (1993). Ceramic remains from Carl V. Hartman's 1903 excavations at Las Huacas cemetery, Costa Rica. *Annals of Carnegie Museum* 62: 97-129.
- Herrera, L. F. (1987). El manejo del medio ambiente natural por el hombre prehispánico en la Sierra Nevada de Santa Marta. *Boletín del Museo del Oro* 19: 82-86.
- Herrera, L. F., Drennan, R. D., and Uribe, C. A. (eds.) (1989). *Prehispanic Chiefdoms in the Valle de la Plata, Vol. 1. The Environmental Context of Human Habitation*, University of Pittsburgh Memoirs in Latin American Archaeology No. 2, Pittsburgh.
- Hosler, D. (1988). Ancient west Mexican metallurgy: South and Central American origins and west Mexican transformations. *American Anthropologist* 90: 832-855.

- Hosler, D., Lechtman, H., and Holm, O. (1990). *Axe-monies and Their Relatives*, Studies in Pre-Columbian Art and Archaeology, No. 30, Dumbarton Oaks Research Library and Collection, Washington, DC.
- Ibarra Rojas, E. (1990). *Las Sociedades Cacicales de Costa Rica (Siglo XVI)*, Editorial de la Universidad de Costa Rica, San José.
- Idrovo, I. (1992). *El Formativo Ecuatoriano*, Museo del Banco Central del Ecuador, Quito.
- Lange, F. W. (ed.) (1988). *Costa Rican Art and Archaeology: Essays in Honor of Frederick R. Mayer*, University of Colorado, Boulder.
- Lange, F. W. (ed.) (1992). *Wealth and Hierarchy in the Intermediate Area*, Dumbarton Oaks, Washington, DC.
- Lange, F. W. (ed.) (1993). *Precolumbian Jade: New Geological and Cultural Interpretations*, University of Utah Press, Salt Lake City.
- Langebaek Rueda, C. H. (1987). Dispersión geográfica y contenido simbólico de la cerámica Guatavita Desgrasante Tiestos: Un ensayo de interpretación. *Revista de Antropología* (Universidad de los Andes, Bogotá) 3(2): 113-130.
- Langebaek Rueda, C. H. (1990). Buscando sacerdotes y encontrando chuques: De la organización religiosa muisca. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 81-103.
- Langebaek Rueda, C. H. (1990). Patologías en la población muisca y la hipótesis de la economía autosuficiente. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 6(1): 143-157.
- Langebaek Rueda, C. H. (1995). *Regional Archaeology in the Muisca Territory: A Study of the Fúquene and Susa Valleys*, University of Pittsburgh Memoirs in Latin American Archaeology No. 9, Pittsburgh.
- Legast, A. (1993). *La Fauna en el Material Precolombino Calima*, Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República, Bogotá.
- Lippi, R. D. (1988). Paleotopography and phosphate analysis of a buried jungle site in Ecuador. *Journal of Field Archaeology* 15: 85-97.
- Llanos Vargas, H. (1988). Algunas consideraciones sobre la cultura de San Agustín: Un proceso histórico milenario en el sur del Alto Magdalena de Colombia. *Boletín del Museo del Oro* 22: 82-101.
- Llanos Vargas, H. (1988). *Arqueología de San Agustín: Pautas de Asentamiento en el Cañón del Río Granates—Saladoblanco*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Llanos Vargas, H. (1990). *Proceso Histórico Prehispánico de San Agustín en el Valle de Laboyos (Pitalito—Huila)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Lleras Pérez, R. (1987). La utilización de las áreas libres en Ciudad Perdida. *Boletín del Museo del Oro* 19: 97-116.
- Lleras Pérez, R. (1988). Comentario sobre el debate, La arqueología: Cultivo de fragmentos cerámicos. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 4(2): 206-209.
- Lleras Pérez, R. (1989). *Arqueología del Alto Valle de Tenza*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Lleras Pérez, R., and Vargas Escobar, A. (1990). Palogordo: La prehistoria de Santander en los Andes Orientales. *Boletín del Museo del Oro* 26: 64-129.
- Londoño Vélez, S. (n.d.) *Museo del Oro: 50 Años*, Banco de la República, Bogotá.
- Long, S. (1989). Matrices de piedra y su uso en la metalurgia Muisca. *Boletín del Museo del Oro* 25: 41-69.
- López Castaño, C. E. (1991). *Investigaciones Arqueológicas en el Magdalena Medio: Cuenca del Río Carare (Departamento de Santander)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Lynch, T. F. (1989). Chobshi Cave in retrospect. *Andean Past* 2: 1-32. (Cornell University Latin American Studies Program, Ithaca, NY.)
- Marcos, J. G. (1988). *Real Alto: La Historia de un Centro Ceremonial Valdivia (Biblioteca Ecuatoriana de Arqueología, Vols. 4 and 5)*, Corporación Editora Nacional, Quito, and

- Escuela Superior Politécnica del Litoral, Centro de Estudios Arqueológicos y Antropológicos, Guayaquil.
- Messenger, L. C., Jr. (1991). Climatic settings and prehistoric social complexity: The Central American isthmus. In Fowler, W. R., Jr. (ed.), *The Formation of Complex Society in Southeastern Mesoamerica*, CRC Press, Boca Raton, FL, pp. 237-275.
- Mora Camargo, S. (1988). Cataruben: Una aproximación a los Achaguas. *Revista Colombiana de Antropología* 26: 84-107.
- Mora Camargo, S. (1993). Cold and hot, green and yellow, dry and wet: Direct access to resources in Amazonia and the Andes. *Florida Journal of Anthropology* 18: 51-60.
- Mora Camargo, S., Cárdenas Arroyo, F., and Roldán, M. A. (eds.) (1989). *V Congreso Nacional de Antropología, Villa de Leyva, 1989: Memorias del Simposio de Arqueología y Antropología Física*, Departamento de Antropología, Universidad de los Andes and Instituto Colombiano de Antropología, Bogotá.
- Moreno González, L. (1990). Pobladores prehispánicos de la zona plana del Río Magdalena y de la Cordillera Central: Tarqui, Huila. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 5(2): 31-43.
- Moreno González, L. (1991). *Arqueología de San Agustín: Pautas de Asentamiento Agustiniánas en el Noroccidente de Saladoblanco (Huila)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Oyuela-Caycedo, A. (1987). Gaira: Una introducción a la ecología y arqueología del Litoral de la Sierra Nevada de Santa Marta. *Boletín del Museo del Oro* 19: 34-55.
- Oyuela-Caycedo, A. (ed.) (1993). *History of Latin American Archaeology*, Avebury, Aldershot, Hampshire.
- Patino Castaño, D. (1988). *Asentamientos Prehispánicos en la Costa Pacífica Caucana*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Patino Castaño, D. (1988). Orfebrería prehispánica en la costa Pacífica de Colombia y Ecuador "Tumaco—La Tolita." *Boletín del Museo del Oro* 22: 17-31.
- Patino Castaño, D. (1992). Sociedades Tumaco-La Tolita: Costa Pacífica de Colombia y Ecuador. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 7(1): 37-58.
- Patino Castaño, D. (1993). Arqueología del bajo Patía, fases y correlaciones en la costa pacífica de Colombia y Ecuador. *Latin American Antiquity* 4: 180-199.
- Peña León, G. A. (1991). *Exploraciones Arqueológicas en la Cuenca Media del Río Bogotá*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Pérez, P. F. (1990). El cacicazgo de Guatavita. *Boletín del Museo del Oro* 26: 2-11.
- Pollard, H. P. (1993). Merchant colonies, semi-Mesoamericans, and the study of cultural contact: A comment on Anawalt. *Latin American Antiquity* 4: 383-385.
- Reichel-Dolmatoff, G. (1988). *Orfebrería y Chamanismo: Un estudio iconográfico del Museo del Oro*, Editorial Colina, Medellín.
- Rodríguez Bastidas, E. E. (1992). *Fauna Precolombina de Nariño*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República and Instituto Colombiano de Antropología, Bogotá.
- Rodríguez Ramírez, C. (1991). *Patrones de Asentamiento de los Agricultores Prehispánicos en "El Limón", Municipio de Chaparral (Tolima)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Rodríguez Ruíz, C. A. (1992). *Tras las Huellas del Hombre Prehispánico y Su Cultura en el Valle del Cauca*, Instituto Vallecaucano de Investigaciones Científicas, Cali.
- Rodríguez Ruíz, C. A., and Bashilov, V. A. (1988). Excavations in prehispanic settlement sites at Jiguales, Calima (first season). In *Pro Calima: Archäologisches Projekt im westlichen Kolumbien/Südamerika*, Vereinigung Pro Calima, Basel, pp. 61-66.
- Rodríguez Ruíz, C. A., and Jaramillo Restrepo, Y. (1993). *Lo Cotidiano y lo Simbólico en el Arte Geométrico Prehispánico del Valle Medio del Río Cauca, 1000-1300 D.C.*, Instituto Vallecaucano de Investigaciones Científicas, Cali.

- Salgado López, H. (1988). Excavations in prehispanic settlement sites at Jiguales, Calima (second season). In *Pro Calima: Archäologisches Projekt im westlichen Kolumbien/Südamerika*, Vereinigung Pro Calima, Basel, pp. 67-71.
- Salgado López, H., Rodríguez, C. A., and Bashilov, V. A. (1993). *La Vivienda Prehispánica Calima*, Instituto Vallecaucano de Investigaciones Científicas, Cali.
- Salgado López, H., and Stemper, D. (1991). Alfarería prehispánica temprana (I milenio A.C.) entre la Bahía de Buenaventura y el bajo Río San Juan. *Boletín de Arqueología* (Fundación de Investigaciones Arqueológicas Nacionales, Banco de la República) 6(2): 25-55.
- Sánchez, C. A. (1991). *Arqueología del Valle de Timaná (Huila)*, Fundación de Investigaciones Arqueológicas Nacionales del Banco de la República, Bogotá.
- Serje, M. (1987). Arquitectura y urbanismo en la cultura Tairona. *Boletín del Museo del Oro* 19: 87-96.
- Sheets, P. D., and Sever, T. L. (1991). Prehistoric footpaths in Costa Rica: Transportation and communication in a tropical rainforest. In Trombold, C.D. (ed.), *Ancient Road Networks and Settlement Hierarchies in the New World*, Cambridge University Press, Cambridge, pp. 53-65.
- Sheets, P. D., Hirth, K., Lange, F., Stross, F., Asaro, F., and Michael, H. (1990). Obsidian sources and elemental analyses of artifacts in southern Mesoamerica and the northern Intermediate Area. *American Antiquity* 55: 144-158.
- Sociedad Estatal Quinto Centenario (1990). *Culturas Indígenas de los Andes Septentrionales*, Quinto Centenario, Madrid.
- Soto Holguín, A. (1988). *La Ciudad Perdida de los Tayrona: Historia de su Hallazgo y Descubrimiento*, Neotrópico, Bogotá.
- Sotomayor, M. L., and Uribe, M. V. (1987). *Estuaria del Macizo Colombiano*, Instituto Colombiano de Antropología, Bogotá.
- Stahl, P. W., and Zeidler, J. A. (1988). The spatial correspondence of selected bone properties and inferred activity areas in an Early Formative dwelling structure (S 20) at Real Alto, Ecuador. In Saunders, N.J., and de Montmollin, O. (eds.), *Recent Studies in Pre-columbian Archaeology*, BAR International Series 421, Oxford, pp. 275-298.
- Stahl, P. W., and Zeidler, J. A. (1990). Differential bone-refuse accumulation in food-preparation and traffic areas on an early Ecuadorean house floor. *Latin American Antiquity* 1: 150-169.
- Taller sobre el futuro de las investigaciones arqueológicas y etnohistóricas en Gran Nicoya (1992-1993). *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 18-19.
- Tolstoy, P., and DeBoer, W. R. (1989). An archaeological sequence for the Santiago-Cayapas River basin, Esmeraldas, Ecuador. *Journal of Field Archaeology* 16: 295-308.
- Uribe Alarcón, M. V., and Cabrera Micolta, F. (1988). Estructuras de pensamiento en el altiplano nariñense: Evidencias de la arqueología. *Revista de Antropología y Arqueología* (Universidad de los Andes, Departamento de Antropología) 4(2): 43-69.
- Valerio Lobo, W. (1989). Patrones de asentamiento en Agua Caliente de Cartago. *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 15: 25-44.
- Vasco Uribe, L. G. (1992). Arqueología e identidad: El caso Guambiano. In Politis, G. (ed.), *Arqueología en América Latina Hoy*, Biblioteca Banco Popular, Bogotá, pp. 176-191.
- Vázquez, L. R. (1989). Representaciones demográficas y estructurales de la organización social en las prácticas funerarias del sitio Agua Caliente, Cartago. *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 15: 1-23.
- Velandia Jagua, C. A. (1994). *San Agustín: Arte, Estructura y Arqueología*. Fondo de Promoción de la Cultura, Bogotá.
- Villalba, O. M. (1988). *Cotocollao: Una Aldea Formativa del Valle de Quito*, Miscelanea Antropológica Ecuatoriana, Serie Monográfica 2. Museos del Banco Central del Ecuador, Quito.
- Wagner, E. (1992). Diversidad cultural y ambiental en el occidente de Venezuela. In Ortiz-Troncoso, O., and van der Hammen, T. (eds.), *Archaeology and Environment in Latin America*, Instituut voor Pre- en Protohistorische Archeologie Albert Egges van Giffen, Universiteit van Amsterdam, Amsterdam, pp. 207-221.

- Wippern, A. M. (1987). Review of *Monstá, un sitio arqueológico*, *Boletín Cultural y Bibliográfico, Biblioteca Luis-Angel Arango* 22(12): 83-87.
- Zeidler, J. A., and Pearsall, D. M. (eds.) (1994). *Regional Archaeology in Northern Manabí, Ecuador, Vol. 1. Environment, Cultural Chronology, and Prehistoric Subsistence in the Jama River Valley*, University of Pittsburgh Memoirs in Latin American Archaeology No. 8, Pittsburgh.
- Zucchi, A. (1991). El Negro-Casiquiare-Alto Orinoco como ruta conectiva entre el Amazonas y el norte de Suramérica. In Robinson, L.S. (ed.), *Comptes Rendus des Communications du Douzième Congrès de l'Association Internationale d'Archéologie de la Caraïbe*, Association Internationale d'Archéologie de la Caraïbe, Martinique, pp. 1-33.