

The Emergence of Social Complexity in the Chibchan World of Southern Central America and Northern Colombia, AD 300–600

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The societies of southern Central America and northern South America, a region historically occupied by Chibchan-speaking peoples, have long been acknowledged as valuable sources of information on chiefdoms and other forms of prestate social organization. Most studies, however, have focused on chiefdoms that are known ethnographically or ethnohistorically with an emphasis on the sixteenth century and the immediate precontact period. This paper reviews archaeological evidence from an earlier period in an attempt to elucidate general patterns associated with the earliest appearance of social inequality. The centuries between AD 300 and 600 are characterized by the first widespread use of prestige goods manufactured from gold and jade, special cemeteries for the interment of elites, and a rich iconography. Detailed consideration of recent research relevant to the events of this period highlights some of the problems inherent in the archaeological identification of hierarchy, chiefdoms, leadership, and other features of prestate complex societies.

KEY WORDS: Chibchan; Honduras; Costa Rica; Panama; Colombia; chiefdoms.

INTRODUCTION

The indigenous societies of southern Central America and northern South America have figured prominently in discussion of sedentary, nonstate social complexity since the pioneering work of Samuel Lothrop, Paul Kirchhoff, Julian Steward, and Karlovo Oberg. As pointed out by Carneiro (1981, p. 38), Lothrop's (1937, 1942) ethnohistoric and archaeological research on Coclé and central Panama and Kirchhoff's (1943) careful study of cultures settled around the

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Caribbean led to Steward's organization of Volume 4 of the *Handbook of South American Indians* around "the Circum-Caribbean tribes." In the introductory article to this volume, Steward (1948b, pp. 2–3) characterized these as ones in which "The village chief stood at the social pinnacle, and in some areas he ruled over federations of villages or tribes." The "lowland tribes of South and Central America" were subsequently central to Oberg's (1955) sixfold typology of "major classes of social structure," which included three prestate types: homogeneous tribes, segmented tribes, and politically organized chiefdoms. While Steward himself never used the term chiefdom, it is clear that many of the societies described in Volume 4 of the *Handbook* conformed to what was subsequently defined by Carneiro (1981, p. 45) as "an autonomous political unit comprising a number of villages or communities under the permanent control of a paramount chief." It has since been taken for granted that the Intermediate Area south of Mesoamerica and north of the central Andes presents archetypical examples of a wide variety of chiefdoms, from minimal to maximal, and can serve as a laboratory for the study of prestate, or at least nonstate, complex societies. A focus on the emergence of chiefdoms, however, regardless of their definition, ignores the potential of these societies to elucidate a variety of phenomena relevant to the analysis of social complexity.

A variety of terms have been applied to complex prestate societies, among them tribes, autonomous village cultures, rank societies, chiefdoms, middle-range societies, intermediate societies, and transegalitarian societies. Chiefdoms themselves carry a range of definitions, from ones including any societies with a level of organization above that of individual households to others that emphasize the presence of a chief and his rule over several subordinate villages. My intent here is not to contribute to typological confusion but to explore variability and its causes. As Feinman and Neitzel (1984, p. 96) noted two decades ago, "Only if diachronic, contextualized studies are undertaken in different regions will social scientists be able to understand the causal processes and sequences of the changes that are responsible for social variability." The Chibchan area provides a rich context for this type of study, especially for examination of trajectories distinct from those that produced ancient states. However, this cannot be undertaken without critical review. The early literature held several errors and assumptions that affected the premises built upon it. These included mistaken assumptions about the temporal depth and the nature of social processes. For example, Steward relied on Lothrop's mistaken interpretation of the lavish burials at Sitio Conte as "late preconquest" in date, one that conflated the archaeological record of the eighth to tenth century with sixteenth century ethnohistoric accounts. It is no longer taken for granted that interpretations of the behavior of Panamanian *caciques* in the presence of Spanish aggressors can be mapped onto Coclé mortuary remains dating at least six centuries earlier. Steward (1948b, p. 2) also claimed that organized priesthoods were rare in "Circum-Caribbean culture." This now seems unlikely in light of Reichel-Dolmatoff's (1985) meticulous documentation

of the Kogi *mámas* of the Sierra Nevada de Santa Marta, who represent just such a phenomenon.

Recent literature has expanded theoretical discussions of social complexity away from a focus on unilinear evolution, hierarchy, centralization, and chiefdoms to include alternative dimensions such as heterarchy (Crumley, 1995, 2001) and dual processual strategies (Blanton *et al.*, 1996; Feinman, 2000, 2001). It seems likely that the earliest forms of inequality were qualitatively distinct from the centralized, chiefly authority present at the time of the conquest. The role of corporate strategies, among them decentralized, knowledge-based priesthoods, merits further consideration. Furthermore, the frame of analysis has changed from “Circum-Caribbean tribes” through concepts such as the Intermediate Area and lower Central America to a new multidisciplinary consideration of Chibchan-speaking populations and their ancestors (Hoopes and Fonseca, 2003). These developments warrant a fresh look at a growing body of relevant data.

THEORETICAL APPROACHES TO THE CHIBCHAN WORLD

Kirchhoff (1943) proposed the concept of a Chibchan area based on both linguistic and cultural criteria in the same article in which he outlined his classic definition of Mesoamerica. Although he was unable to develop it into an operative concept at the time, the notion of a Chibchan area resonates well with new data. The theoretical construct of Mesoamerica is not free of problems (Creamer, 1987). Nonetheless, it has served as a useful frame of analysis in ways that concepts such as Intermediate Area and Lower Central America have not. The concept of a Chibchan world is an attempt to get closer to how the indigenous peoples of the region may have perceived their own cultural milieu.

At the beginning of the sixteenth century, populations speaking languages of the Chibchan stock (Constenla, 1991) occupied a region stretching from eastern Honduras to northern Colombia (Fig. 1). Although they shared portions of this territory with groups speaking Misumalpan and Chocoan languages, the distribution of Chibchan languages suggests an ancient network of cultures with a common genetic and cultural heritage (Cooke and Fonseca, 1994; Fonseca, 1994; Hoopes and Fonseca, 2003). This region has long been considered home to prototypical chiefdoms, the Tairona being the best-known example. There is no evidence for autochthonous states or that any societies in this region were ever under the control of a state society until the arrival of the Spanish. In general, the processes of population growth, the emergence of inequality, and political centralization appear to have been slower—if not of an altogether different nature—than what occurred in either Mesoamerica or the central Andes. It is clear that the Chibchan world was not a watered-down version of either of these culture areas but a major region in its own right. Can a careful evaluation of broader patterns provide insights into how the emergence of social complexity

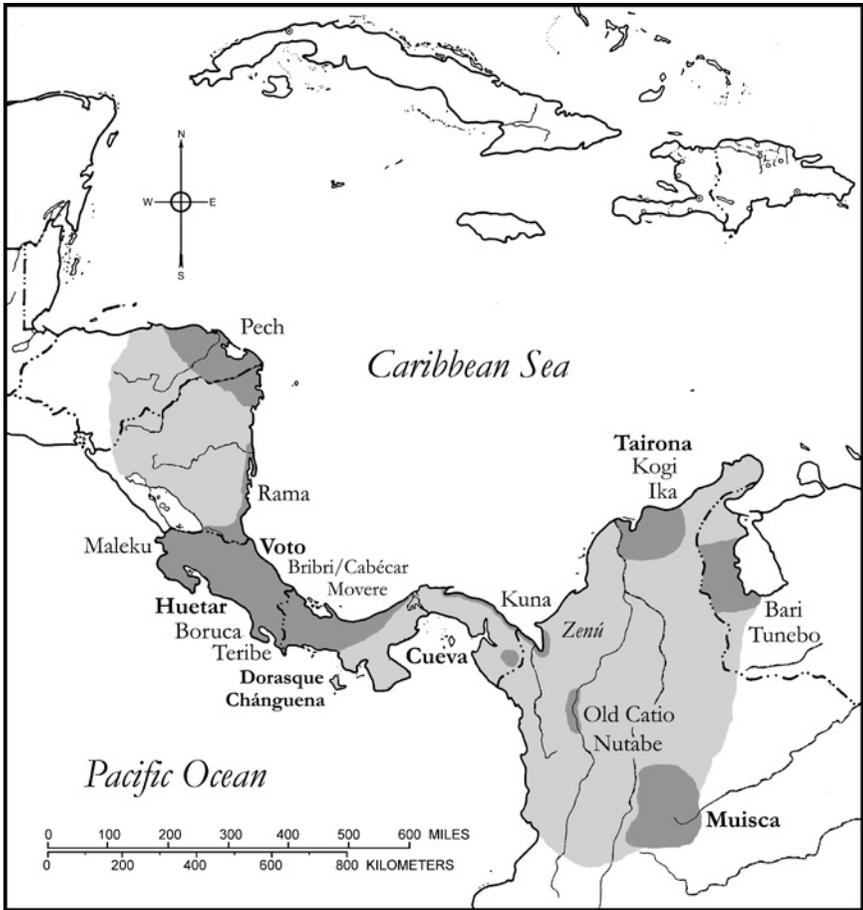


Fig. 1. Map of the Chibchan world. Darker shading indicates areas of known Chibchan speakers.

here may have differed from areas that subsequently experienced the emergence of states?

The apparent cultural diversity of this region has made it difficult to define an overarching model. In 1980, participants in a School of American Research seminar concluded that “Lower Central America lacks the broad horizontal phenomena that we see” in Mesoamerica and Peru. Gordon Willey (1984, p. 377) noted, “Lower Central America does not present a similar phenomenon or set of phenomena. In this it is like Ecuador and Colombia, and for the time being at least, the archaeologist is forced to view the whole of lower Central America as an Intermediate Area of considerable regional diversity and great cultural complexity.” Following their lead, I wrote, “The Intermediate Area lacks truly

widespread, unifying cultural traditions... We should therefore acknowledge that such variability is a major hallmark of the Intermediate Area, and that the emergence of subsequent social complexity must have been equally varied and diverse” (Hoopes, 1992a, p. 73).

I am no longer sure this is so. Although there was great variation in specific manifestations, careful analysis suggests that in fact there were some “broad horizontal phenomena” and “unifying cultural traditions” that may have played a direct role in the emergence of social complexity, as defined by the appearance of social inequality, hierarchy, and formalized religious, political, and economic institutions. The iconography of ceramics, stone sculpture, and metallurgy suggests widespread ideological traditions that may share a common ancestry in a cultural horizon or religious complex. The emergence of individuals with strongly differentiated social status may have resulted from rapid change and “diffuse unity” characterized by common elements of worldviews that characterize Chibchan-speaking populations (Hoopes and Fonseca, 2003). Although it is difficult to recognize individual actors, control of knowledge as “the dominant dimension of inequality” (Lindstrom, 1984) appears to have been a key element. The use of specialized knowledge within local groups fostered the replication of similar structures of inequality within diverse cultural contexts by “routinization” of rituals and practices in the context of religious sodalities or priesthoods (Oyuela, 2001, 2002). There are hints that such a process may have begun in the context of a “crisis cult” (La Barre, 1971) with multiple causes, but the specifics of its origin and spread remain vague. There also are reasons to believe that this first occurred within the context of a network of what Carneiro (2002) calls “autonomous village cultures” or simply “tribal culture” rather than what he identifies as chiefdoms (Carneiro, 1981).

Why have these processes been so difficult to recognize? Part of this issue may lie with the conceptual frameworks we have been using. Lower Central America, a concept that included El Salvador, central Honduras, and Mesoamericanized Greater Nicoya but excluded northern Colombia, was defined primarily on the basis of geography. It included several unrelated language families and biological populations while dividing the territories of others. The Intermediate Area was defined on the basis of *intermediateness*—its position between Mesoamerica and the central Andes. A provisional approach linking specific populations on the basis of linguistic and biological criteria may provide a better framework for investigating variation. Although there are good reasons to be cautious about assigning linguistic identities to archaeological cultures, the basis for defining a Chibchan archaeology is similar to that used for identifying preliterate continuity in Maya or Zapotec populations—continuity in material culture with limited (and usually recognizable) evidence for migrations from outside.

The definition of social complexity is tied to inequality and the phenomena that maintained it. It is most commonly used to refer to differences in social rank, ascribed status, hereditary privileges, and disparities of power, for which the most

commonly cited evidence is patterned differentiation in residences and burials and variation in the control of labor and resources. It implies the existence of social structures that maintain differentiation and inequality—distinct status differences among individuals in a given community that are expressed as differential access to basic resources and power as manifest in the archaeological record. Although social complexity is commonly shorthand for hierarchy and political centralization, Blanton, Feinman, and others (Blanton *et al.*, 1996; Feinman, 2000, 2001) have argued that it can be manifest in at least two dimensions, the corporate and network modes. One definition of chiefdoms requires the identification of units composed of several villages under the leadership of a paramount chief (Carneiro, 1981; Oberg, 1955). Another uses chiefdom “simply as a convenient label for a highly diverse group of societies with many forms of complex hierarchical organization but without the bureaucratic political institution of the state” (Drennan, 1995b, p. 92). Alternative forms can include chieftaincies, which lack the permanent presence of a chief (Redmond, 1998), as well as societies managed by corporate groups led by religious personnel who have differential access to spiritual rather than material realms. This access, of course, can be perceived only indirectly in the creation and manipulation of symbols and sacred spaces, the latter including temples and burial grounds. Feinman (2001, p. 160) notes, “the corporate mode emphasizes. . . nonlinear inheritance of rulership, social segments that are woven together through broad integrative ritual and ideological means, an emphasis on offices rather than personalized officeholders, and suppressed economic differentiation.” This process may have been in the hands of religious sodalities that drew from multiple settlements and even crossed territorial boundaries. At the same time, some individual actors operated in a network mode to consolidate power. Although the Intermediate Area has often been perceived as a laboratory to study the diversity of chiefdoms, it is perhaps best seen as a fertile ground for understanding variation in middle-range societies of which chiefdoms are only one of several alternatives. For this reason, I recommend caution in equating the emergence of social complexity with the formation of chiefdoms—especially if their definition implies the classic essential elements of chiefdoms: 1) the person of a chief, and 2) the centralized control of two or more communities. It is difficult to establish the existence of either of these on the basis of archaeological evidence from the Chibchan world, and pantribal sodalities that represent a form of supravillage organization are a hallmark of tribal cultures (Carneiro, 2002).

The appearance of supravillage institutions and individuals of differential status defines the emergence of social complexity. The degree of complexity is usually correlated with the permanence of these institutions and the levels and heritability of status. Although they are often the precursors to power structures that integrate several different settlements under centralized authority, this need not always be so. Religious movements can promote forms of organization that are not always political or economic in nature. Oyuela, following Weber, describes

a process of routinization (*Veralltäglicung*) that corresponds to the formation of a relationship between a community and a charismatic individual who, together with disciples, articulates a program of what Giddens (1979, p. 218) referred to as “reflexive attention, used to generate interaction over time” (Oyuela, 2001, p. 6). The emergence of routinization is characterized by “the creation of fixed cultic centers that are associated with a cultic apparatus”—and of a religious complex that may be associated with the origins of a priestly elite (Oyuela, 2001) Such “cultic centers” may be shrines, temples, or sacred burying grounds that are the focus of activity by several different communities. The establishment of cultic centers created what Crumley (2001, p. 28) refers to as “the sacred space of liminal experience.” Here, individuals could communicate with one another in a mode that was distinct from everyday interaction. These places also facilitated communication between elite (or priestly) individuals and the nonelite members of society. They corresponded to what Dillehay (1995, p. 297) describes as the “cultivated landscape of ancestral imagery” of the Mapuche, with mounds, wooden statues, and ceremonial spaces that were used for rites conveying cosmological interpretations and affirmations of group identity. They can be managed, however, either by pantribal sodalities (corresponding to a corporate strategy) or by emergent elites (a corporate or network strategy).

Whereas special individuals may preside over these centers and burying grounds, they do not necessarily exercise political control over participant communities. As such, terms such as “chieftains” or “chiefs” may be less appropriate than “shamans” or “priests,” however problematic the latter may be (Klein *et al.*, 2002). It is premature to privilege presumptions of network over corporate modes in what may have been a process of religious routinization in the absence of better data. Individual agents may have been ideological “tradition keepers” whose activities are not readily reduced to economic or political self-aggrandizement and whose roles may have been more heavily conditioned by corporate expectations than individual network strategies. The activities of decentralized tradition keepers and routinized rituals may create an archaeological signature that resembles network-mode chiefly centralization but is markedly distinct from one driven by self-aggrandizing, economically oriented, centralized chiefs. As Drennan (1995b, p. 97) has noted for the Alto Magdalena, the foundation for personal leadership lay in belief systems rather than the control of basic resources.

Feinman (2001, p. 158) has applied dual-processual theory to a comparative analysis of Mesoamerican and Intermediate Area societies, comparing Middle/Early Formative period Mesoamerican populations (1000–500 BC) to Drennan’s (1991, p. 283) characterization of Regional Classic (AD 0–900) populations of Alto Magdalena and Conte period (AD 450–900) central Panama. He concludes that Formative era Mesoamerican polities placed considerably more emphasis on the corporate strategy, constructing plazas, platform mounds, and other public ritual spaces while investing less energy in the residences and burials

of individuals. This was in contrast to the relative importance of the network strategy in places like San Agustín and Sitio Conte, where there is evidence for intense investment of effort in the construction of tombs and amassing of personal wealth. Feinman (2001, p. 158) asserts that the San Agustín and Sitio Conte examples “illustrate clear parallels with Renfrew’s individualizing chiefdoms [such as evidenced by Mycenaean tombs] and what we call a network strategy.” In neither case are there communal works in the form of public plazas, temple platforms, or even intensive agriculture (irrigation, terracing, raised fields, etc.) This concentration on provisioning and commemorating individuals appears to have consumed a disproportionate amount of what Drennan (1991, p. 283) calls the “chiefly domestic product.” However, it is worth considering whether this was actually done for the benefit of individuals or for perceived supernatural beings, surrogate deities, or priestly offices and whether activity focused on these latter might not have represented a corporate strategy distinct from the Mycenaean case.

Renfrew (1974) contrasted individualizing and group-oriented forms of chiefdoms while Feinman (2001) highlights leadership positions that were “self-serving” (network strategy) as opposed to “system serving” (corporate strategy) and suggests that individual leaders in the latter were “faceless” and “anonymous.” There is a sharp difference between the ways that chiefly authority was represented in the iconography of individualized Olmec heads, Maya stelae, Moche portrait vessels, and even Mycenaean gold masks and the stylized representations of individuals at San Agustín and Sitio Conte. These latter, rather than portraying specific individuals, depict anthropomorphic supernaturals with sharp canines in a fashion echoing “deities” in Chavín art. Jewelry from the Sitio Conte burials suggests that an important role of the individuals buried there was to adorn themselves in ritual costumes that persisted in patterned forms across several generations. What if the “individuals” who were the focus of intense provisioning and mortuary commemoration were not identified as individuals at all but were personifications of specific deities invoked for the benefit of the community? Such a role, with parallels to Hopi kachinas or costumed Cocijo impersonators in the Oaxaca Valley, is distinct from that of a self-aggrandizing network individual, especially if the duties of such a role required the surrender of individual decision-making authority to the will of a corporate group.

Feinman (2001, p. 167) emphasizes that the corporate mode may have prevailed in the Teotihuacan state, where “rulership appears to have been kept in check by a collective leadership” (Millon, 1992, p. 340), and “supreme political authority may not have always been strongly concentrated in a single person or lineage (Cowgill, 1997, p. 152). What if individual leaders were selected from among a collective of clans or lineages for their ability to assume a role that was at the same time heavily conditioned by corporate decision making? Might not a person play a role comparable to that of a ceremonial plaza or mound, presenting a template upon which corporate activity was projected? A contemporary analogy would be the example of the fourteenth Dalai Lama, who was identified at age

two in the family of a Tibetan farmer by a committee of Buddhist monks, who recognized him as the reincarnation of the previous Dalai Lama. Every Dalai Lama is a bodhisattva, the reincarnation of his predecessor and a *tulku* or re-embodiment of Chenrezig, the Lord of Compassion and patron deity of Tibet (Craig, 1997). In this case, a corporate-mode process resulted in the selection of an individual with both corporate and network-mode authority. Reichel-Dolmatoff (1976) provides a more pertinent example directly from the Chibchan world with his description of the selection of *Kogi mamas*, or priests, who are identified by a corporate group and taken from their homes as children to enter a rigorous training program that lasts through adolescence and assigns a permanent, lifelong status as tradition keeper and decision maker. There is often a presumption that chiefdoms are characterized by inherited rather than ascribed status. However, a corporate-mode strategy may promote the assignation of ritual roles such as *tulkus* and *mamas* that represent institutionally ascribed status. It is premature to assert that this type of activity was at play in the emergence of social differentiation in other Chibchan societies, especially deep in antiquity, but before we assume that network strategies were at work we must consider that a corporate strategy of status assignation might also create the apparent signature of an “individualizing chiefdom.” It may often be impossible to distinguish one from the other on the basis of archaeological evidence.

Culture change in the Chibchan world appears to have been more of a “punctuated equilibrium” than a gradual evolution. The appearance of possible cultic centers and special cemeteries may have been rapid, occurring in a period that was perhaps no greater than that between ego and a 2nd or 3rd great-grandparent (c. 200 years). What caused it? Oyuela (2001, p. 9) has suggested that the process in northern Colombia was precipitated by a catastrophic environmental crisis that undoubtedly affected an even larger region. A related phenomenon may have been growing awareness of the events occurring in distant places through expanding and increasingly effective networks of communication. Although it is impossible to confirm or disconfirm whether this process was associated with the emergence of prophets (as Oyuela suggests), between the fourth and the seventh centuries, the core area of the Chibchan area saw the rapid emergence of status differentiation, craft production, complex iconography, and either “central persons” or individuals with specialized roles. The status of these individuals as chiefs remains unclear. Comparisons with Mesoamerica suggests they were not necessarily self-aggrandizers who emphasized the accumulation of wealth and its transmission through descent (Clark and Blake, 1994). They may have had primarily religious functions, such as shamans or priests, vested with spiritual rather than political authority. They used stylized ornaments of jade and gold, fancy ceramics, exotic shell jewelry, monumental stone sculptures in forms ranging from human statuary to monolithic flying-panel metates and giant granite balls. In so doing, they created a symbolic vocabulary or “international style” in goods and information that “reconfirms the elite’s legitimacy vis-à-vis other elites... but

in a situation in which no single society has the ability to dictate its symbolic content or its stylistic canon” (Blanton *et al.*, 1996, p. 15). Although the specific manifestations of this process were highly regionalized, the chronology suggests that significant, rapid changes were occurring in symbol-laden material culture over a large area at about the same time. This laid the foundations for the emergence of localized manifestations such as the Gran Coclé semiotic tradition of central Panama (Cooke *et al.*, 2000), the Tairona religious complex of northern Colombia (Oyuela, 2001), and centralized polities that appeared after about AD 900. Although there are some indications of settlement hierarchies, it remains to be demonstrated that some centers exercised political control over others and that some villages lost autonomy as they were incorporated into multivillage polities.

The period of AD 300–600 was a critical time for the emergence of inequality in southern Central America and northern South America. Its identification as a time corresponding to the emergence of chiefdoms depends upon their definition, but the appearance of social differentiation is clear. Prior to that time, there are no clearly identifiable elite residences or cemeteries. After that time, such patterns are widespread. High intensity artifacts made of jadeite appear before AD 300, as do ceramics with rich iconography. After AD 300, however, these appear in mortuary contexts that are unmistakably representative of specialized individuals and practices. This period sees the spread into Central America of the first jewelry fashioned from gold and *tumbaga* or *guanín* (a gold-copper alloy). Although the full pattern remains unclear, the widespread and virtually simultaneous appearance of elite cemeteries and residences indicates a time of rapid cultural evolution—a transition from societies with little or no specialization to ones in which the activities of elites are critical for the establishment of regionalized identities. The process of routinization—the development of patterned actions duplicated by members of widespread religious sodalities—may have been central to this transition.

Scholars now recognize strong linguistic, genetic, and cultural connections among populations of the southern isthmus and northwestern South America. The label “southern Central America and northwestern South America” is unwieldy. Several alternative terms have been offered, including “Area of Chibchoid Tradition” (Fonseca, 1994), “Chibchoid Historical Region” (Fonseca and Cooke, 1993), and the “Isthmo-Colombian area” (Hoopes and Fonseca, 2003). None has yet come into common use. They have been formulated, however, to emphasize that the traditional Central/South American boundary between Panama and Colombia divides populations that were related through language, biology, and material culture. A “Chibchan world” was divided in two. The circumstantial link between Chibchan languages and populations would be tenuous if not for the strong correlations between linguistic and genetic data (Barrantes, 1993; Barrantes *et al.*, 1990; Bieber *et al.*, 1996; Kolman and Bermingham, 1997) and significant population continuity since Paleoindian times (Torrioni *et al.*, 1994). Although “Central America” ends in eastern Panama, the ancient inhabitants of the region

surely did not consider themselves to have occupied two different continents. It is likely that they perceived their world as a single landmass bounded by the Caribbean and the Pacific, most of which was occupied by people with a common biological heritage, speaking languages in the Chibchan family. However, the boundaries between this world and neighboring language families, especially Misumalpan to the north and Chocoan to the south, were fluid.

Other culture history-based constructions have obscured recognition of social processes. For example, a general periodization formulated for lower Central America during a 1980 advanced seminar at the School of American Research (Lange and Stone, 1984) reified a division between Periods IV and V at AD 500. This division was meant as an acknowledgment of AD 500 as a time of significant change. However, regional reviews that followed the SAR scheme and divided time into neat segments also tended to divide phenomena before and after this date that should have been considered together, artificially impeding the recognition of significant patterns. The traditional division of cultural periods at the conveniently round number of AD 500 split a critical time for the emergence of complex society in half rather than directing focus on it.

Several sources of information now indicate that the centuries around AD 500, specifically the period of AD 300–600, were a time of rapid social and technological innovation across most of the Chibchan area, from Honduras to northern Colombia. For example, the careful dating and contextualization of Initial Group goldwork on the isthmus (Cooke *et al.*, 2000) demonstrates that, rather than extending back to the first centuries BC, it appeared during this shorter time span. The reasons for these rapid changes were varied and probably resulted from a combination of factors, such as intensified interaction within the Chibchan world, the activities of local agents, and the effects of changes occurring in Mesoamerica, the Caribbean, and the central Andes. It may have been precipitated in part by specific events, such as the arrival of Teotihuacanos at Tikal in AD 378 and the founding of the Copán dynasty in AD 426 (Martin and Grube, 2001), the eruption of the Ilopango volcano ca. AD 429 (Dull *et al.*, 2001), environmental fluctuations ca. AD 536 (Gunn, 2000) that also affected the Peruvian coast, and the eruption of Volcán Barú in western Panama ca. AD 600 (Linares *et al.*, 1975). Long-distance interaction with societies of the middle Cauca Valley and Regional Classic chiefdoms of the Alto Magdalena may have been an additional factor. We still have a poor grasp of ancient American history, but Chibchan peoples were undoubtedly influenced by what was happening both north and south.

Defining the Chibchan World

Speakers of Chibchan languages inhabited lands from eastern Honduras in the north through eastern Nicaragua and most of Costa Rica and Panama across northern Colombia to Santa Marta and the western shores of Lake Maracaibo,

and up the Magdalena River to the Sábana de Bogotá (Constenla, 1991, 1993, 1995) (Fig. 1). The ancient languages of central Panama are unknown, but “most likely” speculations of Buglé/Movere ancestry (Cooke and Ranere, 1992b) hint they may have been Chibchan speakers. It is also unclear how much of the Sinú region and the Cauca Valley should be included. Material culture suggests close affinities, and there was a pocket of Chibchan-speaking Old Catío/Nutabe near Antioquía in the middle Cauca Valley, but the historical residents were predominantly Chocoan speakers. Chibchan territory does not include Pacific Nicaragua, which appears to have been occupied by Misumalpan speakers prior to ninth century migrations of Oto-Manguean speakers from the north (Constenla, 1994). All of Costa Rica appears to have been occupied by Chibchan speakers until this time, after which their presence continued to be felt in southern Greater Nicoya. Table I provides an overview of Chibchan speakers, based on the work of Constenla (1993, 1995). The presence of large numbers of Chocoan speakers in the middle Cauca Valley of Colombia and in eastern Panama represents a significant linguistic and genetic frontier (Kolman and Bermingham, 1997). Sources indicate that the most likely indigenous language of the Zenú, occupants of the historic settlements of Dabeiba, Finzenú, and Panzenú (Helms, 1979, pp. 150–162), was Chocoan (Constenla, 1991; Jijón y Caamaño, 1938; Loewen, 1963), but this is based on fragmentary records. The language of the Cueva of Panama (Romoli, 1987) has been identified as both Chibchan and Chocoan. Constenla (1991, pp. 47–48) leans toward the latter, but admits that the evidence is slim. If this is so, a region of Chocoan speakers divided Chibchan speakers in the isthmus and Colombia. Whether this represents a historical expansion of Chocoan speakers into formerly Chibchan territory remains to be investigated. The presence of possible Chibchan speakers (Nutabe) in the middle Cauca and especially on tributaries of the upper Amazon near the Colombia/Ecuador border (Cofán) makes this especially intriguing. Are Nutabe and Cofán the surviving remnants of Chibchan populations that once occupied the Cauca and upper Magdalena Valleys? The language of Regional Classic chiefdoms of the Alto Magdalena remains unknown, but it is difficult to ignore the possibility of their inclusion in a larger Chibchan world.

Despite several decades of authoritative claims of a South American origin for Chibchan speakers (Kidder, 1940; Lothrop, 1940; Mason, 1940; Trimborn, 1960), an abundance of linguistic and genetic data indicates a homeland in Costa Rica and Panama (Barrantes *et al.*, 1990; Constenla, 1981, 1991). It is important to emphasize that (with the exception of the modern Emberá, Waunaan, and possibly the San Blás Cuna) there is no evidence that groups migrating from South America ever populated southern Central America. In fact, some Colombian scholars suggest that Chibchan-speaking areas of South America were the recipients of populations that originated in the isthmus (Lleras Pérez, 1995; Sáenz Samper and Lleras Pérez, 1999). This has met with criticism, specifically for the area of Muisca settlement around Bogotá (Rodríguez Cuenca, 2001), but the recognition

Table I. Chibchan Languages^a

Pech [Alternative names: Paya, Taya, Tawka, Seco] (Eastern Honduras)
 Meridional Chibchan

Votic Subgroup (Eastern Nicaragua and Northern Costa Rica)
 Rama
 Makelu [Guatuso, Maleku Jaíka]
 Voto^b
 Corobici^b

Isthmic Subgroup
Viceitic Subgroup (Eastern Costa Rica)
 Cabécar [Dialects: Chirripó, Telire, Estrella, Ujarrás]
 Bribri [Borunca, Burunca, Brunca, Brunka]
 Tiribí [Teribe, Terraba, Tirribi, Norteño, Quequexque, Naso]
Guaimiic Subgroup (Western and Central Panama)
 Guaymí [(Western) Guaymí, Valiente]
 Nogbere [(Eastern) Ngábere; Tolé, Chiriquí]
 Buglé [Buglere, Bocotá, Bokota, Bofota, Bofota, Bukueta, Norteno, Movere,
 Move, Murire, Sabanero, Veraguas Sabanero]
Doracic Subgroup (Western and Central Panama)
 Dorasque
 Chánguena^b

Kuna Subgroup (Eastern Panama and Northern Colombia)
 Kuna [Cuna, San Blás Kuna, Paya-Pucuro Kuna, Caiman Nuevo]

Magdalenic Subgroup (Northern Colombia)
Cundiarhuacic Subgroup
 Cundicoúyic Subgroup (Upper Magdalena and Middle Cauca Village)
 Muisca [Chibcha Mosca]^b
 Old Catio [Nutabe]^b
 Duit
 Tunebo [(Eastern) Angosturas, Barro Negro; (Central) Tunebo, Cobaría; (Western)
 Aguas Blancas]
Arhuacic Subgroup (Santa Marta)
 Kogi [Cogui, Coghui, Cagaba, Kagaba, Kaggaba]
 Ica [Arahuaco, Aruaco, Ica, Ijca, Ijka, Ika, Ike, Bintucua, Bintuk, Bintukua, Pebu]
Eastern Meridional Arhuacic Subgroup
 Eastern Arhuacic Subgroup (Eastern Colombia)
 Guamaca [Guamaka, Malayo, Marocacero, Maracaserro, Sancá,
 Sanja, Sanka, Arosario, Arsario, Wiwa, Huihua]
 Damana
 Atanques

Chimila [Caca Weranos, San Jorge, Shimizya] (Eastern Colombia)
 Barí [Motilón Motilone, and Dobocubi] (Eastern Colombia, Western Venezuela)

^a After Constenla 1991, 1995, with additions of alternative names.

^b Extinct.

of Central American elements in Muisca religion was noted as early as Uhle’s original definition of the Chibchan language family (Uhle, 1890)

Recent Contributions to Scholarship

The issue of emergent social complexity in the Chibchan world must be understood in the context of current research. The past decade has seen a significant

number of publications relevant to Chibchan archaeology. A symposium at Dumbarton Oaks in October 1987 examined the issue of social complexity in the form of “wealth and hierarchy”—for the Intermediate Area as a whole (Lange, 1992). Another symposium resulted in a collection of critical papers with an art historical approach (Graham, 1992b). A third symposium at the International Congress of Americanists in 1991 focused on recent research (Lange, 1996b), whereas a conference at Cuajiniquil, Costa Rica, in 1993 produced a new synthesis of Greater Nicoya (Guerrero Miranda *et al.*, 1994). The most recent addition is a collection from a second symposium at Dumbarton Oaks, held in October 1999 (Quilter and Hoopes, 2003).

Jade and gold figure prominently in evaluations of early social complexity in the Chibchan world. Two books provide thorough coverage on the theme of jade, with an emphasis on Costa Rica (Jones, 1998; Lange, 1993). Two others focus respectively on Costa Rican and Colombian goldwork (Aguilar Piedra, 1996; Labbé, 1998). A book on goldwork (McEwan, 2000) includes papers on Costa Rica (Quilter, 2000), Panama (Cooke *et al.*, 2000), and Colombia (Bray, 2000; Falchetti, 2000; Lleras Pérez, 2000). Another invaluable publication is a special issue of the *Boletín del Museo del Oro* (No. 42, 1997) featuring papers from a symposium on goldwork at the 1997 International Congress of Americanists. In October 1999, a symposium at Dumbarton Oaks concentrated on the role of gold in shaping status and power relations (Quilter and Hoopes, 2003).

Cooke has made several contributions to the interpretations of central Panamanian iconography (Cooke, 1998a) and ecology (Cooke, 1992a,c; Cooke and Rancre 1998a,b), as has Helms (1993a, 1995, 2000). Three museum catalogues highlight gold and jade from Costa Rica (Calvo Mora *et al.*, 1995; Fernández Esquivel *et al.*, 1999; Karpinsky, 1997), while two catalogues from Italy (Cavatrunci *et al.*, 1992) and Spain (Snarskis *et al.*, 2001) contribute to the general literature on Central America.

The publication of fieldwork has greatly augmented our knowledge of specific local sequences and archaeological complexes. This includes the work of the Arenal Prehistory Project in Costa Rica, which documented the 12,000-year occupation of a highland valley in eastern Guanacaste (Sheets and McKee, 1994). Research beginning in 1992 at the site of Cerro Juan Díaz has provided new evaluations of settlement, subsistence, mortuary practices, and material culture (Cooke, 2001; Cooke *et al.*, 1998), including goldwork (Cooke *et al.*, 2000, 2003; Sánchez Herrera and Cooke, 1998), and shell ornaments (Cooke and Sánchez, 1998). Students working with Cooke have produced unpublished theses on ceramics (Isaza, 1993; Sánchez Herrera, 1995) and burials (Carvajal, 1998; Díaz, 1999). In Colombia, Langebaek (1995) has conducted the most complete regional survey in Muisca territory since Broadbent’s pioneering studies as well as new research in the lower Magdalena (Langebaek and Dever, 2000). A forthcoming

publication presents new data on the origins of the Tairona (Langebaek, in press).

It is impossible to reconstruct site hierarchies without good settlement data. Careful settlement pattern studies have been undertaken through formal large-scale surveys in the Culmí and Talgua Valleys of Honduras (Begley, 1999; Dixon *et al.*, 1998), Arenal basin (Mueller, 1986, 1994), the Department of Chontales in Nicaragua (Rigat, 1992; Rigat and González Rivas, 1996), the Térraba Coto-Brús Valley (Drolet, 1992), the Santa María Valley in Panama (Cooke and Ranere, 1984), and the Sábana de Bogotá (Langebaek, 1995). Smaller surveys include work near sites such as Guayabo de Turrialba (Acuña Coto, 1987). Although other surveys have been undertaken, their results remain unpublished. Interpretation is also subject to constrictions of basic culture history. With some exceptions—particularly central Panama—periods and phases of 500–1000 years or more are common. Some of this results from Precolumbian cultural conservatism, a hallmark of the area. However, scarce or problematic absolute dating exacerbates it.

There have been several substantial theoretical contributions. A pair of articles by Drennan (1995a, 1996) and a book chapter by Lange (1996a) provide invaluable reviews of the current state of research. A revised version of a book by Langebaek (1992, 1996) explores the origins of complex society in northern Colombia, looking at the ancient territories of the Tairona and Muisca. Helms also has provided stimulating critical interpretations of the nature of complex societies (Helms, 1992, 1993b, 1994, 1998). Two other collections of relevant papers are one on trade and exchange (Langebaek and Cardenas Arroyo, 1996) and a *festschrift* for Gerardo Reichel-Dolmatoff (Oyuela and Raymond, 1998).

Despite new research, analysis of the emergence of social complexity in the Chibchan world remains fraught with problems. Illicit excavations have seriously compromised an enormous base of knowledge. With a small number of exceptions (Guerrero Miranda, 1993, 1998), jade and greenstone objects are known only from looted contexts. This is also true for the vast majority of items of gold and *guanín*, although thanks to the work of individuals like Lothrop, Mason, and Cooke, there is more contextualized metallurgy from central Panama than anywhere else in the Americas besides Peru (Cooke *et al.*, 2000, 2003).

INVESTIGATING THE EMERGENCE OF COMPLEXITY

As noted above, the nonstate societies of Central and South America have figured prominently in theoretical constructs of social organization since the work of Steward (1948a) and Oberg (1955). In fact, there was tremendous variation in sociopolitical formations, ranging from small, autonomous hamlets such as the settlements of the Cueva to the densely populated chiefdoms of the Tairona and

Muisca. Ethnocentric biases stemming from unilinear evolutionary models that identify statehood with “success” and alternatives as “failure” have obscured the consideration of political structures that are situated outside evolutionary trajectories of state development. This has been remedied by approaches that acknowledge other dimensions of social complexity such as dual-processual models (Blanton *et al.*, 1996; Feinman, 2000, 2001) and heterarchy (Crumley, 2001; Ehrenreich *et al.*, 1995). I have previously argued that the societies of the Central American isthmus may never have been on developmental trajectory towards centralization, instead adapting alternative, decentralized organizations that were segmentary and impermanent over the short term but relatively stable over the long term (Hoopes, 1991). The identification of chiefdoms works only as long as the definition is kept broad. Recent scholarship on tribal societies (Parkinson, 2002) helps clarify the variability that was present in Central and South America.

The Events of AD 300–600

The period of AD 300–600 stands out as a critical time for rapid and widespread culture change throughout most of the Chibchan world. During these three centuries one sees (1) the maximum use of jade, (2) the introduction of gold metallurgy, (3) the construction of special tombs and the establishment of high-status necropoli, (4) the production of monumental sculpture in the form of flying-panel metates and colossal stone balls, (5) the production of large quantities of shell and stone beads, (6) the erection of monumental architecture (in eastern Honduras), (7) the expression of a complex iconography that included anthropomorphized birds, crocodiles, bats, monkeys, and other creatures linked to religious ideas that may have included notions of shape-shifting or animal spirit companions. By AD 300 the archaeological record in both Costa Rica and Panama bears an unmistakable signature of complex social organization. By at least AD 500, this is evident also for eastern Honduras and the Santa Marta region of northern Colombia. It appears latest in the highlands around Bogotá, where, despite the fact that the Muisca have the highest densities of population and the clearest social hierarchies in all of the Chibchan world, there is little evidence for social differentiation until approximately AD 800. Understanding the events of this period in fine detail should be a high priority for future research. It is the constellation of all these elements together that constitutes the most solid argument for the emergence of social complexity in the Chibchan world. It is critical, however, to emphasize the fragmentary state of our current understanding of the region as a whole. Western Nicaragua and the Alto Magdalena of Colombia probably merit inclusion in the broader model but have been excluded to permit a sharper focus on areas of Chibchan speakers. The following is a region-by-region review of this period.

Eastern Honduras

Healy (1984, 1992) has written two excellent syntheses of the origins of social complexity in Honduras. Explorations in the Talgua Valley (Brady *et al.*, 2000; Dixon *et al.*, 1998) and the Culmí Valley (Begley, 1999) have greatly augmented information about eastern Honduras. Whereas Healy dated incipient chiefdoms (his term) in northern and eastern Honduras to the Transitional Selin period (AD 800–1000), Begley notes, “The earliest strong evidence of complex societies occurs at the end of Period IV-b or the beginning of Period V, after AD 250 and probably before AD 600” (Begley, 1999, p. 253). Settlements dating from before AD 300 are still poorly documented for eastern Honduras, and even this date is suspect. Healy dates Selin Farm to AD 300, but the calibrated dates for the Early Selin phase have 2-sigma ranges of AD 384–626 and AD 410–626, with midpoints at ca. AD 500 (Begley, 1999, ff. 252). There is evidence for corporate activity in the earliest known villages. Begley identified Altas de Subirana, in the Culmí Valley, as one of the oldest firmly dated sites, with radiocarbon dates of ca. AD 252–779. It has large-scale public architecture in the form of mounds 2 m tall up to 79 m long (Begley, 1999, p. 221). Features known to date prior to AD 600 include house mounds, stone causeways or *calzadas*, paved plazas, and stone monoliths. Wankybila (Reyes Mazzoni, 1976; Strong, 1934, 1935) is a large site on the Patuca River dated to the Early Selin phase (AD 300–600) (Begley, 1999, p. 221). At La Floresta (Strong, 1935, pp. 160–161), a stone causeway connecting the center of the site to a nearby river, stone monoliths, and greenstone artifacts characterize an occupation dating to AD 250–660. Greenstone pendants from Guaimoreta Lagoon and Jérico Farm, near Trujillo (Stone, 1941, fig. 39), suggest that cultures of northern Honduras participated in stylistic norms of the south. Although not made of jadeite, the forms of these objects recall the “axe gods” of Costa Rica. Evidence for large-scale, corporate labor appears ca. AD 600. At Talgua Village, a cluster of about 80 house mounds, a large amount of labor was used to fill a plaza of at least 1000 m³ with gravel from a nearby river to a depth of over 2 m (Brady *et al.*, 2000, p. 115). This feature, discovered by geophysical subsurface survey, suggests a significant “central place” and indicates that large-scale architecture may not be visible aboveground at other sites.

Eastern Nicaragua

There has been little published research on the archaeology of the Atlantic Coast of Nicaragua since that of Magnus (1974, 1975, 1976, 1977, 1978) until recently. Fieldwork directed by Ermengol Gassiot of the Universitat Autònoma de Barcelona since 1996 has now identified 25 sites with over 85 shell mounds along the central Atlantic Coast. Recent excavations have focused on a settlement at El Cascal de Flor de Pino, near Kukra Hill (Gassiot *et al.*, 2003a,b; Gassiot

and Clemente, 2003). The site has occupations dating from ca. 800 BC, with the principal activity dating just prior to AD 450—contemporaneous with complex sites in eastern Honduras and Costa Rica. El Cascal de Flor de Pino has some evidence for cooperative labor in the form of mounds and repositories of naturally shaped basalt columns that may have been used for monumental architecture, suggesting a level of social complexity previously undocumented for Caribbean Nicaragua.

There has been a substantial amount of research in the Chontales region north of Lake Nicaragua during the past decade (Espinoza Pérez and Rigat, 1994; Gorin, 1990; Rigat, 1992; Rigat and González Rivas, 1996; van Broekhoven, 2002). The earliest large settlements date to the Cuisalá phase (AD 400–800), during which time there are close relations between Chontales and northern Greater Nicoya. (Whether there were also relations with Caribbean sites such as El Cascal de Flor de Pino remains to be demonstrated.) The largest, El Tamarindito, has over a dozen mounds distributed over 1.6 ha. Most are circular, varying between 7 and 30 m in diameter. None measured more than a meter in height, suggesting platforms that supported perishable superstructures (Espinoza Pérez and Rigat, 1994, p. 146, fig. 4). Although there are general similarities between the plans of sites in eastern Honduras and Chontales, none of the latter had recognizable ballcourts. There are no tall platform mounds. Plaza excavations to test for buried gravel pavements, like the one at Talgua Village, have not been undertaken. Geophysical survey to identify buried monuments has not yet been tried. This would be particularly useful given the lack of contextual information for monumental stone statues from Lake Nicaragua (Bovallius, 1886; Falk *et al.*, 1999; Furletti and Vila, 1977; Squier, 1852), some of which may date to this period. If the limited data for eastern Nicaragua is at all representative, villages with large house mounds appear ca. AD 400, and perhaps a century earlier. Use of symbolically charged artifacts in Chontales, however, is poorly documented, with only one polished, light gray stone pendant of an anthropomorphic figure on an axelike base signaling participation in the Costa Rican “axe-god” network (Espinoza Pérez and Rigat, 1994, p. 145).

Costa Rica

In Costa Rica, the period of AD 300–600 is characterized by widespread use of symbolic objects of gold and jade, carved metates, and a ubiquitous pattern of high-status burials. Two significant patterns in Costa Rica, Panama, and northern Colombia for the time are (1) the appearance of items that may represent a “symbolic vocabulary” or “international style” to define and confirm the legitimacy of an elite (Blanton *et al.*, 1996; Cooke and Bray, 1985), and (2) special cemeteries that may represent cultic centers or “macroterritorial necropoli” (Cooke *et al.*, 2000, p. 172). Cemeteries in which an overwhelmingly large proportion of the burials contained prestige items such as jade, gold, mace heads, carved metates,

and decorated pottery may contain high-status individuals from more than one community.

Mortuary patterns that include the production of fancy ceramics and elaborately carved metates, included in graves with jade ornaments (Guerrero Miranda *et al.*, 1994; Guerrero Miranda and Solís Del Vecchio, 1997), appeared in southern Greater Nicoya in the first half of the Bagaces period (AD 300–800). Las Huacas is the best known early elite cemetery on the Nicoya Peninsula (Fonseca and Richardson, 1978; Fonseca and Scaglione, 1978; Hartman, 1907). It is now known that most of the graves date to AD 300–500 (Heckenberger and Watters, 1993). The original contexts of over 2000 metates from Las Huacas are lost. The fifteen graves excavated by Hartman, however, appear to represent individuals who had equal access to formalized sets of ritual items such as jade pendants, mace heads, and elaborate metates. The quality and quantity of grave goods suggest Las Huacas served as a cultic center or a necropolis for high-status individuals from several different villages, similar to what has been suggested for Cerro Juan Díaz in central Panama (Cooke *et al.*, 2000). Special treatment of certain individuals also is apparent in eastern Guanacaste at Río Naranjo (Norr, 1986) and Sitio Bolívar (Hoopes and Chenault, 1994), where feasting and special treatment of the dead occurred ca. AD 300–600. The principal activities at both sites included smashing hundreds of ceramic vessels directly on top of cobble-covered burials.

The use of jade reached its height at ca. AD 300–600 (Garber *et al.*, 1993; Guerrero Miranda, 1998), simultaneous with the first appearance of gold. Rare proof of the production of ornaments of both jade and gold comes from Finca Linares in central Guanacaste (Herrera, 1998), where a burial contained artifacts of each together with tools used for their manufacture. It has been identified as the grave of a craftsman dating to ca. AD 500–800. Given that religious personnel often manufactured their own paraphernalia, it also may be the grave of a shaman or priest. Snarskis (1984a, p. 212; 1992, pp. 145–146, fig. 1) has identified the El Bosque phase of the Atlantic watershed and the Pavas phase of the central highlands as the first with signs of emerging social complexity. The principal evidence is a large, rectangular structure with cobble foundations at Severo Ledesma, interpreted as an elite residence. A subfloor burial within the structure contained 27 ceramic vessels, a necklace of greenstone beads with a central jade pendant, stone celts, and the plate of a flying-panel metate. Two uncorrected C14 dates were obtained from the fill of this structure: 50 ± 90 BC and $AD 350 \pm 60$ (Snarskis, 1978). The most parsimonious explanation—given larger patterns—is that the latter dates the structure's use. The stylistic purity of the assemblage of this site sets it apart from later La Selva contexts (AD 400–700) but still within the pattern of emergent inequality.

There also were high-status cemeteries. The nearby site of El Tres de Guácimo (Stone and Balsler, 1965), dated to ca. AD 400–500, had at least 25 burials marked by low (<1 m) stone mounds surrounded by over a hundred other graves. The central burials reportedly yielded 150 jade objects, including reworked axe-gods and large

tubular beads, gold ornaments, mace heads, slate mirror backs, decorated ceramics, and more than 60 metates. One grave contained a double-spiral ornament identical to examples from Cubitá contexts at Cerro Juan Díaz, Panama (see below). Another included a mace head of a bird with a beak curled in the angular style of flying-panel metates (Stone and Balsler, 1965, fig. 17) and a crumpled “Classic” Quimbaya *poporo* similar to those found at Filandia, Colombia (Bray, 1978, Cats. 358, 360; Stone and Balsler, 1965, fig. 26), also dated to ca. AD 400. The styles of the gold objects from this cemetery can now be identified as those of Cooke and Bray’s (1985) Initial Group, representative of a complex and widespread “international style” (Blanton *et al.*, 1996, p. 5) (a precursor to the formally defined International Style goldwork of the Chibchan area). The El Tres cemetery may, like Las Huacas and Cerro Juan Díaz, represent a macroterritory necropolis. Unfortunately, it was destroyed by looting and never mapped. La Fortuna (Stone and Balsler, 1965) contained between 100 and 160 individual graves. Nineteen of these were reported to contain similar numbers of jade beads and axe-god pendants. A slate mirror back with two columns of Maya glyphs similar in style to those on the Marcador from Tikal (Mora-Marín, personal communication, 2002), itself dated to AD 416 (Martin and Grube, 2001), suggests a late fourth or early fifth century date. Most Maya artifacts reportedly found in Costa Rica date from the Early Classic period (AD 200–600). These include slate mirror backs with hieroglyphic inscriptions and (sadly unprovenanced) Maya royal belt plaques—more than are known from the Maya lowlands (Baudez and Coe, 1966; Easby, 1968; Fields and Reents-Budet, 1992; Folan *et al.*, 1995, p. 325; Graham, 1998; Hoopes, 1985, 1992b; Reents-Budet and Fields, 1991; Stone and Balsler, 1965). These are not the only indications of Mesoamerican contacts during this period. A burial at Talamanca de Tibás contained a large Olmec-style jade pectoral in the form of a clamshell with low relief carving (Parsons, 1993; Snarskis, 1979). Although it is unquestionably late Middle and/or Late Formative in date (it has been reworked) and Mesoamerican in origin, local metates and a ceramic *florero* in the tomb indicate a date in the fourth or fifth century AD. The depositional contexts of other Olmec objects remain unknown (Mora Marín, 2002; Pohorilenko, 1981). A similar burial was found at La Fábrica, the most completely documented settlement of the Curridabat phase (AD 400–900) (Guerrero Miranda, 1980, 1981, 1986, 1993; Herren, 1997; Herrera *et al.*, n.d.; Snarskis, 1984a,b, 1992.). It contained an individual who had been placed on top of three metates. Grave goods included a mace head, a stirrup-shaped mano, four jade pendants, a waisted axe, two polished celts, and a ceramic vessel. One of the pendants was a “banded, jade-like tube” that Snarskis has identified as similar to examples from the Sacred Cenote at Chichén Itzá (Snarskis, 1984a, p. 221).

There remains significant temporal and geographic confusion regarding the specific relationships between El Bosque, Pavas, La Selva A, and Curridabat A materials (Hurtado de Mendoza and Arias, 1986a,b; Snarskis, 1986), both temporally and geographically. Hurtado, Arias, and Snarskis are all in agreement

that El Bosque and La Selva overlap temporally. The most likely range for this overlap is within the period of ca. AD 300–600, during which they may represent contemporaneous, specialized assemblages. It is at this time that we also see the production of elaborate, tall-legged tripod vessels—probably for the consumption of special beverages—and their destruction in celebratory, feasting events. The earliest goldwork appears ca. AD 500: 1) a “Coclé-style” piece from Tatiscú (Aguilar Piedra, 1980), near Cartago; 2) grave goods from Guácimo, in the Línea Vieja (Stone and Balsler, 1965); and 3) a pendant and pectoral fragments from Finca Linares (Herrera, 1998).

The famous flying-panel metates are among the most spectacular objects of this period, although no complete examples have been found in controlled contexts. These monolithic tables are decorated with complex iconography, typically of a central anthropomorphic being surrounded by animals (Graham, 1992a). Decorated, rimmed metates from the Tibás burial (Guerrero Miranda, 1998, fig. 15) and La Fábrica are closely related in style. The imagery of the most elaborate flying-panel metates—of central, often anthropomorphic beings surrounded by birds—is closely related to that of the gold pectorals from Neguanje and Sitio Conte, *guanín* ornaments from the Diquís and Veraguas, and polychrome vessels of the Gran Coclé semiotic tradition. Flying-panel metate fragments from the Severo Ledesma burial (ca. AD 350) and a cemetery at La Montaña dated to AD 640 ± 60 (Snarskis, 1978, p. 240) suggest dates for these elaborate sculptures of ca. AD 400–600, or at most a century later.

In an earlier publication (Hoopes, 1996), I suggested that the Aguas Buenas period (AD 200–600) was a critical time for the emergence of inequality and social hierarchy in southern Costa Rica. This appraisal was made without the benefit of additional dates from the Diquís Delta (Baudez *et al.*, 1993, 1996) and central Panama (Cooke *et al.*, 2000). A more specific phase of AD 400–600 seems indicated for the statues of one individual riding on another’s shoulders, shaft tombs, and monumental metates of Barriles, in Chiriquí, Panama (Haberland, 1984, pp. 244–245; Linares *et al.*, 1975; Stirling, 1950; Vidal, 1971, 1993) and for the famous stone balls of the Diquís Delta (Baudez *et al.*, 1993; Lothrop, 1963; Quintanilla Jiménez and Fernández, 2003). This corresponds to the Late Bugaba phase in Chiriquí, during which one finds images of individuals with conical hats—similar to the figures in the statues—on tripod serving bowls (Linares and Sheets, 1980, p. 37). The contemporary Las Brisas site had elite objects such as a polished stone cylinder and an axe-god pendant in association with clay “portraits of village and territorial individuals dressed in formal attire,” including conical hats (Drolet, 1992, p. 222, fig. 5). The existence of a cultic center is suggested by the fact that the statues at Barriles once stood in a row near a raised, 30 m × 50 m area lined with stone slabs (Stirling, 1950). To date, no macroterritory necropolis has been identified in the Diquís Delta for the period in question, although this pattern probably applies to sites like Panteón de la Reina and others dating after AD 900 (Quilter, 2000; Quilter and Vargas, 1995). Sitio Bolas, a single-component site with

stone balls and mounds in the Térraba Valley is “clearly a socioceremonial center” (Drolet, 1988, 1992). The large stone balls were first manufactured in late Aguas Buenas times, although they were used for many centuries afterwards (Badilla *et al.*, 1997). The pattern for Greater Chiriquí is therefore contemporaneous with regions to the east and west.

Panama

In Panama, the period of AD 300–600 corresponds to the appearance of painted ceramics of the “Gran Coclé semiotic tradition” (Cooke *et al.*, 2000, 2003; Cooke and Sánchez, 1998; Cooke and Sánchez Herrera, 2000; Sánchez Herrera, 2001; Sánchez Herrera and Cooke, 1998), especially the styles of Tonosí (cal AD 250–500) and Cubitá (cal AD 500–700), with emphasis on the transition between the two. Tonosí and Cubitá styles predate the spectacular, gold-filled burials at Sitio Conte, whose dates are ca. AD 750–950 (Cooke *et al.*, 2000, p. 42) but are plainly ancestral to Coclé pottery in style and iconography. There is little beyond the size of sites such as La Mula-Sarigua to imply settlement hierarchy prior to AD 250. Evidence for social inequality is weak during Tonosí times. Cooke and Sánchez Herrera (2000, p. 14) note that the “geographically localized distribution of ceramic production techniques alludes to self-sufficient villages of the kinds that depended on certain locally accessible raw materials, had limited relations with outside communities, and were politically poorly integrated” (Cooke and Sánchez Herrera, 2000, p. 14). Cooke (1984) and Briggs (1989) concur that the contemporary sites of El Indio and Sitio Sierra, both of which date before AD 250, were egalitarian. The Tonosí/Cubitá transition, however, sees the emergence of an increasingly complex iconography (Sánchez Herrera and Cooke, 1998) in the Tonosí and related Aristides style (Isaza, 1993). The earliest gold ornaments in Panama are associated with ceramics pertaining to the Tonosí-to-Cubitá transition (AD 400–500) at the sites of El Cafetal, La India-1, and Las Huacas-1 (Cooke *et al.*, 2003). Painted pottery with a rich iconography and gold jewelry represent the first “prestige goods” in central Panama.

The Cubitá style (Cooke and Sánchez Herrera, 2000; Sánchez Herrera, 1995; Sánchez Herrera and Cooke, 1998) emerges from Tonosí ca. AD 500. It is associated with the manufacture of ornaments of *Spondylus* (spiny oyster) and *Pinctada* (pearl oyster) and use of gold jewelry of the Initial Group, a collection of styles that include cold-hammered double-spirals, as well as curly-tailed animals, conjoined animals, and bird figures of cast *guanín* (Bray, 1992; Cooke and Bray, 1985). The dates of the Initial Group are estimated at AD 400–600 (Bray, 1997). It is not clear whether the earliest gold ornaments in Panama were manufactured locally or imported. Helms (1979, 1981, 1991) suggests that these objects were used to parlay contact with distant Colombian cultures into local political power. However, close correspondences in the iconography of Tonosí and Cubitá painted ceramics,

local shell jewelry, and early goldwork suggest goldworking *was* practiced in central Panama (Cooke *et al.*, 2003).

As in Costa Rica, this period is characterized by the appearance of large cemeteries. Mortuary contexts with Cubitá-style ceramics show much greater elaboration than those of earlier periods. These include deep tombs cut into bedrock at Las Huacas and numerous graves in Operations 3 and 4 at Cerro Juan Díaz (Cooke *et al.*, 2000). These latter include individuals buried with necklaces of hundreds of elongated *Spondylus* beads, hammered gold plaques, polished stone bars, perforated canines of pumas and ocelots, and many small, labor-intensive objects of gold and *guanín*, marine shell, pearls, and animal teeth. Although close to a hundred mortuary features containing almost 400 individuals have been excavated in distinct cemeteries, not one of the burials at Cerro Juan Díaz has the appearance of a “chiefly” tomb. In a sample of 115 skeletons, 50 were subadults (Díaz, 1999). Playa Venado, whose painted ceramic assemblage is 95% Cubitá in style (Cooke and Sánchez Herrera, 2000), represents another large cemetery from this period. At least 365 individuals were buried there, with offerings of fine ceramics, *Spondylus* ornaments, and gold jewelry. Several of these indicate ritual activity, including sacrifice (Lothrop, 1954). It is important to note, however, that violence has yet to be identified in the large skeletal population from Cerro Juan Díaz, despite careful study (Díaz, 1999).

The arrangement of burials and associated goods at these sites suggest distinct differences in status, but there is still little evidence for “central persons” (chieftains or chiefs). Sites such as Cerro Juan Díaz and Playa Venado may have served as “central necropoli” that established a pattern later manifest in sites like Sitio Conte and El Hatillo. The latter may have served as burying grounds not for individual chiefdoms but for high-status individuals from several different communities or “macroterritories” in Gran Coclé (Cooke *et al.*, 2000, p. 172). Craft activities associated with Cubitá included the production of beads made of *Spondylus* and other marine shells, the working of gold and *guanín*, and the production of polychrome ceramics. The appearance of marine shells from coral reef habitats has been suggested as resulting from the expansion of trade along the coast and islands of Parita Bay (Cooke *et al.*, 2000; Cooke and Sánchez Herrera, 2000, p. 15). The procurement of *Spondylus*, a deep-water mollusk that occupies habitats at depth of 60–80 m, may have been a specialized occupation.

Colombia

The origins of complexity in western and eastern Colombia are remarkably distinct in chronology and manifestation. Patterns at San Agustín, in the Alto Magdalena, and Malagana in the middle Cauca Valley indicate the production of gold and monumental stone sculpture as early as the first century BC. The iconography of Malagana goldwork shows clear antecedents to the “crocodile

man” figures of southern Central America, dating several hundred years earlier (Bray, 2000). The spectacular “treasure of the Quimbayas” (Plazas, 1978) probably dates to AD 400; its iconography also appears to be reflected in Central American goldwork and stone sculpture. Quimbaya-style gold ornaments have been recovered from mortuary contexts at Sitio Conte and various sites in Costa Rica, including La Fortuna. I have recently argued that the seated figures on Classic Quimbaya *poporos* are conceptually linked to Barriles human statuary (Hoopes and Fonseca, 2003). Their four-legged stools are probably ancestral to later *duhos* or “seats of power.” However, the similar treatment of male and female figures in Quimbaya goldwork suggests their identification as chiefs is not straightforward.

Research on the Tairona has resulted in renewed interest in fieldwork by Mason in the 1930s (Mason, 1931, 1936, 1939) at Neguanje and related sites. The Neguanje culture (also spelled Naguanhe) has associated C-14 dates ranging between AD 130 ± 40 (Plazas, 1998, p. 51) and 620 ± 70 (Oyuela, 1987, p. 46) and is viewed as the beginning of the Tairona tradition (Bischof, 1969a,b; Langebaek, 1996, pp. 54–56; in press; Oyuela, 1986; Wynn, 1975). The nucleus of a cast *guanín* object provided an uncalibrated date of AD 310 ± 70 (OxA-1577) (Bray, 1991, p. 59; 1995, p. 110), but according to Augusto Oyuela (personal communication, 2002), the ceramics from this burial date to the end of Cinto Phase II, or cal AD 400–600, a date supported by the sequence from Puerto Gaira (Oyuela, 1987, 1995) and other parts of the Santa Marta littoral (Langebaek, in press). There are a number of strong parallels between the material culture of Neguanje and both Costa Rica and central Panama. A circular mortuary mound at the type site of Neguanje 1, located in Santa Marta (Mason, 1931, 1936, 1939), provides clear evidence of complex mortuary activity. A stone wall 15 m in diameter and 1 m high encircled this feature. At its center was a large, stone-lined tomb that contained at least 30 ceramic vessels, numerous greenstone pendants, metal objects of gold and *guanín*, and about 8000 beads made of carnelian, agate, quartz crystal, a red stone like catlinite, and green stone. Thirty polished greenstone pendants were of the “winged pendant” type (cf. Snarskis, 1998, p. 90) known from Costa Rica, Panama, Venezuela, and the Caribbean, still used by modern Kogi as paired tinklers. Long, tubular shell beads recall those from Cubitá/Tonosí burials in Operations 3 and 4 at Cerro Juan Díaz (Cooke *et al.*, 2000). The goldwork includes Initial Group objects, such as bicephalic birds. A thin gold pectoral (Mason, 1936, p. 255, Pl. CXLV) has a general shape that recalls the double-spiral form and a repoussé design of an individual with a bifurcate headdress that recalls elements of gold pectorals from Sitio Conte and that corresponds to “Icon D,” identified as *hátei nyui* (Kogi: “Father Sun”) (Reichel-Dolmatoff, 1988) or Seyankua, “son of the Father Sun” (Oyuela, 2001). The tomb also contained painted vessels with abstract curvilinear and geometric designs in red on a buff slip. This evidence supports Reichel-Dolmatoff’s early appraisal of “Central American” influence on early Tairona culture (Reichel-Dolmatoff, 1965, p. 157). The large mortuary feature at Neguanje is a clear indication of social differentiation and the existence of

individuals who merit special tombs with high concentrations of high-status goods. Settlement pattern studies, however, indicate little or no site hierarchy during either the Neguanje or succeeding Buritaca (AD 600–900) periods (Langebaek, in press; Oyuela, 1995).

The Timing and Causes of Emergent Complexity

The preceding discussion documents the existence of a relatively short temporal horizon of AD 300–600 during which the earliest evidence for social inequality is apparent at a number of sites throughout the Chibchan world. Some specialization in the production of jade pendants and fine pottery, “central places” such as La Mula-Sarigua, and special cemeteries such as Las Pilas, Guanacaste (Lange and Scheidenheim, 1972) are present before AD 300. However, there is a significant and widespread change in the form and expression of complexity throughout the Chibchan area in the succeeding centuries, especially ca. AD 400–600. Why do these changes affect diverse populations in such a similar fashion? Why do they occur when they do? The pattern suggests a network of interacting elites. Is this a landscape of emergent chiefdoms or something different?

Whether the emergence of a widespread religious complex contributed to the formation of centrally organized chiefdoms remains unclear. Carneiro (1998, 2002) insists that domination is critical to chiefdom formation. Yet the evidence for the domination of some settlements by others in the Chibchan world remains ambiguous, even when there is variation in settlement sizes. In central Panama, where there is arguably the best and most thoroughly documented evidence for concentration of wealth and power anywhere in southern Central America, Cooke and his associates are reluctant to identify multivillage chiefdoms even at the time of Spanish contact (Cooke *et al.*, 2000, p. 172). In the Upper Magdalena, Drennan (1995a,b; Drennan and Blick, 2000; Drennan and Quattrin, 1995) identifies chiefdoms on the basis of monumental tombs but concedes that there is little evidence for chiefly control of economic resources. The historic Tairona have been identified as a classic chiefdom-level society, but site hierarchies do not appear until after AD 900. It is only for the Muisca that there is clear ethnohistoric evidence for “an autonomous political unit comprising a number of villages under the permanent control of a paramount chief” (Carneiro, 1981, p. 45; 1998, p. 20), but this dates to the sixteenth and seventeenth centuries. There seems to be little correlation between inequality and the control of some villages by others for the period in question. Is something else at work?

Sanders and Webster (1978) argued that trajectories in which minimal status differentiation for a long period were followed by rapid state development were conditioned by environments in which there was a high degree of resource diversity and also a high degree of risk to agriculture. In areas with high diversity and

relatively low risk, one might expect long-term stability. Yet short-term changes would place pressure specifically on those areas whose agriculture had become important either for the production of staples or feasting foods. Under these circumstances, low-risk areas would cease to be so—at least on a temporary basis. The introduction of risk and change, and the ways it was explained, may have provided the “kick” for rapid emergence of inequality linked to religious specialization rather than economic control.

External Stimuli for Culture Change

There has long been a sense that social change in the Chibchan area was introduced from without. Snarskis (1978, 1984a, p. 236; 1992, p. 144; 1998, 2001, 2003) continues to advocate a model that attributes increased cultivation of maize, the adoption of jade and avian iconography, and rectilinear house plans to Mesoamerican influence. In his scenario, a “politico-religious world view” was brought via trade to Costa Rica ca. 600-400 BC by “heirs of the Gulf Coast Olmec cultural tradition.” This induced peoples of northern Costa Rica to adopt jade—especially in the form of celts—as a material associated with Olmec thought, specifically reverence for maize and preparation of the land for agriculture. This persisted in a “patina of Mesoamerican symbolism. . . combined with preexisting tropical forest animist beliefs” (Snarskis, 1984a, p. 215) that dissipated with the collapse of Teotihuacán and competing “South American influence,” resulting in the gradual replacement of jade with gold as the principal prestige material between AD 500 and 700.

There are a number of problems with this scenario. First and foremost is the significant chronological gap between the “Gulf Coast Olmec” (ca. 1000–500 BC) and the earliest known El Bosque phase settlements, dated by Snarskis to no earlier than 50 BC (and possibly as late as AD 400). Secondly, there are too few elements of Mesoamerican belief systems in eastern Costa Rica to recognize even a “patina.” The use of figurines in Preclassic rituals has no counterpart. Architectural orientations to the cardinal directions, the bloodletting complex, 260-day calendar, and glyphs—all present in Mesoamerica from 400 BC—are absent from the practices of Chibchan groups. The ballgame, although present much later in eastern Honduras, was not played farther south, despite the appropriateness of the ecology for the production of latex. Obsidian, the quintessential marker of Mesoamerican trade systems, is all but absent. More significantly, Snarskis’ hypothesis does not explain the simultaneous emergence of similar patterns in southern Costa Rica, central Panama, and even northern Colombia.

Although it is tempting to interpret elements such as jade pendants, birds, and double-headed reptiles within a Mesoamerican framework, there is a more complex process at work. Begley (1999) observes that ball courts in eastern Honduras have a style and orientation that reflect Mesoamerican patterns.

However, he situates their use within pre-existing local cosmologies that he traces to South American concepts of an *axis mundi* as an organizing structure of the universe and argues ball courts were appropriated for the promotion of non-Mesoamerican worldviews. This may have been true for jade and other elements of early Chibchan symbolism, but there has not been adequate examination of possible Colombian antecedents. There is a long tradition of polished, fine-grained stones in northern Colombia, and jade use may be another practice that appears Mesoamerican but is actually autochthonous or derived from northern South American uses. It remains to be demonstrated whether the double-headed saurian of the Chibchan world has a meaning parallel to the double-headed serpent in Mesoamerica and whether the Sun/Black Sun dichotomy for the Kogi was equivalent to the Sun Jaguar/Jaguar God of the Underworld concepts for the Maya. Reichel-Dolmatoff's (1965) identifications of Mesoamerican concepts in northern Colombia have been too hasty. We do not know whether similarities between Mesoamerican and Chibchan symbol systems indicate shared primordial cosmologies or more recent diffusion. The significant temporal priority of monumental architecture (Shady Solís *et al.*, 2001) and metallurgy (Burger and Gordon, 1998; Plazas, 1998) in South America over Mesoamerica indicates caution is warranted when placing emphasis on the latter.

Snarskis's (1998) and Graham's (1992a, 1995) identifications of Mesoamerican elements in the art of central and eastern Costa Rica are not without merit. The prevalence of the avian iconography in Costa Rica after 500 BC may derive from the predominance of the Principal Bird Deity in Late Preclassic Maya iconography and direct contact with the Maya. Early and Late Formative contact between Costa Rica and southern Guatemala has been suggested by jade items traced to the Motagua source (Bishop and Lange, 1993), especially blue jade from the Motagua Valley (Seitz *et al.*, 2001) and objects with Epi-Olmec texts (Mora Marín, 2002). Jade procurement almost certainly involved direct contact and exchange. In the absence of dated contexts, however, it may be premature to interpret early artifacts as evidence of early contact. Two alternative explanations are that Olmec objects were introduced to Costa Rica either in modern times, as suggested by Pohorilenko (1981), or during the Early Classic period in the Maya region (AD 200–600), where their procurement may eventually be tied to specific historical events.

The late fourth and early fifth centuries saw the arrival of Siyaj K'ak at Tikal on January 31, 378, and the installation of Yax Nuun Ayiin I ("First Caiman") as *ahau* of Tikal in 8.17.2.16.17 (September 13, 379). The association of this latter individual with crocodilians is apparent in his name glyph (initially read as "Curl Nose") and his tomb (Burial 10), which contained the headless body of an adult caiman and a small jade ornament in the shape of a caiman head. Inscriptions on Altar Q at Copán indicate that on September 5, 426, an individual named K'uk Mo' Ajaw ("Quetzal Macaw Lord") took a *k'awil* scepter and became the founder of the site's Classic period dynasty (Martin and Grube, 2001, p. 192). The name of Yax K'uk Mo', as he was later known, was represented by monumental,

double-headed, human-faced birds (combining quetzal and macaw) in plaster on the Margarita pyramid, erected by his son Popol Hol around 441 (Martin and Grube, 2001, p. 194). Copán's connections with Central America are well documented (Gerstle, 1988), and either it or Quiriguá is likely to have controlled access to jade sources in the Motagua Valley. These events had repercussions far beyond the Maya lowlands. For example, stories of *ahaus* with names of caimans, quetzals, macaws, and other birds undoubtedly reached southern Central America, enhancing the associations of these animals with rank and social differentiation. Both Olmec and Maya royal jewels, such as Olmec "spoons," the Tibás jade, the La Fortuna slate disk, and numerous Early Classic royal belt plaques, may have been exhumed from early royal tombs that were desecrated during fourth and fifth century conflicts among Tikal, Calakmul, and their rival polities. The potentially dangerous supernatural qualities of sacred talismans and texts on jade belt plaques that asserted the legitimacy of conquered lineages necessitated their disposal through trade with distant, non-Maya peoples. Through this process, complex worldviews of the Maya were integrated, albeit transformed, into those of neighbors to the south.

Gold is conspicuous by its absence in the Maya lowlands, especially by comparison to the Chibchan world, but the Maya were not completely ignorant of this material. *Guanín* jewelry is known from a fifth century context at Altún Ha (Pendergast, 1970) and from a cache beneath Stela H at Copán, erected during the reign of Waxaklajuun Ub'aah K'awil ("18 Rabbit") in AD 695–736 (Morley, 1946, p. 432, fig. 55c). Exchange relationships may have been terminated before gold use became widespread in Central America between AD 400–600. Maya trade with southern Central America was sharply diminished during the Late Classic period (Hoopes, 1985, 1992b). Isthmian and Colombian gold does appear at Chichén Itzá but was probably deposited after AD 800 (Coggins and Shane, 1984; Lothrop, 1952).

Significant elements of Chibchan culture undoubtedly originated in South America. Mesoamerican traits may not represent new features but additions of new meanings to pre-existing Chibchan cosmologies. Jade, for example, may have been a substitute for hard, polished stones such as quartz crystals and carnelian as used in northern Colombia but with added layers of meaning. An emphasis on crocodilian and avian motifs in Costa Rica during the period of AD 300–600 represented the assignation of *additional* values to existing icons. An anthropomorphic caiman may have been present in Malagana goldwork of the upper Cauca Valley sometime prior to the second century AD (Bray, 2000, fig. 5.5) and traveled into the isthmus with Initial Group goldwork sometime prior to AD 400. Caimans and harpy eagles are prominent in Chavín iconography ca. 800–200 BC. Both caimans and birds (especially "beak birds") are prominent in the iconography of flying-panel metates and goldwork. Individuals seeking to use powerful symbols may have utilized the element of distance, as has been discussed by Helms (1979, 1988, 1992, 1993b), to further interpret stories of events in distant

lands to their own advantage, mythologizing events concerning foreign leaders or charismatic individuals, and communicating animal-based names for humans in the idiom of anthropomorphized animals. Hearing about events in distant lands involving influential individuals named for animals, shape-shifting, shamanistic transformation, and even fanged beings may have been interpreted in ways that conflated human and animal identities. The period of AD 400–600 is also one that saw the florescence of strong technological and iconographic traditions in the middle Cauca and upper Magdalena, as expressed in Classic Quimbaya goldwork and the monumental Regional Classic period (AD 0–900) tombs of San Agustín. Although the absolute chronology of these cultures will never approach that of the literate Maya, the most parsimonious explanation is that these events were roughly simultaneous.

The emergence of inequality in the Chibchan world was accompanied by the creation of a synthesis and reinterpretation of local and distant elements charged with symbolism, interpreted in the context of a cosmology that explained the universe and emphasized in an idiom of common origin. There are significant Andean elements in the iconography of the Chibchan world. The association of gold with rayed beings and the sun—such appear on early Tairona pectorals (Reichel-Dolmatoff, 1988)—were especially prominent in Moche iconography, as exemplified by the “Lord of Sipán,” dating to ca. AD 300 (Alva and Donnan, 1993) and decorations on fine-line ceramics (Donnan and McClelland, 1999). They also are echoed in ceramics from burials at San José de Moro dated to ca. AD 500 (Castillo, 1993; Castillo and Donnan, 1994). Chibchan appropriation and adaptation of symbols with Andean origins, and the roles of intermediate cultures in the process of their transmission, merits further attention from archaeologists and iconographers.

Internal Stimuli for Culture Change

The emergence of cultic centers, special cemeteries, and individuals with elite status in the Chibchan world may have been related to a form of crisis cult similar to, but much less centralized than, what Burger (1988) has proposed for Chavín during the Early Horizon in the Andes. The timing of these changes appears to be linked to a complex suite of relationships among specific historical events both north and south and specific environmental events that had both global and local effects. The period of AD 450–600 has been identified as one associated with a prolonged dry period on the north coast of Colombia (van der Hammen, 1970, 1986a,b; van der Hammen and Noldus, 1986) as well as a rapid and substantial (>1 m) tectonic uplift of the Sierra Nevada de Santa Marta (Oyuela, 1987, 1996). These changes included the initial desertification of the Goajira Peninsula. Oyuela suggests that a “catastrophic environmental crisis” took place ca. AD 500–550 (Oyuela, 2001, p. 9). This was probably related to the “years without summer,”

a global climatic event that occurred ca. AD 536 (Gunn, 2000). These changes affected the availability of marine resources, especially shellfish, and in Santa Marta precipitated a population shift inland to better agricultural lands and higher altitudes. Coincidentally, this occurred shortly before the catastrophic eruption of Volcán Barú in western Panama around AD 600, an event that may have driven inland populations towards the coasts (Linares *et al.*, 1975). These events had transcontinental effects on many different cultures, stimulating and conditioning long-distance interaction. However, they must also be understood within a larger context.

The elaborate phenomena that appear in the period AD 300–600 suggest a widespread horizon of common practices and beliefs despite variations in their specific manifestations. Why did this emerge? Cultural networks were conducive to communicating complex interpretations of natural phenomena and appropriate response. Oyuela suggests that a catastrophic environmental crisis ca. AD 500–550 stimulated the emergence of prophets and a serious concern with eschatology (a cosmology concerned with afterlife and the end of present reality) in northern Colombia. In his model, charismatic, visionary individuals articulated a worldview that came to be expressed through “routinization”—the development of a patterned iconographic and material expression of ritual. Oyuela identifies routinization as “the cultural threshold practice of the change from shamanism to priesthood” and associates it with the emergence of a religious complex that “can expand and contract in space, depending on the rise of new crises and the success of the process of routinization in the landscape.” This process precipitates the designation and use of cultic places, “where individuals can engage in prayers and offerings to the masters and gods that control the universe” (Oyuela, 2001). The principal practitioners of these rituals are members of a priesthood, one example of which would be *mámas* or “elder brothers” of the Kogi of the Sierra Nevada de Santa Marta (Reichel-Dolmatoff, 1985, 1990; Reichel-Dolmatoff *et al.*, 1999).

The differences between “shamans” and “priests” are more than semantic (Klein *et al.*, 2002). Priests are considered to be intermediaries between individuals and the supernatural in the context of a formalized, institutionalized, routinized set of beliefs and practices. The “routine” of the priest is an institution distinct from the individual who practices it in the same way that the “office” of a chief is distinct from the individual who holds it. A priest differs from a shaman in that the status of the former’s authority is sanctioned by the existence of formal institutions as well as individual charisma and ability. The generalized tools and techniques of shamans are well known and can be recognized cross-culturally (Vitebsky, 2001), despite critiques of specific interpretation and nomenclature (Kehoe, 2000). The priest’s “routine” consists of those elements that are not general, but culture specific. Priests also may have been chieftains or chiefs. We have far more evidence for symbolic, ideological activity than political control. As noted earlier, the question of whether the activities of these individuals can be considered as a corporate or network strategy (or perhaps with elements of

both) may be a more productive line of investigation than the question of whether or not they were chiefs or chieftains. It also is germane to consider how these individuals articulated with each other in the context of a heterarchical, rather than hierarchical structure, in which their specific roles may have varied significantly depending upon which functions or networks are being considered.

CONCLUSION

The Chibchan world presents a laboratory for the study of diversity in prestate societies. It is sufficiently distinct in character to merit consideration as a major region in its own right, and not an intermediate area that is a pale reflection of either Mesoamerica or the central Andes. There is now a substantial literature documenting a wide range of cultural phenomena that can inform studies of the emergence of inequality and a wide range of forms of social organization from autonomous villages to multivillage chiefdoms. The study of social complexity has now gone well beyond issues of typology in describing the processes that produce a wide range of organizational and leadership styles. A focus on the behavior of chiefs runs the risk of discounting other mechanisms that can foster organization above the level of households or villages. One that holds promise is the realm of ideology and religion as expressed in material culture.

This paper has focused not on the long trajectory of the emergence of centralized, multivillage chiefdoms but on defining the period that bears the greatest potential for elucidating the early stages of emergent hierarchy in the Chibchan world. Social differentiation prior to AD 300 remains diffuse and poorly documented. After this date, however, it is widespread and unmistakable. By AD 600, and certainly no later than AD 700, a basic cosmology and formalized patterns of ritual activity are evident throughout most of the region. These represent the beginnings of a process that continued until the sixteenth century. These were manifest in post-A.D. 600 occupations at sites such as Marañones in the Culmí Valley, La Fábrica de Grecia in highland Costa Rica, Sitio Conte in central Panama, and Mamorón in Santa Marta, Colombia. The causes for these changes remain unknown, but they seem likely to have resulted from the responses of an emergent elite to environmental phenomena and historical events affecting a broad cultural milieu distributed across a broad area of the Americas.

Current models for tribal cultures identify “pantribal sodalities” as a phenomenon that preceded the formation of chiefdoms. One option is to interpret the archaeological record of the period from AD 300–600 as representing a landscape of competing individual, self-aggrandizing chiefs who amassed wealth and power through the control of esoteric knowledge and limited resources. Yet the existence of a loose network of shamans, prophets, or priests who were able to articulate interpretations of the world that explained environmental change and integrated imperfect knowledge of distant populations in Mesoamerica,

the Caribbean, and the Andes—and their expression in increasingly routinized ritual—may have produced similar patterns. The possibility that this was manifest in a cultural horizon whose specific elements can be discerned in the iconography of jade, gold, ceramics, and stone sculpture deserves further investigation, as does the possibility that the priesthood of Kogi *mámas* represents the persistence of a sodality with origins in the events of the sixth century. Were there networks of interacting chiefdoms or interacting priesthoods? It is certainly possible that both processes were occurring simultaneously and that the same individuals shared the roles of shamans, priests, and chiefs. Were there characteristics of these processes that were distinct from those occurring in areas that subsequently experienced the emergence of state societies? These are issues that require more careful evaluation. Future research that explores the multiple dimensions of social complexity in prestate (or nonstate) societies will find rich challenges to interpretation in the archaeology of the Chibchan world. This paper highlights some of the resources that can contribute to this line of inquiry.

REFERENCES CITED

- Acuña Coto, V. (1987). Relaciones entre asentamientos precolombinos al norte de Guayabo de Turrialba en la fase Cabaña. *Revista de Ciencias Sociales* 35: 43–52.
- Aguilar Piedra, C. H. (1980). Presencia temprana del cobre en el intermontano central de Costa Rica. In *La antropología americanista en la actualidad: homenaje a Raphael Girard*, Editores Mexicanos Unidos, Mexico City, pp. 363–367.
- Aguilar Piedra, C. H. (1996). *Los usékares de oro*, Fundación Museos Banco Central, San Jose, Costa Rica.
- Alva, W., and Donnan, C. B. (1993). *Royal Tombs of Sipán*, Fowler Museum of Cultural History, University of California, Los Angeles.
- Badilla, A., Quintanilla Jiménez, I., and Fernández, P. (1997). Hacia la contextualización de la metalurgia en la subregión arqueológica Diquís: el caso del sitio Finca 4. *Boletín Museo del Oro* 42: 113–137.
- Barrantes, R. (1993). *Evolución en el trópico: los amerindios de Costa Rica y Panamá*, Editorial de la Universidad de Costa Rica, San Jose.
- Barrantes, R., Smouse, P. E., Mohrenweiser, H. W., Gershowitz, H., Azofeifa, J., Arias, T. D., and Neel, J. V. (1990). Microevolution in lower Central America: Genetic characterization of the Chibcha speaking groups of Costa Rica and Panama, and a taxonomy based on genetics, linguistics, and geography. *American Journal of Human Genetics* 46: 63–84.
- Baudez, C. F., Borgnino, N., Lalignat, S., and Lauthelin, V. (1993). *Investigaciones arqueológicas en el Delta del Diquís*, Centro de Estudios Mexicanos y Centraméricanos, Mexico, and the Delegación Regional de Cooperación Científica y Técnica en América Central, San Jose, Costa Rica.
- Baudez, C. F., Borgnino, N., Lalignat, S., and Lauthelin, V. (1996). A ceramic sequence for the lower Diquís area, Costa Rica. In Lange, F. W. (ed.), *Paths to Central American Prehistory*, University Press of Colorado, Niwot, pp. 79–92.
- Baudez, C. F., and Coe, M. D. (1966). Incised slate disks from the Atlantic Watershed of Costa Rica: A commentary. *American Antiquity* 31: 441–443.
- Begley, C. T. (1999). *Elite Power Strategies and External Connections in Ancient Eastern Honduras*, Ph.D. dissertation, Department of Anthropology, University of Chicago, Chicago.
- Bieber, H., Bieber, S. W., Rodewald, A., and Barrantes, R. (1996). Microevolution and genetic affinities among six Amerindian tribes of lower Central America: Comparative genetic study of serum proteins. *Human Biology* 68: 929–953.

- Bischof, H. (1969a). Contribuciones a la cronología de la Cultura Tairona (Sierra Nevada de Santa Marta, Colombia). In *Proceedings of the 38th International Congress of Americanists*, Vol. 1, Stuttgart-Munich, Germany, pp. 259–269.
- Bischof, H. (1969b). La cultura Tairona en el area intermedio. In *Proceedings of the 38th International Congress of Americanists*, Vol. 1, Stuttgart-Munich, Germany, pp. 272–280.
- Bishop, R. L., and Lange, F. W. (1993). Sources of Maya and Central American jadeite. In Lange, F. W. (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, University of Utah Press, Salt Lake City, pp. 125–130.
- Blanton, R. E., Feinman, G. M., Kowalewski, S. A., and Peregrine, P. N. (1996). A dual-processual theory for the evolution of Mesoamerican civilization. *Current Anthropology* **37**: 1–14.
- Bovallius, C. (1886). *Nicaraguan Antiquities*, Swedish Academy of Anthropology and Geography, Stockholm.
- Brady, J. E., Begley, C. T., Fogarty, J., Stierman, D. J., Luke, B. A., and Scott, A. (2000). Talgua Archaeological Project: A preliminary assessment. *Mexicon* **22**: 111–118.
- Bsray, W. (1978). *The Gold of El Dorado*: Catalogue of an Exhibition Held at The Royal Academy, Piccadilly, London, 21 November, 1978–18 March, 1979, Times Newspapers, London.
- Bray, W. (1991). A donde han ido los bosques? El hombre y el medio ambiente en la Colombia prehispanica. *Boletín del Museo del Oro* **30**: 42–65.
- Bray, W. (1992). Sitio Conte in its pan-American context. In Hearn, P., and Sharer, R. J. (eds.), *River of Gold: Precolumbian Treasures from Sitio Conte*, University Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia, pp. 32–46.
- Bray, W. (1995). Searching for environmental stress: Climatic and anthropogenic influences on the landscape of Colombia. In Stahl, P. W. (ed.), *Archaeology in the Lowland American Tropics: Current Analytical Methods and Applications*, Cambridge University Press, Cambridge, UK, pp. 96–112.
- Bray, W. (1997). Metallurgy and anthropology: Two studies from prehistoric America. *Boletín del Museo del Oro* **42**: 37–55.
- Bray, W. (2000). Malagana and the goldworking tradition of southwest Colombia. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 94–111.
- Briggs, P. S. (1989). *Art, Death and Social Order: The Mortuary Arts of Pre-Conquest Central Panama*, BAR International Series, Vol. 550, British Archaeological Reports, Oxford.
- Burger, R. L. (1988). Unity and heterogeneity within the Chavín horizon. In Keatinge, R. W. (ed.), *Peruvian Prehistory: An Overview of Pre-Inca and Inca society*, Cambridge University Press, New York.
- Burger, R. L., and Gordon, R. B. (1998). Early central Andean metalworking from Mina Perdida, Peru. *Science* **282**: 1108–1111.
- Calvo Mora, M., Bonilla Vargas, L., and Sánchez Pérez, J. (1995). *Gold, Jade, Forests: Costa Rica*, Trust for Museum Exhibitions, University of Washington Press, Seattle.
- Carneiro, R. L. (1981). The chiefdom: Precursor to the state. In Jones, G. D., and Kautz, R. R. (eds.), *The Transition to Statehood in the New World*, Cambridge University Press, Cambridge, UK, pp. 37–79.
- Carneiro, R. L. (1998). What happened at the flashpoint? Conjectures on chiefdom formation at the very moment of conception. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 18–42.
- Carneiro, R. L. (2002). The tribal village and its culture: An evolutionary stage in the history of human society. In Parkinson, W. A. (ed.), *The Archaeology of Tribal Societies*, International Monographs in Prehistory, Ann Arbor, MI, pp. 34–52.
- Carvajal, C. R. (1998). *Análisis de cuatro componentes en el rasgo CH excavado mediante de microestratigrafía: El caso de Cerro Juan Díaz*, Tesis de grado, Facultad de Ciencias Humanas, Universidad Nacional de Colombia, Santa Fe de Bogota.
- Castillo, L. J. (1993). Prácticas funerarias, poder e ideología en la sociedad Moche Tardía. *Gaceta Arqueología Andina* **7**: 67–82.
- Castillo, L. J., and Donnan, C. B. (1994). La ocupación moche de San José de Moro, Jequetepeque. In Uceda, S., and Mujica, E. (eds.), *Moche: Propuestas y perspectivas*, Travaux de l'Institut Français d'Études Andines, Vol. 79, Lima, Peru, pp. 93–146.

- Cavatrunci, C., Orefici, G., and Terenzi, C. (1992). *Centro America. Tesori d'arte delle civiltà precolombiane*, Fabbri Editori, Milan.
- Clark, J. E., and Blake, M. (1994). The power of prestige: Competitive generosity and the emergence of rank societies in lowland Mesoamerica. In Brumfiel, E., and Fox, J. W. (eds.), *Factional Competition and Political Development in the New World*, Cambridge University Press, Cambridge, UK, pp. 17–30.
- Coggins, C. C., and Shane, O. C., III (eds.) (1984). *Cenote of Sacrifice: Maya Treasures from the Sacred Well at Chichén Itzá*, University of Texas Press, Austin.
- Constenla, U. A. (1981). *Comparative Chibchan Phonology*, Ph.D. dissertation, Department of Linguistics, University of Pennsylvania, Philadelphia.
- Constenla, U. A. (1991). *Las lenguas del Área Intermedia: Introducción a su estudio areal*, Editorial de la Universidad de Costa Rica, San Jose.
- Constenla, U. A. (1993). La familia chibcha. In Rodríguez de Montes, M. (ed.), *Estado actual de las lenguas indígenas de Colombia: Ponencias presentadas en el seminario-taller realizado en el Instituto Caro y Cuervo (febrero 10, 11, y 12 de 1988)*, Instituto Caro y Cuervo, Santa Fe de Bogota, pp. 75–125.
- Constenla, U. A. (1994). Las lenguas de la Gran Nicoya. *Vínculos* 18–19: 209–227.
- Constenla, U. A. (1995). Sobre el estudio diacrónico de las lenguas chibchenses y su contribución al conocimiento del pasado de sus hablantes. *Boletín del Museo del Oro* 38–39: 13–56.
- Cooke, R. (1984). Archaeological research in central and eastern Panama: A review of some problems. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 263–302.
- Cooke, R. G. (1998a). The Felidae in pre-Columbian Panama: A thematic approach to their imagery and symbolism. In Saunders, N. J. (ed.), *Icons of Power: Feline Symbolism in the Americas*, Routledge, New York, pp. 77–121.
- Cooke, R. G. (1998b). Subsistencia y economía casera de los indígenas precolombinos de Panamá. In Pastor, A. (ed.), *Antropología panameña: Pueblos y culturas*, Editorial Universitaria, Panama, pp. 61–134.
- Cooke, R. G. (2001). Cuidando a los ancestros: rasgos mortuarios precolombinos en Cerro Juan Díaz, Los Santos. In Heckadon Moreno, S. (ed.), *Panamá: Puente biológico*, Smithsonian Intitute for Tropical Studies, Panama, pp. 54–62.
- Cooke, R. G., and Bray, W. (1985). The goldwork of Panama: An iconographic and chronological perspective. In Jones, J. (ed.), *The Art of Precolumbian Gold: The Jan Mitchell Collection*, Weidenfield and Nelson, London, pp. 35–45.
- Cooke, R., and Fonseca, O. (1994). Historia antigua del sur de la América Central: Una contribución al estudio de la Región Histórica Chibcha. In Carmack, R. M. (ed.), *Historia antigua: Historia general de Centroamérica*, Vol. I, Facultad Latinoamericana de Ciencias Sociales, San Jose, Costa Rica, pp. 217–281.
- Cooke, R. G., Isaza, I. I., Griggs, J., Desjardins, B., and Sánchez, L. A. (2003). Who crafted, exchanged and displayed gold in pre-Columbian Panama. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks Research Library and Collections, Washington, DC.
- Cooke, R., and Ranere, A. (1984). El Proyecto Santa María: A multidisciplinary analysis of prehistoric adaptations to a tropical watershed, Panama. In Lange, F. W. (ed.), *Recent Developments in Isthmian Archaeology: Advances in the Prehistory of Lower Central America: Proceedings, 44th International Congress of Americanists, Manchester, 1982*, BAR International Series, Vol. 212, British Archaeologies Reports, Oxford, pp. 3–31.
- Cooke, R. G., and Ranere, A. J. (1992a). Human influences on the zoogeography of Panama: An update based on archaeological and ethnohistorical evidence. In Darwin, S. P., and Welden, A. L. (eds.), *Biogeography of Mesoamerica: Proceedings of a Symposium, Merida, Yucatan, Mexico, October 26–30, 1984*, Tulane Studies in Zoology and Botany, Supplementary Publication, No. 1, Tulane University, New Orleans, pp. 21–58.
- Cooke, R. G., and Ranere, A. J. (1992b). 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: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC, pp. 243–316.

- Cooke, R. G., and Ranere, A. J. (1992c). Prehistoric human adaptations to the seasonally dry forests of Panamá. *World Archaeology* **24**: 114–133.
- Cooke, R. G., and Sánchez, L. A. (1998). Coetaneidad de metalurgia, artesanías de concha y cerámica pintada en Cerro Juan Díaz, Panamá. *Boletín del Museo del Oro* **42**: 57–85.
- Cooke, R. G., Sánchez, L. A., Isaza, I. I., and Pérez, Y. A. (1998). Rasgos mortuarios y artefactos inusitados de Cerro Juan Díaz, una aldea precolombina de ‘Gran Coclé’ (Panamá central). *La Antigua* **53**: 127–196.
- Cooke, R. G., and Sánchez Herrera, L. A. (2000). Cubitá: un nuevo eslabón estilístico en la tradición cerámica del ‘Gran Coclé,’ Panamá. *Precolombart* **3**: 5–20.
- Cooke, R. G., Sánchez, L. A., and Udagawa, K. (2000). Contextualized goldwork from ‘Gran Coclé,’ Panamá: An update based on recent excavations and new radiocarbon dates for associated pottery styles. In McEwan, C. (ed.), *Pre-Columbian Gold: Technology, Style and Iconography*, British Museum, London, pp. 154–176.
- Cowgill, G. L. (1997). State and society at Teotihuacan, Mexico. *Annual Review of Anthropology* **26**: 129–162.
- Craig, M. (1997). *Kundun: A Biography of the Family of the Dalai Lama*, Counterpoint, Washington, DC.
- Creamer, W. (1987). Mesoamerica as a concept: An archaeological view from Central America. *Latin American Research Review* **22**: 35–62.
- Crumley, C. L. (1995). Heterarchy and the analysis of complex societies. In Ehrenreich, R. M., Crumley, C. L., and Levy, J. E. (eds.), *Heterarchy and the Analysis of Complex Societies*, Archeological Papers, No. 6, American Anthropological Association, Washington, DC., pp. 1–5.
- Crumley, C. L. (2001). Communication, holism, and the evolution of sociopolitical complexity. In Haas, J. (ed.), *From Leaders to Rulers*, Kluwer Academic/Plenum, New York, pp. 19–33.
- Díaz, C. P. (1999). Estudio bio-antropológico de rasgos mortuarios de la Operación 4 del Sitio Arqueológico Cerro Juan Díaz, Panamá central, Tesis de licenciatura, Universidad de los Andes, Santa Fe de Bogotá, Colombia.
- Dillehay, T. D. (1995). Mounds of social death: Araucanian funerary rites and political succession. In Dillehay, T. D. (ed.), *Tombs for the Living: Andean Mortuary Practices: A Symposium at Dumbarton Oaks 12th and 13th October 1991*, Dumbarton Oaks, Washington, DC., pp. 281–314.
- Dixon, B., Hasemann, G., Brady, J. E., Gomez, P., and Beaudry-Corbett, M. (1998). Multi-ethnicity or multiple enigma? Archaeological survey in the Río Talgua drainage, Department of Olancho, Honduras. *Ancient Mesoamerica* **9**: 327–340.
- Donnan, C. B., and McClelland, D. (1999). *Moche Finesline Painting: Its Evolution and its Artists*, Fowler Museum of Cultural History, University of California, Los Angeles.
- Drennan, R. D. (1991). 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, UK, pp. 263–287.
- Drennan, R. D. (1995a). Chiefdoms in northern South America. *Journal of World Prehistory* **9**: 301–340.
- Drennan, R. D. (1995b). 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. (1996). Betwixt and between in the Intermediate Area. *Journal of Archaeological Research* **4**: 95–132.
- Drennan, R. D., and Blick, J. P. (2000). *Las sociedades prehispanicas del alto Magdalena*, Instituto Colombiano de Antropología e Historia, Bogotá.
- 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, New York, pp. 207–233.
- Drolet, R. (1988). The emergence and intensification of complex societies in Pacific southern Costa Rica. In Lange, F. W. (ed.), *Archaeology and Art in Costa Rican Prehistory: Essays in Honor of Frederick R. Mayer*, University of Colorado Press, Boulder, pp. 163–188.
- Drolet, R. (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: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC., pp. 207–242.

- Dull, R. A., Southton, J. R., and Sheets, P. D. (2001). Volcanism, ecology and culture: A reassessment of the Volcán Ilopango TBJ eruption in the southern Maya realm. *Latin American Antiquity* **12**: 25–44.
- Easby, E. K. (1968). *Pre-Columbian Jade from Costa Rica*, André Emmerich, New York.
- Ehrenreich, R. M., Crumley, C. L., and Levy, J. E. (eds.) (1995). *Heterarchy and the Analysis of Complex Societies*, Archeological Papers No. 6, American Anthropological Association, Washington, DC.
- Espinoza Pérez, E., and Rigat, D. (1994). Gran Nicoya y la región de Chontales, Nicaragua. *Vínculos* **18**: 139–156.
- Falchetti, A. M. (2000). The gold of Greater Zenu: Prehispanic metallurgy in the Caribbean lowlands of Colombia. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 132–151.
- Falk, P., Friberg, L., Salamanca, D., and Arellano, J. E. (1999). *La estuaría aborígen de Nicaragua*, Publicaciones de la Academia Nicaragüense de la Lengua. Serie Raíces, Vol. 20, Academia Nicaragüense de la Lengua, Managua.
- Feinman, G., and Neitzel, J. (1984). Too many types: An overview of sedentary prestate societies in the Americas. In Schiffer, M. B. (ed.), *Advances in Archaeological Method and Theory*, Vol. 7, Academic, Orlando, FL, pp. 39–102.
- Feinman, G. M. (2000). Dual-processual theory and social formations in the Southwest. In Mills, B. J. (ed.), *Alternative Leadership Strategies in the Prehispanic Southwest*, University of Arizona Press, Tucson, pp. 207–224.
- Feinman, G. M. (2001). Mesoamerican political complexity: The corporate-network dimension. In Haas, J. (ed.), *From Leaders to Rulers*, Kluwer Academic/Plenum, New York, pp. 151–175.
- Fernández Esquivel, P., Corrales Ulloa, F., Sáenz Samper, J., and Lleras Pérez, R. (1999). *Oro y jade: Emblemas de poder en Costa Rica*, Banco Central de Costa Rica, Museo Nacional de Costa Rica y Museo del Oro, San Jose.
- Fields, V. M., and Reents-Budet, D. (1992). Historical implications of the jade trade between the Maya lowlands and Costa Rica during the Early Classic period. In Markel, S. (ed.), *The World of Jade*, Marg, Bombay.
- Folan, W. J., Marcus, J., Pincemin, S., Dominguez Carrasco, M. D. R., Fletcher, L., and Morales López, A. (1995). Calakmul: New data from the ancient Maya capital in Campeche, Mexico. *Latin American Antiquity* **6**: 310–334.
- Fonseca, Z. O. M. (1994). El concepto de Area de Tradición Chibchoide y su pertinencia para entender Gran Nicoya. *Vínculos* **18**: 209–228.
- Fonseca, Z. O., and Cooke, R. G. (1993). El sur de la América Central: Contribución al estudio de la Región Histórica Chibcha. In Carmack, R. M. (ed.), *Historia general de Centroamérica, Vol. 1, Historia antigua*, Ediciones Siruela, Madrid, pp. 217–282.
- Fonseca, Z. O., and Richardson, J. B., III (1978). South American and Maya cultural contacts at the Las Huacas site, Costa Rica. *Annals of the Carnegie Museum* **47**: 299–317.
- Fonseca, Z. O., and Scaglione, R. (1978). Stylistic analysis of stone pendants from Las Huacas burial ground in northwestern Costa Rica. *Annals of the Carnegie Museum* **47**: 281–298.
- Furletti, R., and Vila, M. (1977). *Piedras vivas*, Guardian S. A. de Impresiones, Managua.
- 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.
- Gassiot, B. E., and Clemente, C. I. (2003). Asentamiento y sociedad durante el período en la costa atlántica de Nicaragua. URL: <http://seneca.uab.es/arqueologia-nicaragua/>. Universidad Autónoma de Barcelona, Barcelona, Spain.
- Gassiot, B. E., Briz, I., and López, A. (2003a). El Cascal de Flor de Pino. Una civilización desconocida en la costa Atlántica de Nicaragua. *Revista de Arqueología* **268**: 32–37.
- Gassiot, B. E., Clemente, C. I., and Lechado, L. (2003b). El Cascal de Flor de Pino: Descubrimiento, planimetría y datación de un conjunto arqueológico en la Costa Atlántica de Nicaragua. *Revista de Historia y Ciencias Sociales* **2**: 3–15.
- Gerstle, A. I. (1988). *Maya-Lenca Ethnic Relations in Late Classic Period Copan, Honduras*, PhD dissertation, Department of Anthropology, University of California, Santa Barbara.
- Giddens, A. (1979). *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis*, University of California Press, Berkeley.

- Gorin, F. (1990). *Archéologie de Chontales, Nicaragua*, Thèse de Nouveau Doctorat, Archaeology, Université de Paris I (Panthéon-Sorbonne), Paris.
- Graham, M. M. (1992a). Art-tools and the language of power in the early art of the Atlantic Watershed of Costa Rica. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC., pp. 165–206.
- Graham, M. M. (1992b). *Reinterpreting Prehistory of Central America*, University Press of Colorado, Niwot.
- Graham, M. M. (1995). Iconography and jade in Costa Rica. *Vínculos* 21: 17–28.
- Graham, M. M. (1998). Mesoamerican jade and Costa Rica. In Jones, J. (ed.), *Jade in Ancient Costa Rica*, Metropolitan Museum of Art, New York, pp. 39–57.
- Guerrero Miranda, J. V. (1980). La Fábrica: un sitio con rasgos arquitectónicos de la fase Curridabat (400–900 d.C.). Ms. on file, Department of Anthropology and History, Museo Nacional de Costa Rica, San Jose.
- Guerrero Miranda, J. V. (1981). Informe preliminar sobre el proyecto de rescate arqueológico en el sitio La Fábrica, Grecia. Ms. on file, Department of Anthropology and History, Museo Nacional de Costa Rica, San Jose.
- Guerrero Miranda, J. V. (1986). El contexto del jade en Costa Rica. *Vínculos* 12: 69–82.
- Guerrero Miranda, J. V. (1993). The context of jade in Costa Rica. In Lange, F. W. (ed.), *Precolumbian Jade: New Cultural and Geological Interpretations*, University of Utah Press, Salt Lake City.
- Guerrero Miranda, J. V. (1998). The archaeological context of jade in Costa Rica. In Jones, J. (ed.), *Jade in Ancient Costa Rica*, Metropolitan Museum of Art, New York, pp. 23–37.
- Guerrero Miranda, J. V., and Solís Del Vecchio, L. F. (1997). *Los pueblos antiguos del la zona Cañas-Liberia del año 300 al 1500 después de Cristo*, Museo Nacional de Costa Rica, San Jose.
- Guerrero Miranda, J. V., Solís, D. F., and Vázquez, L. R. (1994). El período Bagaces (300–800 d.C.) en la cronología arqueológica del noroeste de Costa Rica. *Vínculos* 18: 91–110.
- Gunn, J. D. (2000). *The Years Without Summer: Tracing A.D. 536 and Its Aftermath*, BAR International Series, Vol. 872, British Archaeological Reports, Oxford, England.
- Haberland, W. (1984). The archaeology of greater Chiriquí. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 233–254.
- Hartman, C. V. (1907). *Archaeological Researches on the Pacific Coast of Costa Rica*, Memoirs No. 3, Carnegie Museum, Pittsburgh.
- Healy, P. F. (1984). The archaeology of Honduras. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 113–161.
- Healy, P. F. (1992). Ancient Honduras: Power, wealth and rank in early chiefdoms. In Lange, F. W. (ed.), *Wealth and Hierarchy in the Intermediate Area: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC., pp. 85–108.
- 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 the Carnegie Museum* 62: 97–129.
- Helms, M. W. (1979). *Ancient Panama: Chiefs in Search of Power*, University of Texas Press, Austin.
- Helms, M. W. (1981). Precious metals and politics: Style and ideology in the Intermediate Area and Peru. *Journal of Latin American Lore* 7: 215–238.
- Helms, M. W. (1988). *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance*, Princeton University Press, Princeton, NJ.
- Helms, M. W. (1991). Esoteric knowledge, geographical distance, and the elaboration of leadership status: Dynamics of resource control. In Rambo, A. T., and Gillogly, K. (eds.), *Profiles in Cultural Evolution*, Anthropological Papers No. 85, Museum of Anthropology, University of Michigan, Ann Arbor, pp. 333–352.
- Helms, M. W. (1992). 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, New York, pp. 157–174.
- Helms, M. W. (1993a). Cosmological chromatics: Color-related symbolism in the ceramic art of ancient Panama. In Graham, M. M. (ed.), *Reinterpreting Prehistory of Central America*, University Press of Colorado, Niwot, pp. 209–252.
- Helms, M. W. (1993b). *Craft and the Kingly Ideal: Art, Trade, and Power*, University of Texas Press, Austin.

- 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, UK, pp. 55–60.
- Helms, M. W. (1995). *Creations of the Rainbow Serpent: Polychrome Ceramic Designs from Ancient Panama*, University of New Mexico Press, Albuquerque.
- Helms, M. W. (1998). *Access to Origins: Affines, Ancestors, and Aristocrats*, University of Texas Press, Austin.
- Helms, M. W. (2000). *The Curassow's Crest: Myths and Symbols in the Ceramics of Ancient Panama*, University Press of Florida, Gainesville.
- Herren, D. D. (1997). Preliminary investigations of the archeology of Site 3346 III: La Fábrica Nacional de Licores, Grecia, Costa Rica. Unpublished report, Associated Colleges of the Midwest, San Jose.
- Herrera, A., Solís, F., Solano, F., and Guerrero Miranda, J. V. (n.d.). La ocupación aldeano-cacical en el sitio La Fábrica, Valle Central, Costa Rica. Unpublished report, Museo Nacional de Costa Rica, San Jose.
- Herrera, V. A. (1998). Espacio y objetos funerarios en la distinción de rango social en Finca Linares. *Vínculos* 22: 125–156.
- Hoopes, J. W. (1985). Trade and exchange. In Willey, G. R., and Mathews, P. (eds.), *A Consideration of the Early Classic Period in the Maya Lowlands*, Institute for Mesoamerican Studies, Publications Vol. 10, State University of New York, Albany, pp. 145–160.
- Hoopes, J. W. (1991). The isthmian alternative: Reconstructing patterns of social organization in Formative Costa Rica. In Fowler, W. (ed.), *The Formation of Social Complexity in Southeastern Mesoamerica*, CRC, Boca Raton, pp. 171–192.
- Hoopes, J. W. (1992a). 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: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC., pp. 43–83.
- Hoopes, J. W. (1992b). A view from the south: Prehistoric exchange in lower Central America. In Baugh, T. G., and Ericson, J. (eds.), *Prehistoric Exchange Systems in North America*, Plenum, New York, pp. 247–282.
- Hoopes, J. W. (1996). Settlement, subsistence, and the origins of social complexity in Greater Chiriquí: A reappraisal of the Aguas Buenas tradition. In Lange, F. W. (ed.), *Paths to Central American Prehistory*, University Press of Colorado, Niwot, pp. 15–48.
- Hoopes, J. W., and Chenault, M. (1994). Excavations at Sitio Bolívar: A Late Formative village in the Arenal basin. In Sheets, P. D., and McKees, B. (eds.), *Archaeology, Volcanism, and Remote Sensing in the Arenal Region, Costa Rica*, University of Texas Press, Austin, pp. 87–105.
- Hoopes, J. W., and Fonseca, O. M. (2003). Goldwork and Chibchan identity: Endogenous change and diffuse unity in the Isthmo-Colombian area. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC., pp. 49–90.
- Hurtado de Mendoza, L., and Arias, A. C. (1986a). Cerámica y patrones de asentamiento en la región de Guayabo de Turrialba. In Lange, F. W., and Norr, L. C. (eds.), *Prehistoric Settlement Patterns in Costa Rica*, Journal of the Steward Anthropological Society, Vol. 14, pp. 281–322.
- Hurtado de Mendoza, L., and Arias, A. C. (1986b). A reply to Snarski's' comment. In Lange, F. W., and Norr, L. C. (eds.), *Prehistoric Settlement Patterns in Costa Rica*, Journal of the Steward Anthropological Society, Vol. 14, University of Illinois, Urbana, pp. 317–322.
- Isaza, I. I. (1993). *Desarrollo estilístico de la cerámica pintada del Panama central con énfasis en el periodo 500 a.C.–500 d.C.* Tesis de licenciatura, Departamento de Antropología, Universidad Autónoma de Guadalajara.
- Jijón y Caamaño, J. (1938). *Sebastián de Benalázar, Vol. 2: Las naciones indígenas que poblaban el occidente de Colombia al tiempo de la conquista, según los cronistas castellanos*, Editorial Ecuatoriana, Quito.
- Jones, J., (ed.) (1998). *Jade in Ancient Costa Rica*, Metropolitan Museum of Art, New York.
- Karpinsky, R. M., (ed.) (1997). *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997 – 11 enero 1998*. Ayuntamiento de Zaragoza, Spain and Museo Nacional de Costa Rica, San Jose.

- Kehoe, A. B. (2000). *Shamans and Religion: An Anthropological Exploration in Critical Thinking*, Waveland, Prospect Heights, IL.
- Kidder, A. V. (1940). South American penetrations in Middle America. In Hay, C. L. (ed.), *The Maya and Their Neighbors*, D. Appleton Century, New York, pp. 441–459.
- Kirchhoff, P. (1943). Mesoamérica. *Acta Americana* **1**: 92–107.
- Klein, C. F., Guzmán, E., Mandell, E. C., and Stanfield-Mazzi, M. (2002). The role of shamanism in Mesoamerican art: A reassessment. *Current Anthropology* **43**: 383–419.
- Kolman, C. J., and Bermingham, E. (1997). Mitochondrial and nuclear DNA diversity in the Choco and Chibcha Amerinds of Panama. *Genetics* **147**: 1289–1302.
- La Barre, W. (1971). Materials for a history of studies of crisis cults: A bibliographic essay. *Current Anthropology* **12**: 3–44.
- Labbé, A. J. (1998). *Shamans, Gods, and Mythic Beasts: Colombian Gold and Ceramics in Antiquity*, American Federation of Arts and University of Washington Press, New York.
- Lange, F. W. (ed.) (1992). *Wealth and Hierarchy in the Intermediate Area: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC.
- Lange, F. W. (1993). *Precolumbian Jade: New Geological and Cultural Interpretations*, University of Utah Press, Salt Lake City.
- Lange, F. W. (1996a). Gaps in our databases and blanks in our syntheses: The potential for Central American archaeology in the twenty-first century. In Lange, F. W. (ed.), *Paths to Central American Prehistory*, University Press of Colorado, Niwot, pp. 305–326.
- Lange, F. W. (ed.) (1996b). *Paths to Central American Prehistory*, University Press of Colorado, Niwot.
- Lange, F. W., and Scheidenheim, K. (1972). The salvage archaeology of a Zoned Bichrome cemetery. *American Antiquity* **37**: 240–245.
- Lange, F. W., and Stone, D. Z. (1984). Introduction. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 3–12.
- Langebaek, R. C. H. (1992). *Noticias de caciques muy mayores: origen y desarrollo de sociedades complejas en el nororiente de Colombia y norte de Venezuela*, Universidad de los Andes, Santafé de Bogotá, Colombia.
- Langebaek, R. C. H. (1995). *Regional Archaeology in the Muisca Territory: A Study of the Fúquene and Susa Valleys* *Arqueología regional en el territorio muisca: estudio de los valles de Fúquene y Susa*, Memoirs in Latin American Archaeology, Vol. 9, University of Pittsburgh, and Departamento de Antropología, Universidad de los Andes, Bogotá.
- Langebaek, R. C. H. (1996). *Noticias de caciques muy mayores: origen y desarrollo de sociedades complejas en el nororiente de Colombia y norte de Venezuela, segunda edición revisada*, Editorial Universidad de Antioquía, Medellín, Colombia.
- Langebaek, R. C. H. (in press). *Poblamiento prehispánico de las bahías de Santa Marta: Contribución al estudio del desarrollo de los cacizgos tairona del norte de Colombia*, Universidad de los Andes, Bogotá.
- Langebaek, R. C. H., and Cardenas Arroyo, F. (1996). *Chieftains, Power and Trade: Regional Interaction in the Intermediate Area of the Americas* *Caciques, intercambio y poder: interacción regional en el área intermedia de las Américas*, Departamento de Antropología Universidad de los Andes, Bogotá, Colombia.
- Langebaek, R. C. H., and Dever, A. (2000). *Arqueología en el Bajo Magdalena: un estudio de los primeros agricultores del Caribe colombiano*, Informes Arqueológicos del Instituto Colombiano de Antropología e Historia, Vol. 1, Instituto Colombiano de Antropología e Historia, Bogotá.
- Linares, O. F., and Sheets, P. D. (1980). Highland agricultural villages in the Volcán Barú region. In Linares, O. F., and Raner, A. J. (eds.), *Adaptive Radiations in Prehistoric Panama*, Peabody Museum Monographs, Vol. 5, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, pp. 44–55.
- Linares, O. F., Sheets, P. D., and Rosenthal, E. J. (1975). Prehistoric agriculture in tropical highlands. *Science* **187**: 137–145.
- Lindstrom, L. (1984). Doctor, lawyer, wise man, priest: Big-men and knowledge in Melanesia. *Man* **19**: 291–309.
- Lleras Pérez, R. (1995). Diferentes oleadas de poblamiento en la prehistoria tardía de los Andes Orientales. *Boletín Museo de Oro* **38–39**: 3–11.

- Lleras Pérez, R. (2000). The iconography and symbolism of metallic votive offerings in the Eastern Cordillera, Colombia. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 112–132.
- Loewen, J. A. (1963). Chocó I: Introduction and bibliography. *International Journal of American Linguistics* **29**: 239–263.
- Lothrop, S. K. (1937). *Coclé, An Archaeological Study of Central Panama, Part 1*, Memoirs of the Peabody Museum of Archaeology and Ethnology, Vol. 7, Harvard University, Cambridge.
- Lothrop, S. K. (1940). South American as seen from Middle America. In Hay, C. L. (ed.), *The Maya and Their Neighbors*, D. Appleton Century, New York, pp. 88–144.
- Lothrop, S. K. (1942). *Coclé: An Archaeological Study of Central Panama, Part 2*, Memoirs of the Peabody Museum of Archaeology and Ethnography, Vol. 8, Harvard University, Cambridge.
- Lothrop, S. K. (1952). *Metals from the Cenote of Sacrifice, Chichen Itza, Yucatan*. Memoirs of the Peabody Museum of Archaeology and Ethnology, Vol. 10, No. 2, Harvard University, Cambridge.
- Lothrop, S. K. (1954). Suicide, sacrifice and mutilations in burials at Venado Beach, Panama. *American Antiquity* **19**: 226–234.
- Lothrop, S. K. (1963). *Archaeology of the Diquís Delta, Costa Rica*, Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 51, Harvard University, Cambridge.
- Magnus, R. W. (1974). *The Prehistory of the Mosquito Coast of Nicaragua: Study in Cultural Relationships*, PhD Thesis, Department of Anthropology, Yale University, New Haven.
- Magnus, R. W. (1975). La secuencia cerámica de la Costa Atlántica de Nicaragua. *Boletín Nicaragüense de Bibliografía y Documentación* **4**: 1–10.
- Magnus, R. W. (1976). La costa Atlántica de Nicaragua. *Vínculos* **2**: 67–74.
- Magnus, R. W. (1977). La costa Atlántica de Nicaragua. *Boletín Nicaragüense de Bibliografía y Documentación* **16**: 1–6.
- Magnus, R. W. (1978). The prehistoric and modern subsistence patterns of the Atlantic coast of Nicaragua: A comparison. In Stark, B. L., and Voorhies, B. (eds.), *Prehistoric Coastal Adaptations: The Economy and Ecology of Maritime Middle America*, Academic, New York and London, pp. 61–80.
- Martin, S., and Grube, N. (2001). *Chronicle of the Maya Kings and Queens: Deciphering the Dynasties of the Ancient Maya*, Thames and Hudson, New York.
- Mason, J. A. (1931). *Archaeology of Santa Marta, Colombia. The Tairona Culture, Pt. 1: Report on Field Work*, Anthropological Series, Vol. 20 (Pub. 304), Field Museum of Natural History, Chicago.
- Mason, J. A. (1936). *Archaeology of Santa Marta, Colombia. The Tairona Culture, Pt. 2, Sec. 1: Objects of Stone, Shell, Bone, and Metal*, Anthropological Series, Vol. 20 (Pub. 358), Field Museum of Natural History, Chicago.
- Mason, J. A. (1939). *Archaeology of Santa Marta, Colombia. The Tairona Culture, Pt. 2, Sec. 2: Objects of Pottery*, Anthropological Series, Vol. 20 (Pub. 446), Field Museum of Natural History, Chicago.
- Mason, J. A. (1940). The native languages of Middle America. In Hay, C. L. (ed.), *The Maya and Their Neighbors*, D. Appleton Century, New York, pp. 52–87.
- McEwan, C. (ed.) (2000). *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborns, Chicago.
- Millon, R. (1992). Teotihuacan studies: From 1950 to 1990 and beyond. In Berlo, J. C. (ed.), *Art, Ideology, and the City of Teotihuacan*, Dumbarton Oaks, Washington, DC., pp. 339–401.
- Mora Marin, D. (2002). An Epi-Olmec jade pendant found in Costa Rica. *Mexicon* **24**: 14–19.
- Morley, S. G. (1946). *The Ancient Maya*, Stanford University Press, Palo Alto, CA.
- Mueller, M. (1986). *Settlement in the Cuenca de Arenal, Northwestern Costa Rica*, MA thesis, Department of Anthropology, University of Colorado, Boulder.
- Mueller, M. (1994). Archaeological survey in the Arenal Basin. In Sheets, P. D., and McKee, B. (eds.), *Archaeology, Volcanism, and Remote Sensing in the Arenal Region, Costa Rica*, University of Texas Press, Austin, pp. 48–72.
- Norr, L. C. (1986). Archaeological site survey and burial mound excavations in the Río Naranjo/Bijagua Valley of the Guanacaste Cordillera. In Lange, F. W., and Norr, L. C. (eds.), *Prehistoric Settlement Patterns in Costa Rica*, Journal of the Steward Anthropological Society, Vol. 14, University of Illinois, Urbana, pp. 1–2.
- Oberg, K. (1955). Types of social structure among the lowland tribes of South and Central America. *American Anthropologist* **57**: 472–487.

- Oyuela, A. (1986). Contribución a la periodización cultural en el litoral del Parque Tairona. *Boletín de Arqueología* **1**: 24–28.
- Oyuela, 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, A. (1995). Centralización e integración en la Sierra Nevada de Santa Marta. *Boletín del Museo del Oro* **38–39**: 113–133.
- Oyuela, A. (1996). The study of collector variability in the transition to sedentary food producers in northern Colombia. *Journal of World Prehistory* **10**: 49–93.
- Oyuela, A. (2001). The rise of religious routinization: The study of changes from shaman to priestly elite. In Staller, J. E., and Currie, E. J. (eds.), *Mortuary Practices and Ritual Associations: Shamanic Elements in Prehistoric Funerary Contexts in South America*, BAR International Series, Vol. 982, British Archaeological Reports, Oxford, pp. 5–17.
- Oyuela, A. (2002). El surgimiento de la rutinización religiosa: La conformación de la elite sacerdotal tairona-kogi. *Arqueología del Area Intermedia* **4**: 45–64.
- Oyuela, A., and Raymond, J. S. (1998). Cupica (Chocó): A reassessment of Gerardo Reichel-Dolmatoff's fieldwork in a poorly studied region of the American tropics. In Oyuela-Caycedo, A., and Raymond, J. S. (eds.), *Recent Advances in the Archaeology of the Northern Andes: In Memory of Gerardo Reichel-Dolmatoff*, Institute of Archaeology, University of California, Los Angeles, pp. 91–106.
- Parkinson, W. A. (2002). *The Archaeology of Tribal Societies*, International Monographs in Prehistory, Ann Arbor, MI.
- Parsons, L. A. (1993). The Izapa style and the Tibas jade. In Lange, F. W. (ed.) *Precolumbian Jade: New Geological and Cultural Interpretations*, University of Utah Press, Salt Lake City, pp. 251–259.
- Pendergast, D. (1970). Tumbaga object from the Early Classic period, found at Altun Ha, British Honduras (Belize). *Science* **168**: 116–118.
- Plazas, C. (1978). Tesoro de los Quimbayas y piezas de orfebrería relacionadas. *Boletín Museo del Oro* **2**: 21–28.
- Plazas, C. (1998). Cronología de la metalurgia colombiana. *Boletín del Museo del Oro* **44–45**: 3–78.
- Pohorilenko, A. (1981). The Olmec style and Costa Rican archaeology. In Benson, E. P. (ed.), *The Olmec and their Neighbors*, Dumbarton Oaks, Washington, DC, pp. 309–327.
- Quilter, J. (2000). The General and the Queen: Gold objects from a ceremonial and mortuary complex in southern Costa Rica. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 177–195.
- Quilter, J., and Hoopes, J. W. (eds.) (2003). *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC.
- Quilter, J., and Vargas, A. B. (1995). Monumental architecture and social organization at the Rivas site, Costa Rica. *Journal of Field Archaeology* **22**: 203–221.
- Quintanilla Jiménez, I., and Fernández, P. (2003). Metallurgy, balls, and stone statuary in the Diquís Delta, Costa Rica: Local production of power symbols. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 205–244.
- Redmond, E. M. (1998). Introduction: The dynamics of chieftancy and the development of chiefdoms. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 1–17.
- Reents-Budet, D., and Fields, V. (1991). Incised Early Classic Maya jade plaques from Costa Rica. Ms. on file, Smithsonian Centers for Materials Research and Education, Smithsonian Institution, Washington, DC.
- Reichel-Dolmatoff, G. (1965). *Colombia*, Praeger, New York.
- Reichel-Dolmatoff, G. (1976). Training for the priesthood among the Kogi of Colombia. In Wilbert, J. (ed.), *Enculturation in Latin America: An Anthology*, Latin American Study Series, Latin American Center, University of California, Los Angeles, pp. 265–288.
- Reichel-Dolmatoff, G. (1985). *Los Kogi. Una tribu de la Sierra Nevada de Santa Marta*, Procultura, Bogota.
- Reichel-Dolmatoff, G. (1988). *Orfebrería y chamanismo: Un estudio iconográfico del Museo del Oro*, Editorial Colina, Medellín.
- Reichel-Dolmatoff, G. (1990). *The Sacred Mountain of Colombia's Kogi Indians*, Iconography of Religions, Vol. Section IX: South America, Fasc. 2, E.J. Brill, New York.

- Reichel-Dolmatoff, G., Reichel-Dolmatoff, A., and Rouillard, P. (1999). *Sierra Nevada de Santa Marta, tierra de hermanos mayores*, Editorial Corina, Bogota.
- Renfrew, C. (1974). Beyond a subsistence economy: The evolution of social organisation in prehistoric Europe. In Moore, C. B. (ed.), *Reconstructing Complex Societies: An Archaeological Colloquium*, Supplement to the Bulletin of the American Schools of Oriental Research, Vol. 20, Ann Arbor, pp. 69–95.
- Reyes Mazzoni, R. (1976). *Introducción a la arqueología de Honduras*, Editorial Nuevo Continente, Tegucigalpa.
- Rigat, D. (1992). *Prehistoire au Nicaragua: Region Juigalpa, Departement de Chontales*, Tesis de Doctorado, Université de Paris I (Pantheon-Sorbonne), Paris.
- Rigat, D., and González Rivas, R. (1996). Preliminary research in Chontales and the Lake Managua basin, Nicaragua. In Lange, F. W. (ed.), *Paths to Central American Prehistory*, University Press of Colorado, Niwot, pp. 177–190.
- Rodríguez Cuenca, J. V. (2001). *Los chibchas: adaptación y diversidad en los Andes orientales de Colombia*, Facultad de Ciencias Humanas, Departamento de Antropología Universidad Nacional de Colombia, Bogota.
- Romoli, K. (1987). *Los de la lengua cueva: Los grupos indígenas del istmo oriental en la época de la conquista española*, Instituto Colombiano de Antropología, Bogota.
- Sáenz Samper, J., and Lleras Pérez, R. (1999). Las relaciones pre-hispánicas entre los territorios de Costa Rica y Colombia. In *Oro y jade: Emblemas de poder en Costa Rica*, Banco Central de Costa Rica, Museo Nacional de Costa Rica y Museo del Oro, San Jose, pp. 67–89.
- Sánchez Herrera, L. A. (1995). Análisis estilístico de dos componentes cerámicos de Cerro Juan Díaz: Su relación con el surgimiento de las sociedades cacicales en Panamá (450–650 d.C.). Licenciatura, Escuela de Antropología y Sociología, Universidad de Costa Rica.
- Sánchez Herrera, L. A. (2001). Panamá: archéologie et évolution culturelle. In Snarskis, M. J., Salgado, S., and Sanchez Herrera, L. A. (eds.), *Arts precolombiens de l'Amérique centrale dans les collections du musée Barbier-Mueller de Barcelone: Nicaragua, Costa Rica et Panama*, Musée Barbier-Mueller, Paris, Geneve, pp. 115–145.
- Sánchez Herrera, L. A., and Cooke, R. G. (1998). Quién presta y quién imita? ofebrería e iconografía en “Gran Coclé,” Panama. *Boletín del Museo del Oro* **42**: 87–111.
- Sanders, W. T., and Webster, D. (1978). Unilinealism, multilinealism, and the evolution of Complex Societies. In Redman, C. L., Berman, M. J., Curtin, E. V., Langhorne, W. T., Jr., Versaggi, N. M., and Wanser, J. C. (eds.), *Social Archeology: Beyond Subsistence and Dating*, Academic, New York, pp. 249–302.
- Seitz, R., Harlow, G. E., Sisson, V. B., and Taube, K. A. (2001). ‘Olmec Blue’ and Formative jade sources: New discoveries in Guatemala. *Antiquity* **75**: 687–688.
- Shady Solís, R., Haas, J., and Creamer, W. (2001). Dating Caral, a Preceramic site in the Supe Valley on the central coast of Peru. *Science* **292**: 723–726.
- Sheets, P. D., and McKee, B. R. (1994). *Archaeology, Volcanism, and Remote Sensing in the Arenal region, Costa Rica*, University of Texas Press, Austin.
- Snarskis, M. J. (1978). *The Archaeology of the Central Atlantic Watershed of Costa Rica*, PhD dissertation, Department of Anthropology, Columbia University, New York.
- Snarskis, M. J. (1979). El jade de Talamanca de Tibás. *Vínculos* **5**: 89–107.
- Snarskis, M. J. (1984a). Central America: The lower Caribbean. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 195–232.
- Snarskis, M. J. (1984b). Prehistoric micro-settlement patterns in eastern and central Costa Rica. In Lange, F. W. (ed.), *Recent Developments in Isthmian Archaeology*, BAR International Series, Vol. 212, British Archaeological Reports, Oxford, pp. 153–177.
- Snarskis, M. J. (1986). A comment on Hurtado de Mendoza and Arias. In Lange, F. W., and Norr, L. C. (eds.), *Prehistoric Settlement Patterns in Costa Rica*, Journal of the Steward Anthropological Society, Vol. 14, University of Illinois, Urbana, pp. 311–316.
- 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: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*, Dumbarton Oaks, Washington, DC., pp. 141–164.
- Snarskis, M. J. (1998). The imagery and symbolism of Precolumbian jade in Costa Rica. In Jones, J. (ed.), *Jade in Ancient Costa Rica*, Metropolitan Museum of Art, New York, pp. 59–91.

- Snarskis, M. J. (2001). Le Costa Rica précolombien. In Snarskis, M. J., Salgado, S., and Sanchez Herrera, L. A. (eds.), *Arts precolombiens de l'Amérique centrale dans les collections du Musée Barbier-Mueller de Barcelone: Nicaragua, Costa Rica et Panama*, Musee Barbier-Mueller, Paris, Geneve, pp. 67–114.
- Snarskis, M. J. (2003). From jade to gold in Costa Rica: How, why, and when. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 159–204.
- Snarskis, M. J., Salgado, S., and Sanchez Herrera, L. A. (eds.). (2001). *Arts precolombiens de l'Amérique centrale dans les collections du Musée Barbier-Mueller de Barcelone: Nicaragua, Costa Rica et Panama*, Musee Barbier-Mueller, Paris, Geneve.
- Squier, E. G. (1852). *Nicaragua: Its People, Scenery, Monuments, and the Proposed Interoceanic Canal*, London.
- Steward, J. (1948a). Culture areas of the tropical forests. In Steward, J. H. (ed.), *Handbook of South American Indians, Vol. 3, The Tropical Forest Tribes*, Bulletin 143, Bureau of American Ethnology, Smithsonian Institution, Washington, DC, pp. 883–889.
- Steward, J. (1948b). *Handbook of South American Indians, Vol. 4, The Circum-Caribbean Tribes*, Bulletin 143, Bureau of American Ethnology, Smithsonian Institution, Washington, DC.
- Stirling, M. W. (1950). Exploring ancient panama by helicopter. *National Geographic Magazine* **97**: 227–246.
- Stone, D. Z. (1941). *The Archaeology of the North Coast of Honduras*, Memoirs of the Peabody Museum of Archaeology and Ethnology, Vol. 1, Harvard University, Cambridge, MA.
- Stone, D. Z., and Balsler, C. (1965). Incised slate disks from the Atlantic Watershed of Costa Rica. *American Antiquity* **30**: 310–329.
- Strong, W. D. (1934). An archaeological cruise among the Bay Islands of Honduras. *Smithsonian Institution Explorations and Fieldwork*, **1933–1934**: 44–48.
- Strong, W. D. (1935). *Archaeological Investigations in the Bay Islands*, Smithsonian Miscellaneous Collection, Vol. 92, Smithsonian Institution, Washington, DC.
- Torroni, A., Neel, J. V., Barrantes, R., Schurr, T. G., and Wallace, D. C. (1994). Mitochondrial DNA “clock” for the Amerinds and its implications for timing their entry into North America. *Proceedings of the National Academy of Sciences* **91**: 1158–1162.
- Trimbom, H. (1960). South Central America and the Andean civilizations. In Krickeberg, W. (ed.), *Pre-Columbian American Religions*, Weidenfeld and Nicolson, London, pp. 83–146.
- Uhle, M. (1890). Verwandtschaften un Wanderungen der Tschibtscha. In *Actas del VII Congreso Internacional de Americanistas, 1888*, Berlin, pp. 466–489.
- van Broekhoven, L. N. K. (2002). *Conquistando lo invencible: fuentes históricas sobre las culturas indígenas de la región central de Nicaragua*, Mededelingen van het Rijksmuseum voor Volkenkunde, Leiden, Vol. 31, CNWS Publications, Leiden University, Leiden, The Netherlands.
- van der Hammen, T. (1970). Ensayo de un esquema en tiempo y espacio de la vegetación y el medio ambiente en el noroeste de Suramérica. *Revista Académica Colombiana de Ciencias Exactas, Físicas y Naturales* **13**: 473–479.
- van der Hammen, T. (1986a). Datos eco-climáticos del trayecto Buritaca y alrededores (Sierra Nevada de Santa Marta). In van der Hammen, T., and Ruiz, P. M. (eds.), *Studies on Tropical Andean Ecosystems = Estudios de ecosistemas tropandinos*, Vol. 2, J. Cramer, Berlin, Stuttgart, pp. 45–66.
- van der Hammen, T. (1986b). Datos sobre la historia de clima, vegetación y glaciación de la Sierra Nevada de Santa Marta. In van der Hammen, T., and Ruiz, P. M. (eds.), *Studies on Tropical Andean Ecosystems = Estudios de ecosistemas tropandinos*, Vol. 2, J. Cramer, Berlin, Stuttgart, pp. 561–580.
- van der Hammen, T., and Noldus, W. G. (1986). Paleoeología de la Ciénaga Grande de Santa Marta. In van der Hammen, T., and Ruiz, P. M. (eds.), *Studies on Tropical Andean Ecosystems = Estudios de ecosistemas tropandinos*, Vol. 2, J. Cramer, Berlin, Stuttgart, pp. 581–588.
- Vidal F., M. L. (1971). Las “estatuas” de Barriles, Chiriquí—República de Panamá. *Antiquitas: Boletín de la Asociación Amigos del Instituto de Arqueología, Facultad de Historia y Letras de la Universidad del Salvador (Argentina)*, pp. 1–19.
- Vidal F., M. L. (1993). *Las “estatuas” de Barriles, Chiriquí, República de Panamá*, Edición Fundación del Rosario, Buenos Aires, Argentina.
- Vitebsky, P. (2001). *Shamanism*, University of Oklahoma Press, Norman.

- Willey, G. R. (1984). A summary of the archaeology of lower Central America. In Lange, F. W., and Stone, D. Z. (eds.), *The Archaeology of Lower Central America*, University of New Mexico Press, Albuquerque, pp. 341–378.
- Wynn, J. T. (1975). *Buritaca Ceramic Chronology: A Seriation from the Tairona Area*, PhD dissertation, Department of Anthropology, University of Missouri, Columbia.

BIBLIOGRAPHY OF RECENT LITERATURE

- Barrantes, R. (1998). Orígen y relaciones entre los amerindios chibcha de Costa Rica: una perspectiva genética y evolutiva. In Bozzoli, M. E., Barrantes, R., Obando, D., and Rojas, M. (eds.), *Congreso científico sobre pueblos indígenas de Costa Rica y sus fronteras*, Editorial de la Universidad Estatal a Distancia, San José, Costa Ricas, pp. 3–14.
- Batista, O. I., Kolman, C. J., Arias, T. D., Guionneau-Sinclair, F., Quirós, E., and Bermingham, E. (1998). Variación en el ADNmt de dos tribus amerindias chibchas, los ngöbé y cuna de Panamá. In Bozzoli, M. E., Barrantes, R., Obando, D., and Rojas, M. (eds.), *Congreso científico sobre pueblos indígenas de Costa Rica y sus fronteras*, Editorial de la Universidad Estatal a Distancia, San Jose, Costa Rica, pp. 15–35.
- Beaudry-Corbett, M., Brady, J. E., Dixon, B., Gomez, P., Hasemann, G., and Reents-Budet, D. (1997). North central Honduras: A Maya landscape? In Cordy-Collins, A., and Johnson, G. (eds.), *Proceedings of the 1995 and 1996 Latin American Symposia: "Death, Burial and the Afterlife" and "Landscapes and Mindscales of the Ancient Maya,"* San Diego Museum Papers, Vol. 34, San Diego Museum, San Diego, pp. 49–66.
- Brady, J. E. (1997). Palaces of the dead: Glimpses of the afterlife from a Middle Preclassic cave ossuary. In Cordy-Collins, A., and Johnson, G. (eds.), *Proceedings of the 1995 and 1996 Latin American Symposia: "Death, Burial and the Afterlife" and "Landscapes and Mindscales of the Ancient Maya,"* San Diego Museum Papers, Vol. 34, San Diego Museum, San Diego, pp. 21–32.
- Bray, W. (2003). Gold, stone, and ideology: Symbols of power in the Tairona tradition of northern Colombia. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC., pp. 301–344.
- Calvo Mora, M., and Bonilla Vargas, L. (1997). La fabricación de objetos en las sociedades precolombinas. In *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997 – 11 enero 1998*, Ayuntamiento de Zaragoza, Zaragoza, Spain, and Museo Nacional de Costa Rica, San Jose, pp. 39–42.
- Coates, A. G. (1997). *Central America: A Natural and Cultural History*, Yale University Press, New Haven, CT.
- Cooke, R. (1997). The native populations of Central America during Precolumbian and Colonial times. In Coates, A. G. (ed.), *Central America: A Natural and Cultural History*, Yale University Press, New Haven, CT, pp. 137–176.
- Cooke, R. G. (2001). Gran Coclé. In Peregrine, P. N., and Ember, M. (eds.), *Encyclopedia of Prehistory, Volume 5: Middle America*, Kluwer/Plenum, New York, pp. 197–203.
- Corrales Ulloa, F. (1997). Gente de piedra, arcilla y metal: La ocupación precolombina de Costa Rica. In *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997 – 11 enero 1998*, Ayuntamiento de Zaragoza, Zaragoza, Spain, and Museo Nacional de Costa Rica, San Jose, Costa Rica, pp. 15–30.
- Corrales Ulloa, F. (1999a). El pasado negado: La arqueología y la construcción de la nacionalidad costarricense. *Vínculos* 24: 1–26.
- Corrales Ulloa, F. (1999b). Surgimiento y desarrollo de la sociedad compleja en la Costa Rica precolombina. In *Oro y jade: Emblemas de poder en Costa Rica*, Banco Central de Costa Rica Museo Nacional de Costa Rica y Museo del Oro, San Jose, pp. 16–37.
- Corrales Ulloa, F. (2000). *An Evaluation of Long Term Cultural Change in Southern Central America: The Ceramic Record of the Diquís Archaeological Subregion, Southern Costa Rica*, PhD dissertation, Department of Anthropology, University of Kansas, Lawrence.
- Di Cosimo, P. (1999). Arte rupestre del Sitio H y La Cueva del Murciélago, Archipelago de Solentiname, Nicaragua. *Vínculos* 24: 27–52.

- Espinoza Pérez, E., García Vásquez, R., and Suganuma, F. (1999). *Rescate arqueológico en el sitio San Pedro, Malacatoya, Granada, Nicaragua*, Instituto Nicaragüense de Cultura Departamento de Investigaciones Antropológicas and Museo Nacional de Nicaragua, Managua.
- Falchetti, A. M. (2003). The seed of life: The symbolic power of gold-copper alloys and metallurgical transformations. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 345–382.
- Fernández Esquivel, P. (1997). Algunas nociones sobre simbolismo orfebre. In *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997 – 11 enero 1998*, Ayuntamiento de Zaragoza, Zaragoza, Spain, and Museo Nacional de Costa Rica, San Jose, Costa Rica, pp. 39–42.
- Fernández Esquivel, P. (1999). Símbolos de prestigio y expresiones de rango en la Costa Rica prehispánica. In *Oro y jade: Emblemas de poder en Costa Rica*, Banco Central de Costa Rica, Museo Nacional de Costa Rica y Museo del Oro, San Jose, pp. 38–66.
- Fitzgerald, C. B. (1998). Aproximación al estudio de los cacicazgos en el Área intermedia y Panamá. In Pastor, A. (ed.), *Antropología panameña: Pueblos y culturas*, Colección de Libros de la Facultad de Humanidades, Vol. 1, Editorial Universitaria, Panama, pp. 153–172.
- Fonseca, Z. O. (1997). La confirmación de los espacios históricos, el caso de América Central y el noroccidente Colombiano, In *III Simposio Panamericano de Historia*, Instituto Panamericano de Geografía e Historia, Mexico, pp. 21–357.
- Fonseca, Z. O. M. (1998). El espacio histórico de los amerindios de filiación chibcha: el área histórica chibchoide. In Bozzoli, M. E., Barrantes, R., Obando, D., and Rojas, M. (eds.), *Congreso Científico sobre pueblos indígenas de Costa Rica y sus fronteras*, Editorial de la Universidad Estatal a Distancia, San Jose, Costa Rica, pp. 36–60.
- Fontana, C. A. (1997). Diseño de los metates del Museo del Jade. In *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997–11 enero 1998*, Ayuntamiento de Zaragoza, Zaragoza, Spain, and Museo Nacional de Costa Rica, San Jose, pp. 35–34.
- Graham, M. M. (2003). Creation imagery in the goldwork of Costa Rica, Panama, and Colombia. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 279–300.
- Guerrero Miranda, J. V. (1997). El jade en la Costa Rica prehispánica. In *El Oro de América: Tesoros precolombinos de Costa Rica, La Lonja, Zaragoza, 3 octubre 1997–11 enero 1998*, Ayuntamiento de Zaragoza, Zaragoza, Spain, and Museo Nacional de Costa Rica, San Jose, pp. 31–34.
- Gutiérrez, G. M. (1998). La ictiofauna del sitio arqueológico Nacascolo, Bahía Culebra, Guanacaste. *Vínculos 22*: 157–187.
- Haas, J. (2001). *From Leaders to Rulers*, Kluwer/Plenum, New York.
- Harlow, G. E., and Sorenson, S. S. (2001). Jade: Occurrence and metasomatic origin. *The Australian Gemologist 21*: 7–10.
- Hasemann, G., Lara Pinto, G., and Cruz Sandoval, F. (1997). *Los indios de Centroamérica*, Editorial MAPFRE, Madrid.
- Hernández, C. M. A. (1998). Manzanillo: Sitio costero multicomponente en Bahía Culebra, Guanacaste. *Vínculos 22*: 79–124.
- Hoopes, J. W. (2001a). Early Chibcha. In Peregrine, P. N., and Ember, M. (eds.), *Encyclopedia of Prehistory. Vol. 5: Middle America*, Kluwer/Plenum, New York.
- Hoopes, J. W. (2001b). An embarrassment of riches: Sitio Conte online. *The SAA Archaeological Record 1*: 30–33.
- Hoopes, J. W. (2001c). Late Chibcha. In Peregrine, P. N., and Ember, M. (eds.), *Encyclopedia of Prehistory. Vol. 5: Middle America*, Kluwer/Plenum, New York.
- Horn, S. P., and Kennedy, I. M. (2001). Pollen evidence of maize cultivation 2700 years ago at La Selva Biological Station, Costa Rica. *Biotrópica 33*: 191–196.
- Horn, S. P., and Sanford, R. L. (1992). Holocene fires in Costa Rica. *Biotrópica 24*: 354–361.
- Hosler, D. (1997). Los orígenes del a metalurgia del occidente de México. *Boletín del Museo del Oro 42*: 3–26.
- Ibarra, R. E. (1998). Las epidemias del Viejo Mundo entre los indígenas de Costa Rica antes de la conquista española: mito o realidad? (1502–1561). *Mesoamérica 36*: 593–618.
- Ibarra, R. E. (1999a). *Las manchas del jaguar: Huellas indígenas en la historia de Costa Rica (Valle Central siglos XVI–XX)*, Editorial de la Universidad de Costa Rica, San Jose.

- Ibarra, R. E. (1999b). Política y etnicidad en sociedades en transición en la zona sur de Costa Rica: Boruca y Talamanca Siglos XVI al XIX. *Vínculos* **24**: 121–151.
- Ibarra, R. E. (2001). *Fronteras étnicas en la conquista de Nicaragua y Nicoya: entre la solidaridad y el conflicto, 800 d.C.–1544*, Vol. 20, Plumsock Mesoamerican Studies, Asociación Pro-Historia Centroamericana, South Woodstock, VT.
- Ibarra, R. E. (2003). Gold in the everyday lives of indigenous peoples of sixteenth-century southern Central America. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 383–419.
- Keegan, W., Maclachlan, M., and Byrne, B. (1998). Social foundations of Taino caciques. In Redmond, E. M. (ed.) *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 217–244.
- Kennedy, L. M., and Horn, S. P. (1997). Prehistoric maize cultivation at the La Selva Biological Station. *Biotrópica* **29**: 368–370.
- Kurella, D. (1998). The Muisca: Chiefdoms in transition. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 189–216.
- Langebaek, R. C. H. (2003). The political economy of pre-Columbian gold work: Four examples from northern South America. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 245–278.
- Langebaek, R. C. H., and Dever, A. (2000). *Arqueología en el Bajo Magdalena: un estudio de los primeros agricultores del Caribe colombiano*, Informes Arqueológicos del Instituto Colombiano de Antropología e Historia, Vol. 1, Instituto Colombiano de Antropología e Historia, Bogotá.
- Legat, A. (1998). Feline symbolism and material culture in prehistoric Colombia. In Saunders, N. J. (ed.), *Icons of Power: Feline Symbolism in the Americas*, Routledge, London.
- Lleras Pérez, R. (1997). *Prehispanic Metallurgy and Votive Offerings in the Eastern Cordillera, Colombia*, PhD Dissertation, Institute of Archaeology, University College, London.
- Lleras Pérez, R. (2000). The iconography and symbolism of metallic votive offerings in the Eastern Cordillera, Colombia. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 112–132.
- Looper, M. G. (1997). The iconography and social context of Tairona gold pectorals. *Journal of Latin American Lore* **19**: 101–128.
- Luke, B. A., Begley, C. T., Chase, D. S., Ross, A., and Brady, J. E. (1997). Rapid-response geophysical site investigation at a pre-columbian settlement in Honduras. In *Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP)*, Environmental and Engineering Society, Wheat Ridge, CO, pp. 983–992.
- Luke, B. A., and Brady, J. E. (1998). Application of seismic surface waves at a pre-Columbian settlement in Honduras. *Archaeological Prospection* **5**: 139–157.
- Meggers, B. J. (1997). La cerámica temprana en América del Sur: Invención independiente o difusión? *Revista de Arqueología Americana* **13**: 7–40.
- Northrop, L. A., and Horn, S. P. (1996). PreColumbian agriculture and forest disturbance in Costa Rica: Paleocological evidence from two rainforest lakes. *The Holocene* **6**: 289–299.
- Oliver, J. R. (2000). Gold symbolism among Caribbean chiefdoms: Of feathers, *çibas*, and *guanín* power among Taino elites. In McEwan, C. (ed.), *Precolumbian Gold: Technology, Style, and Iconography*, Fitzroy Dearborn, Chicago, pp. 196–219.
- Quilter, J. (1998). Metallic reflections. *Science* **282**: 1058–1059.
- Quilter, J. (2003). Introduction: The golden bridge of the Darien. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC., pp. 1–14.
- Quilter, J. (2004). *Cobble Circles and Standing Stones: Archaeology at the Rivas Site, Costa Rica*. University of Iowa Press, Iowa City.
- Redmond, E. M., (ed.) (1998a). *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville.
- Redmond, E. M. (1998b). In war and peace: Alternative paths to centralized leadership. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 68–103.
- Reichel-Dolmatoff, G. (1997). *Arqueología de Colombia: Un texto introductorio*, Biblioteca Familiar de la Presidencia de la Republica, Magistra Editores, Bogotá.
- Reichel-Dolmatoff, G. (1998). *Colombia indígena*, Colina, Bogotá.

- Reichel-Dolmatoff, G., Reichel-Dolmatoff, A., and Rouillard, P. (1999). *Sierra Nevada de Santa Marta, tierra de hermanos mayores*, Editorial Corina, Bogota.
- Salgado, S. (2001). Anciens peuplements du Nicaragua. In Snarskis, M. J., Salgado, S., and Sanchez Herrera, L. A. (eds.), *Arts precolombiens de l'Amérique centrale dans les collections du Musée Barbier-Mueller de Barcelone: Nicaragua, Costa Rica et Panama*, Musée Barbier-Mueller, Paris, pp. 47–66.
- Saunders, N. J. (1998a). *Icons of Power: Feline Symbolism in the Americas*, Routledge, London.
- Saunders, N. J. (1998b). Stealers of light, traders in brilliance: Amerindian metaphysics in the mirror of conquest. *Research* **33**: 225–252.
- Saunders, N. J. (2003). “Catching the light: Technologies of power and enchantment in pre-Columbian goldworking. In Quilter, J., and Hoopes, J. W. (eds.), *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, Dumbarton Oaks, Washington, DC, pp. 15–48.
- Snarskis, M. J. (1997). *Review of Paths to Central American Prehistory*. In Lange, F. W. (ed.), *Latin American Antiquity* **8**: 277–279.
- Snarskis, M. J. (1998). Stone sculpture and Pre-Columbian cultural evolution in the Central Highlands-Atlantic Watershed of Costa Rica/La sculpture en pierre et l'évolution culturelle précolombienne sur l'Altiplano Central et sur le versant atlantique du Costa Rica. *Precolombart* **1**: 19–41.
- Snarskis, M. J. (ed.) (2000). *Artes de los pueblos precolombinos de América Central*, Museo Barbier-Mueller de Arte Precolombino, Barcelona, Spain.
- Snarskis, M. J. (2000). La Costa Rica precolombina. In Snarskis, M. J. (ed.), *Artes de los pueblos precolombinos de América Central*, Museo Barbier-Mueller de Arte Precolombino, Barcelona, Spain, pp. 66–113.
- Snarskis, M. J. (2000). Nicaragua, Costa Rica, Panamá: Interacción cultural. In Snarskis, M. J. (ed.), *Artes de los Pueblos Precolombinos de América Central*, Museo Barbier-Mueller de Arte Precolombino, Barcelona, Spain, pp. 12–45.
- Snarskis, M. J. (2001). Nicaragua, Costa Rica et Panamá: une interaction culturelle. In Snarskis, M. J., Salgado, S., and Sanchez Herrera, L. A. (eds.), *Arts precolombiens de l'Amérique centrale dans les collections du musée Barbier-Mueller de Barcelone: Nicaragua, Costa Rica et Panama*, Musée Barbier-Mueller, Paris, pp. 13–46.
- Solís, D. F. (1998). Nuevos datos en la arqueología de Bahía Culebra, Noroeste de Costa Rica. *Vínculos* **22**: 1–44.
- Soto, M. Z. (1998). The collections of the Museo del Jade Marco Fidel Tristán Castro, San José. In Jones, J. (ed.), *Jade in Ancient Costa Rica*, Metropolitan Museum of Art, New York, pp. 93–96.
- Spencer, C. S. (1998). Investigating the development of Venezuelan chiefdoms. In Redmond, E. M. (ed.), *Chiefdoms and Chieftaincy in the Americas*, University Press of Florida, Gainesville, pp. 104–137.
- Stierman, D. J., and Brady, J. E. (1999). Electrical resistivity mapping of modifications at the Talgua Village site, Olancho, Honduras. *Geoarchaeology* **14**: 495–510.

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