

[Inter-Regional Ties in Costa Rican Prehistory]

Papers presented at a symposium
at Carnegie Museum of
Natural History, Pittsburgh,
April 27, 1983

Edited by
Esther Skirboll
and
Winifred Creamer

BAR International Series 226

1984



B.A.R.

5, Centremead, Osney Mead, Oxford OX2 0ES, England.

GENERAL EDITORS

A.R. Hands, B.Sc., M.A., D.Phil.
D.R. Walker, M.A.

B.A.R.-S226, 1984: 'Inter-Regional Ties in Costa Rican Prehistory'.

Price £ 16.00 post free throughout the world. Payments made in dollars must be calculated at the current rate of exchange and \$3.00 added to cover exchange charges. Cheques should be made payable to B.A.R. and sent to the above address.

© The Individual Authors, 1984.

ISBN 0 86054 292 0

For details of all B.A.R. publications in print please write to the above address. Information on new titles is sent regularly on request, with no obligation to purchase.

Volumes are distributed from the publisher. All B.A.R. prices are inclusive of postage by surface mail anywhere in the world.

Printed in Great Britain

ELITE PARTICIPATION IN PRECOLOMBIAN CERAMIC TRANSFER
IN COSTA RICA

Frederick W. Lange
University of Colorado
Boulder

ABSTRACT

The temporal, quantitative, and contextual patterns of distribution of Greater Nicoya ceramics in the Central Valley of Costa Rica is examined on the basis of available data. The patterns suggest that commercial-economic objectives were not the primary bases for the distribution. Various trade models (Renfrew 1975) are evaluated in light of the data and a model of "elite emissary" behavior is proposed to account for the ceramic distribution.

RESUMEN

Se examina la distribución temporal, cuantativa, y contextual de cerámica de la Gran Nicoya encontrada en el valle central de Costa Rica. Los patrones de distribución sugieren que objetivos comerciales-económicos no formaron las bases para la distribución observado. Se evalúa algunos modelos de comercio (Renfrew 1975) en vista de los datos arqueológicos y se presenta un nuevo modelo de "elite emissary" en explicando la distribución cerámico que se ha notado.

INTRODUCTION

Prehistoric research in Costa Rica has long been compartmentalized by geographical area (Fonseca this volume) and little attention has been paid to relationships between the different geographical/ecological zones. The continuing research at Guayabo (Fonseca and Hurtado de Mendoza 1982; Hurtado de Mendoza et al this volume; Fonseca and Acuna 1984; Hurtado de Mendoza and Arias 1984) and other Central Valley sites (Snarskis and Blanco 1978; Guerrero 1981; Vazquez 1982; Gutierrez 1984; Blanco 1984) has produced evidence of contact with the northwestern part of Costa Rica ("Greater Nicoya") through the presence of Greater Nicoya polychrome ceramics. This ceramic evidence (dating principally from A.D. 800-1300), together with earlier jade/greenstone distribution (300 B.C.-700 A.D.) data (Balser 1980; Lange, Bishop and van Zelst 1981; Lange and Bishop 1984) is beginning to provide better insights into the Precolumbian relationship between these two geographically and environmentally distinct areas.

Greater Nicoya: Limits and Boundaries

The concept of the Greater Nicoya subarea was formulated by Norweb (1961, 1964) and includes (Fig. 1) the Pacific coast of Nicaragua and Guanacaste Province and all of the Nicoya peninsula in Costa Rica (but not the Gulf of Nicoya itself)(Creamer 1983, 1984). Recent survey by Lange and Sheets (1983, 1984) suggests a Nicaraguan extension of the subarea as far north as the southeast shore of Lake Managua. There were temporal fluctuations in Greater Nicoya's boundaries, but the above areas were in its "core" throughout the ceramic period. Small quantities of Early, Middle and Late Polychrome Greater Nicoya ceramics occur on the east side of the cordillera of Guanacaste (Dawson 1979), but this is not considered as part of Greater Nicoya. Research by Finch (1977, 1984), Norr (1979, 1984), Ryder (1979, 1984) and Sheets (1984), also indicates that the full subarea tradition does not reach above approximately the 400 M contour on the west side of the cordilleras of Guanacaste and Tilaran.

It is essential to distinguish between the Central Valley of Costa Rica, which is most directly approachable from Guanacaste/Greater Nicoya via the Rio Grande de Tarcoles, and the broader "Atlantic Watershed," which may be reached via the Central Valley, or via any one of a number of inter-volcano "saddles" in the cordillera of Guanacaste.

The Distribution of Jade and Ceramic Artifacts

As noted, patterns of jade distribution in Greater Nicoya and the Central Valley are somewhat earlier (ending around A.D. 600-700) than the major period of ceramic distribution in the same area (beginning around A.D. 800-900). Major changes in both internal cultural development and external contacts are evidenced between the two periods and we may suspect that both routes of contact and underlying motivations for exchange varied. That contact was maintained over such an extended period, despite shifting underlying reasons, without a more general integration of the material culture of the two areas, indicates that contacts were structured through elite levels of society, and not through the general populace.

The distribution of certain forms and styles of jade artifacts crosses the ecological boundaries between Greater Nicoya and the Highlands, demonstrating that elite (chiefdom level) interaction transcended ecological and physiographical (Fig. 1) limits. Jade occurs almost exclusively in mortuary contexts and often as part of a complex including ceremonial metates/stools, mace heads, and jade. De la Cruz (1981) has done the most thorough study of this complex, while further evidence of its distribution has been demonstrated and summarized by Hartman 1907; Lange 1979, 1984; Snarskis 1979; 1984, and Guerrero 1981. In both ceramics and jade, the data indicate contact between Greater Nicoya and the Central Valley area, but in limited quantities, indicating that specific cultural mechanisms of boundary maintenance were active.

Since the present discussion focuses mainly on decorated pottery we should keep in mind (1) Bray's (1984) comment that pottery is over used as an estimator of cultural contact, and (2) Beaudry's (1984) observation that the house of a prehistoric "agriculturalist" in El Salvador had "...a strong representation of polychromes within the household's supply of vessels." She sees this as contrasting with "...a tendency in Mesoamerican archaeology to equate the presence of polychrome ceramics with high status." In two Costa Rican examples from Greater Nicoya, both the unscientifically obtained hacienda Tempisque (Day 1982, 1984) and scientifically excavated La Ceiba collections (Guerrero 1983), mixtures of decorated and undecorated ceramics also appear in mortuary contexts.

At Hacienda Tempisque we can never know the relative percentages of undecorated and decorated ceramics in the already excavated graves, but at La Ceiba, Guerrero (1983:9) noted differences in ceramic associations between extended, articulated burials with higher quality offerings, and others in bundles and unarticulated with lesser quality (from our aesthetic perspective) ceramics:

Tambien se noto que las ofrendas son de mayor calidad y cantidad, es decir, que el porcentaje de ceramica policromada que aparece en estos entierros extendidos es mucho mayor que el de entierros de paquete y no articulados, los cuales no presentan una formacion lineal de artefactos, sino que es en pequenos grupos, los cuales tienen muy poca ceramica policromada, en especial del tipo Pataky y Papagayo que fueron los mas comunes en los entierros extendidos; es que refuerza nuestra hipotesis anterior y pareciera que estos entierros en paquete son personajes de menos status...

The La Ceiba data seem to again reinforce the previously suggested (Wallace and Accola 1980:58) ritual significance of Pataky Polychrome and also the importance of Papagayo Polychrome, although it is also frequently found in domestic contexts (as with the polychromes in Beaudry's example). The presence of 29 culinary vessels at La Ceiba, in a manner similar to Papagayo's extensive presence in domestic contexts, show that we cannot judge function by appearance alone and that context is an indispensable element. The culinary vessels may have been food containers with the deceased, or as in the case of the

Mapuche, as reported by Dillehay (1984:14), undecorated vessels with ritual significance.

Sufficient data are now available to explore the nature of the contacts and interaction that are represented by the distribution of Greater Nicoya ceramics. In the following discussion the terms "trade" and "exchange" are intended to have an economic emphasis, while "transfer" has a social, religious, and political emphasis. This arbitrary distinction fully recognizes that many anthropologists include sociopolitical characteristics in the term "exchange," and also that differences between political, religious, and economic behavior cannot be fully delineated in prehistoric contexts.

The following discussion demonstrates that the Greater Nicoya ceramics present in the Central Valley are but a small percentage of what was produced in Greater Nicoya. Interpretations involving the degree and nature of the contacts between the two regions should be tempered accordingly.

The Beginning of Ceramic Production in Greater Nicoya

Ceramic production has approximately the same time depth (2,500 years; Lange and Stone 1984: App. 3) on the Atlantic (Snarskis 1984) and Pacific (Lange 1980a, 1984) coasts of Costa Rica (Fig. 2). Following participation in the broad formative tradition of zoned incising, Pacific artesans began to emphasize the use of bichrome and polychrome painting, while Atlantic coastal artesans focused on incision, applique and modeling (plastic decoration). One reason for this difference was a geological scarcity of necessary pigments (Agency for International Development 1965) on the Atlantic side of Costa Rica. It is also worth noting that the natural pigments (such as manganese) for the vibrant black color so essential to many Greater Nicoya ceramics may have been absent from the northern sector of Greater Nicoya (modern Pacific Nicaragua). Extensive trade or direct procurement of black pigments from southern sector sources (modern Pacific Costa Rica) is indicated if this is true. The dominance of painted ceramics in Greater Nicoya is reflected in the "Zoned Bichrome," "Early Polychrome," "Middle Polychrome," and "Late Polychrome" attributions used to divide the regional sequence. In summary, although there are some overall parallels in the evolution of the Pacific and Atlantic regional ceramic traditions, they are quite distinct.

In addition to the Greater Nicoya ceramics found at sites in the Highlands, Highland ceramics do occur in Guanacaste (Ryder 1980, 1984; Day 1984) but very infrequently. None were reported by Hartman (1907) from Late Zoned Bichrome/Early Polychrome contexts at Las Guacas (even though the shared metate, mace head, jade complex is present there) and none has even been reported from controlled excavations on the Bay of Salinas, Santa Elena Peninsula, Bay of Culebra, Bay of Tamarindo, Nosara Valley (where the mace, metate, jade complex is also present), or in the Tempisque Valley.

Decorated (bichrome, polychrome and incised) ceramics usually comprise only a very small percentage (3-15%) of any ceramic inventory in Greater Nicoya. Monochrome wares apparently were produced and utilized locally and only the decorated wares were transferred or

exchanged interregionally. All painted Greater Nicoya types are easily recognizable in external contacts. Stylistic and neutron activation analyses indicate that monochromes (the majority of which are assumed to have been utilitarian wares, despite the caveats in the introduction) were locally made and not widely traded.

Greater Nicoya Ceramics in the Highlands

To evaluate the significance of Greater Nicoya ceramics found in Highland sites we need to examine four principal variables:

(1) What percentage of local ceramic assemblages in both Greater Nicoya and the Highlands was taken up by Greater Nicoya ceramics?

(2) What is the relationship of the proportion of occurrence of Greater Nicoya ceramics in the Highlands compared to the proportion of their occurrence in Greater Nicoya?

(3) What percentage of the total ceramic production of any particular type, and all types collectively from Greater Nicoya, is represented by the sample of Greater Nicoya ceramics in Highland sites?

(4) What are the contexts in which the above occur? This fourth point is crucial to establishing the function and role of these ceramics in both local and extra-local provenience.

With current data we can begin to develop an estimate of the patterns and magnitude of production and transfer. These estimates are based on consideration of the four variables presented above.

The Existing Data Base

In comparing the "as a percentage of the total collection" data for specific types between Greater Nicoya and the Highlands context, we need to be aware that ceramic densities are not comparable from region to region (or even within regions) and may vary greatly between the Atlantic and the Pacific. For example, the ceramic period site of Agua Buena in Nicaragua (Lange and Sheets 1983) yielded almost no surface ceramics; in general ceramics seem less plentiful on the Atlantic coast of Nicaragua than they are on the Pacific coast (Anibal Martinez, personal communication). Thus, 3% of a total collection from one site may in fact be either more or less than the same 3% of a total from another. Data are not at hand to resolve this problem for the examples used here and an arbitrary assumption of equality of ceramic density is made. The extent to which this assumption is accurate will clearly affect our interpretations of the relative quantities of Greater Nicoya ceramics that are present in different sites and different regions.

The data bases for both regions are considered to be of satisfactory comparative value for present purposes. The total archaeological universe of either Greater Nicoya or the Central Valley is an abstract concept as far as numbers of total sites or totals of production of different artifact classes, such as ceramics are concerned. The totals shown (Table 1) do not distinguish between whole vessels and sherds. Also, there has been no attempt to incorporate estimates for sites known but not tested, or sites which have been

completely destroyed and are unknown in scientific terms. Thus, while the figures are certainly low in relationship to actual levels of prehistoric production and archaeological remains, they do accurately represent the proportion of different types in different assemblages, and the temporal and geographical distribution of different types.

Distributional Data

Although portions of Greater Nicoya are still unknown archaeologically, research during the past quarter of a century has produced a reliable background for the distributions of major ceramic types and for the relative frequency with which they occur in either the northern (Nicaraguan) or the southern (Costa Rican) sectors of Greater Nicoya. Research has also been sufficiently extensive in the Central Valley to adequately reflect distributions in that area.

Data from Greater Nicoya and the Highlands, with a distribution similar to that shown in Table 1, were analyzed by neutron activation at the Brookhaven National Laboratory and utilized in two recent Greater Nicoya ceramic conferences (Lange et al n.d.). These data strongly support an interpretation that production of decorated ceramics was initially quite dispersed and became geographically more centralized through time. There is no evidence that any of the principal ceramic types from Greater Nicoya were ever produced elsewhere. Thus, whether a Birmania Polychrome sherd/vessel was found on Isla Cano (Finch and Honetschlager 1984) or in the Highlands (Fonseca and Hurtado 1982), it was made somewhere in Greater Nicoya.

In terms of farther-flung distributions, the ceramics found by Diehl et al (1974) at Tula are not Greater Nicoya ceramics as they reported; they are stylistically related to Las Vegas Polychrome (Baudez and Becquelin 1973: 313-318), a type from central Honduras. Las Vegas Polychrome from Honduras and Papagayo Polychrome from Greater Nicoya share the similarities of red, black, and sometimes orange and gray paint on a creamy white slip. The two types are chronologically coeval and also overlap geographically at Lake Yajoa, Honduras, where Baudez and Becquelin (1973: Fig. 121), recovered both types. Geographical distinctions can be established both on color and stylistic (somewhat different use of space and slightly different slip colors) and instrumental analyses (distinct compositional patterns) bases.

E. Wyllys Andrews V (1976:114) would see Delirio Red-on-White (from Quelepa, El Salvador) as another coeval geographical variant of this Middle Polychrome and early Late Polychrome (Mesoamerican Postclassic) red-on-white ceramic "family." The relationship of the geographical variants of red-on-white and red-black-orange on white polychrome ceramics in southern Mesoamerica and northern Lower Central America between A.D. 800-1300 warrants further investigation. Jane Day (1984) has concluded that white-slipped ceramics in general occur earlier in Central America (and specifically in Greater Nicoya) than they do in southern Mesoamerica.

The sample represented by Table 1 was derived from sites throughout Greater Nicoya area, including Healy's analysis (1974, 1980) of Willey and Norweb's work in the isthmus of Rivas, Jane Day's analysis of the Hacienda Tempisque collection (1982, 1984), Baudez's

benchmark study (1967) in the Tempisque Valley, and Creamer's research in the Gulf of Nicoya (1983). This sample is selective and a large number of sites are not represented (only 1 of 118 sites in the Rio Sapoa/Bay of Salinas area is represented, as is only 1 of 63 sites on the Bay of Celebra; likewise sites from the isthmus of Rivas were only partially reported by Healy, while Lange and Sheets (1983, 1984) visited a number of previously unreported sites. In utilizing Table 1, it should also be noted that it is skewed by the large quantity of Sacasa Striated reported from Rivas by Healy and to a lesser degree by the large quantity of Tempisque Incised and Applique reported from the Gulf of Nicoya by Creamer.

The data that are reported represent only small percentages (1% or less, based on estimates of excavated units relative to total site areas) of the contents of known sites. In reviewing the published and draft reports (Hartman 1901, 1907; Sweeney 1975, 1976; Creamer 1983; Day 1984; Baudez 1967; Lange 1971; Accola 1978; and Healy 1980) used to compile Tables 1-7, it became clear that many different methods of recovery (no screening or screening with various sized meshes; rainy or dry season soil conditions, varied interpretations of the typological nomenclature, and different laboratory procedures) had all affected final counts.

None of the sites reviewed was sampled by an explicit, statistically based research design. A statistically drawn sample would, on the other hand, accurately reflect contextual differences on an individual site basis (individual burial, multiple burial, open habitation, mound habitation, etc.). Such a sample would also place equal analytical emphases on undecorated ceramics; until now, this category of ceramics has been carefully analyzed by some investigators (Baudez 1967, Sweeney 1975) and largely disregarded by others (Lange 1971, Healy 1980, Creamer 1983, Day 1984). Now that patterns of ceramic distribution, such as are defined on a preliminary basis in this paper, are becoming better known and a high level of co-variation between stylistic and instrumental analyses has been established, more carefully defined sampling strategies should be implemented in future research.

The quantitative data presented in Table 1 support the division of Greater Nicoya into northern and southern sectors (Lange 1984). Only some of the following principal types are listed, with citations of principal descriptions:

Evolution of Ceramic Production

In the following discussion "southern sector" refers to that part of Greater Nicoya in contemporary Costa Rica, "northern sector" the part of Greater Nicoya in contemporary Nicaragua, and "pan-regional" to all of Greater Nicoya. Almost the entire sample was drawn from domestic contexts, although mortuary contexts are evaluated in the discussion. Almost all of the pan-regional types are from the Zoned Bichrome and Early Polychrome Periods, reflecting Greater Nicoya's participation in general formative developments and dispersal of cultural traits. Subsequently, Papagayo Polychrome has the superficial appearance of being pan-regional, but its concentration is much heavier in the northern two-thirds of the subarea than in the southern one-third (compare the Rivas and Tempisque Valley data, for example).

Although, as mentioned previously, we have no polychrome kiln sites (but see Abel 1978, Abel-Vidor 1980a) the technical data support a conclusion that the production of polychrome ceramics, certainly by the Middle Polychrome Period and onward, was not a household industry, but highly centralized.

Zoned Bichrome and Early Polychrome ceramics, although of similar, and in some cases even greater technical quality than later types, are not found with any frequency in the Highlands. Perhaps the only known example of a Rosales Zoned Engraved (Claro variety) vessel from the Highlands was the effigy monkey figure found in the Tibas burial (Snarskis 1979). As shown in Table 1, Rosales Zoned Engraved is relatively rare in Greater Nicoya as well. None of the more common Zoned Bichrome types such as Bocana Zoned Incised are known in the Highlands, although Bocana does have very strong modal analogs especially in its Santiago variety (Guerrero and Day personal communication, Denver Ceramic Conference) with El Bosque types (Snarskis 1978). Two late Zoned Bichrome types, Zelaya Bichrome/Trichrome and Guinea Incised are also unknown in the Central Valley, but again have strong analogs. Early Polychrome types such as Galo Polychrome and Carrillo Polychrome are almost completely unknown in the Central Valley and there are no analogs. Snarskis (personal communication) reports 1 small Galo Polychrome vessel (out of 450 vessels) and that Juan Vicente Guerrero found 4 late Galo figurines and 2 "Carrillo-like" bowls at La Fabrica de Grecia. In the broader Atlantic Watershed context, Snarskis (1978:213, 263-264) reported finding 3 sherds of Galo Polychrome at the site of La Zoila, near Turrialba.

CONTEXT AND FUNCTION

Persons working in Greater Nicoya have discussed the extent to which at least some of the polychromes were produced especially for mortuary use and Wallace and Accola (1980:58) suggested that Pataky Polychrome may have been such a type; as noted earlier, this interpretation seems to have been further supported by Guerrero's recent excavations at La Ceiba. While all polychrome types are found in mortuary contexts in Greater Nicoya, they are also all recovered in varying quantities from domestic refuse. The extent to which some types may have been more specifically intended for mortuary use or may have had broader use patterns may be reflected in the data in Table 1. The Hacienda Tempisque data are all from non-scientifically controlled digging, but the vessels are presumably from mortuary contexts. This is an acceptable assumption, based on a "whole vessel equals mortuary context and sherd material equals domestic context" generalization that seems to prevail throughout Greater Nicoya.

In Table 1, those types having a higher percentage in the Hacienda collection than in the average of the excavated domestic samples might be assumed to have a mortuary emphasis, while those types having higher percentages from excavated contexts indicate a much broader mortuary-domestic use. In Binford's (1962) terminology, some of the Greater Nicoya types seem to be more exclusively ideo-technic or technomic.

In comparing the frequency of occurrence of different Greater Nicoya ceramics outside the core subarea, one is struck by major

contextual as well as quantitative differences: Greater Nicoya ceramics have been found in mortuary contexts at Nacascolo (Vazquez 1984a), Vidor (Vazquez and Weaver 1980), Hacienda Tempisque (Day 1982, 1984), Hacienda Mojica (Ryder 1979, 1984), La Guinea (Hoopes 1979), San Vicente (Day 1984), Las Marias (Faulwell 1969), Las Guacas (Hartman (1907), and La Ceiba (Guerrero 1983), among other sites. The geographical distribution of these sites contributes to a feeling of confidence about general distributional patterns. Decorated Greater Nicoya ceramics also come from general site contexts reflecting everyday domestic behavior and refuse; the majority of data in Table 1 are from such domestic contexts. In contrast, most of the Greater Nicoya data from the Highlands seems to have been restricted to selected mortuary contexts.

Networks of Distribution

In considering the transfer of Greater Nicoya ceramics from their loci of production to the Highland region, we must also briefly consider who was producing these ceramics, who controlled their distribution, and the networks by which they were distributed. The available data suggest that we may have multiple routes and systems operating: (1) Nicaragua to Guanacaste (Day and Abel-Vidor 1980, Abel-Vidor and Day 1981, Abel-Vidor 1980b), (2) Nicaragua to the Costa Rican Central Valley via the San Carlos Plain, bypassing the disperse population nodes (Abel-Vidor 1980b, 1981) in Guanacaste, and (3) Guanacaste to the Central Valley. Pataky Polychrome and Papagayo Polychrome may have been transferred both into Guanacaste and directly into the Highlands, perhaps utilizing a route that went down the San Juan River and then up and across the extensive river network of the San Carlos Plain, thus entering the Central Valley from the northeast rather than the northwest.

Mora Polychrome and a number of its varieties, as well as Birmania Polychrome, Atilplano Polychrome, and the Culebra Variety of Papagayo Polychrome appear to have been transferred directly from Guanacaste into the Highlands, but only occasionally into the northern sector of Greater Nicoya. The Culebra variety of Papagayo Polychrome presents somewhat of a contradiction between its known geographical distribution and its compositional analysis. The geographical distribution appears to be strongly focused on the Bay of Culebra area in the southern sector, while the compositional analysis (R. Bishop, personal communication) aligns it with the other Papagayo varieties from the northern sector.

The southern Greater Nicoya tradition is represented very infrequently in northern Greater Nicoya, relative to the representation of northern Greater Nicoya ceramics in the south (however, note the limited occurrence or absence of many northern ceramics from Baudez's excavations in the Tempisque Valley and also their somewhat limited occurrence at Chahuite Escondido and other sites tested by Coe (1962) and reported by Sweeney (1975; 1976).

Regardless of the path, or paths, by which Greater Nicoya ceramics reached the Central Valley, the extent to which considerations of trade mechanisms are germane to interpretation of their presence as opposed to alternative means of ceramic distribution, is completely dependent upon what percentage of the production of Greater Nicoya ceramic

artisans is represented, and the context in which they are found. The quantitative and contextual data allow us to assess the potential role of trade and other cultural practices in the dispersal of Greater Nicoya ceramics to the Central Valley, in this case utilizing the 10 mode framework advanced by Renfrew (1975:42ff).

CONTEXTUAL ANALYSIS OF GREATER NICOYA CERAMICS IN CENTRAL VALLEY SITES

Guayabo (Table 2)

Aguilar (1972) reported a total of 21 (0.2%) Greater Nicoya polychrome sherds from a total of 13,742 from excavations in 4 mounds. Fonseca and Hurtado de Mendoza (1982) reported finding 3 Greater Nicoya types, including the 2 types identified earlier by Aguilar. The counts were unspecified but are known to have been relatively small (personal communication, Fonseca and Hurtado de Mendoza). Hurtado de Mendoza (1981; Hurtado de Mendoza et al, this volume) has reported further on this research.

Sites Tested by Hartman

Las Huacas (Table 2)

Excavations at this site yielded 6 whole and 2 fragmentary Greater Nicoya vessels which were illustrated by Hartman (1901). These materials came from mortuary contexts and represented ceramics from the southern sector.

Chircot (Table 3)

The Chircot material reported by Hartman was from two separate burial grounds. He (1901:125) noted that only one-third (131/205) of the graves had non perishable offerings. Furthermore, only one-third (11/36) of the graves with offerings had Greater Nicoya vessels (all southern sector), never with more than one to a grave. The distribution of Greater Nicoya ceramics was spatially and temporally limited in this cemetery.

Orosi (Table 3)

Hartman (1901) excavated three burial groups; two of the three produced no Greater Nicoya vessels, while one was found in Group V. One 4-legged Birmania Polychrome effigy vessel and one other polychrome vessel were excavated from the coffee plantation area of the site. All vessels were southern sector types.

Los Limones (Table 4)

To date, this is the only Highland site where a Pataky Polychrome vessel has been found. This vessel was from a mortuary context and Hartman (1901) described it as containing a resin-like material. Hartman also found a Culebra variety Papagayo Polychrome vessel, the only reported occurrence of these modeled-rim, man-jaguar motif vessels outside of Greater Nicoya. The vessels from this site were equally (1/1) divided between northern and southern sectors.

Santiago (Table 4)

Hartman excavated 1 Papagayo Polychrome vessel from Grave 16 at this site. It is a northern sector variety.

Las Mercedes

Excavations at Las Mercedes produced no Greater Nicoya material.

None of the sites tested by Hartman can be compared proportionately with either Greater Nicoya or with other Highland sites because the non-whole vessel and non-polychrome vessel data are incomplete. However, it is apparent that Greater Nicoya ceramics are either absent or else a very small part of the ceramic assemblage at any of the sites. Significantly, and this in part reflects Hartman's excavation strategy, all examples are from mortuary contexts.

Barrial de Heredia (Table 5)

This site has two components (Snarskis and Blanco 1978). Greater Nicoya ceramics were found only in the later component, which Snarskis (1984) dated from A.D. 900-1200. Snarskis and Blanco (1978) reported 20 Greater Nicoya vessels found in graves (with 5 found in 1 grave alone), being 4.5% "... of the total number of vessels found in burials and caches." It is not known if the overall percentage of graves with ceramic offerings was similar to that at Chircot, at the other end of the Central Valley, or not.

The multiple occurrence of Greater Nicoya vessels at Barrial contrasts with the single vessel per tomb average recovered by Hartman in the Chircot and Orosí cemeteries. Perhaps this reflects nothing more than closer geographical proximity of Barrial de Heredia to Greater Nicoya, or it may have sociopolitical significance as well. The vessels included five Greater Nicoya types, with all but Papagayo Polychrome being from the southern group. Snarskis (1984) has noted that "Polychrome sherds from surface collections and excavations totalled 356, 1.15% of all sherds collected," and concluded that "... obviously the bright Nicoya-Guanacaste ceramics were highly valued, and their quantity suggests well established trade channels with northwest Costa Rica." Looking at the same data from the perspective of Greater Nicoya, neither is the quantity overly impressive nor are only "well-established trade routes" suggested. Snarskis and Blanco's description of the context of the Barrial vessels in fact suggests that most of them were concentrated in a relatively few burials and represent infrequent and almost rare events over the 300 or so years' occupation that are represented. Fonseca and Hurtado de Mendoza seem to concur in this assessment, stating (1982:10) "... la cerámica policromada de Guanacaste, recuperada del sitio Barrial, puede considerarse evidencia de interrelación entre los dos regiones, pero no es suficiente para asegurar que se trata de una manifestación de intercambio económico."

There is no certainty that all of the "polychrome sherds" are from Greater Nicoya ceramics. The site of Carrizal (Fig. 1), which is physically much closer to Barrial de Heredia than is Greater Nicoya, has produced polychrome ceramics that are not Greater Nicoya in style, and are unlike any other types known in Costa Rica up to the present

time. It is possible that some of the sherds from Barrial de Heredia represent this material instead.

Snarskis (1984) also noted (without quantifying) the "high percentage" of Greater Nicoya Polychromes with "cracklacing" and also wear around the lips and on the surface of many vessels. He interprets this as normal wear and sees it as contrary to a ritual interpretation. We need to keep in mind that often the iconography is more important than the vessel it is on, and that older vessels may be of hereditary ritual significance (Dillehay 1984:14).

We also need to review the context of the material from Barrial. All of the whole vessels were found in mortuary contexts; some of the sherd material was surface collected and the rest was obtained from excavation. Given the serious construction impact at the site, following many years of coffee cultivation, it is likely that at least some of the sherd material from the surface and from excavation was originally also from mortuary contexts.

Ochomoqo (Table 5)

Blanco (1984) reported on these salvage efforts and noted the presence of Greater Nicoya ceramics (from mortuary contexts, but their frequency was not quantified). Again, Papagayo Polychrome was the only northern sector type represented.

El Molino (Cartago) (Table 6)

Vazquez (1982 and this volume) noted that this site had two components, one major (Pavas phase 300 B.C. to A.D. 300) and one minor (Cartago phase A.D. 900-1500) by association with the regional sequence. However, two radiocarbon dates from excavations place at least part of the cemetery closer to A.D. 600-800. Ceramics were the principal funerary offerings at this site, and he illustrated (1982:273) six southern sector Greater Nicoya polychrome sherds.

Tibas (Table 6)

This site was excavated under the supervision of Gamboa and Snarskis (Snarskis 1979); and so far it is the only Highland site to have yielded late Zoned Bichrome ceramics from Greater Nicoya (a whole effigy vessel of a monkey in the Claro Variety of Rosales Zoned Engraved (Snarskis 1981:Plate 4; a pan-regional type). This vessel was found in mortuary context associated with Highland ceramics, jade/greenstone artifacts, stools/metates, and mace heads (Snarskis 1979, de la Cruz 1981).

DISCUSSION

In none of these sites, either individually or collectively (Table 7), is there the quantitative presence of Greater Nicoya ceramics necessary to specifically validate any one of the 10 trade models presented by Renfrew (1975:42ff). A closer examination of his 10 models in conjunction with Greater Nicoya data makes this clear:

(1) Direct Access: All of Greater Nicoya and the Highlands lie within the 200-300 km radius that Renfrew defined as an area of "local

access" where people potentially can simply visit a resource area and obtain what they need without utilizing intermediary persons or processes. Thus, in theory, Pacific and Central Valley peoples could have moved freely between the two regions and facilitated the dispersal of ceramics. As a caution, it is clear that the same distance boundaries of "local access" cannot be liberally moved from one area to another. Dillehay (1984:20), for example, indicates a range of only up to 80 kilometers for some Mapuche shaman, while Abel-Vidor's ethnohistoric research in Greater Nicoya (1981: Abel-Vidor and Day 1981) does not suggest any extensive level of contact between settlements in different parts of Greater Nicoya, at least at the time of the Spanish Conquest. Helms (1979:51-56) sees 6-8 leagues (16-22 miles) as the possible limits of individual chiefdoms in prehistoric western Panama.

Nonetheless, the distances commonly walked by historic Costa Ricans (coast to coast across the Talamanca--following old Indian trails, Nicoya to Hacienda Mojica, Puntarenas to San Jose, and San Jose to Hacienda Jerico) suggest that the Greater Nicoya-Central Valley distance was within the normal range of movement, except for cultural barriers. Again, the fact that at no time between 500 B.C. and A.D. 1520 are Atlantic and Pacific material culture complexes freely intermixed indicates that such cultural barriers were established early and maintained even though their functions and emphases may have changes.

The limited occurrence of Greater Nicoya ceramics in the Highlands, and the even more restricted finds of Highland ceramics in Greater Nicoya, demonstrates that direct access was very limited, if it existed at all. As noted earlier, pigments for polychrome colors could have easily been exploited in this manner, but were not. There are no significant natural barriers to such contacts and the impediments appear to have been socially/religiously/politically based.

(2) Home Base Reciprocity: This dispersal model is based on persons from Zone A (Greater Nicoya) visiting Zone B (Central Valley) and/or versa and exchanging cultural material at the home base of either A or B. The limited quantity and unequal proportion of Greater Nicoya material found in the Central Valley material found in Greater Nicoya would indicate that this was not a significant mechanism for dispersal.

(3) Boundary Reciprocity: In this model, persons from Zone A (Greater Nicoya) would meet persons from Zone B (Central Valley) in a mutually defined boundary area to exchange cultural materials and information. Such an area most likely would exist in a geographically or ecologically intermediate location. Thus far, no such boundary area has been suggested by archaeological data in Pacific coastal costa Rica (Creamer 1983, 1984). Admittedly, there are extensive areas which remain to be examined in greater detail.

(4) Down-the-Line: In this model, cultural materials pass through intermediate points in their transfer from Zone A to Zone B. Here again, the relative lack of known intermediate sites indicate this would not have been a functional system in either the economic sense or at all levels of society. However, the available data, and application of an ethnohistoric model provided from the Mapuche area of Chile by

Dillehay (1984) suggest the strong possibility of elite "down-the-line" activities. We will return to this model later.

(5) Central Place: In this model, cultural materials are dispersed from Zone A to Zone B from a central place, whereas the previous 4 models generally allow for independent and multiple sources and patterns of dispersal. The Greater Nicoya ceramic data do demonstrate that the majority of the polychrome ceramics were produced in, and dispersed from, a central place in some cases and from a very restricted number of places in others. The specific routes and mechanisms by which these ceramics were dispersed both within Greater Nicoya and from Greater Nicoya to the Central Valley is not clear; again, we will return to this model later.

(6) Central Place Market Exchange: In this model, buyers or intermediaries would come to the center of production and engage in commercial activities to obtain desired products, in this case polychrome ceramics. There is no archaeological or ethnohistorical evidence that this mechanism of dispersal was employed in Greater Nicoya.

(7) Free Lance: In this model, an independent trader "C," who was aligned with neither Zone A nor Zone B would obtain cultural materials in either of the two zones and transfer them elsewhere depending upon his own perceptions of the "market." While a possibility, the predominantly mortuary contexts and restricted temporal range of Greater Nicoya ceramics in the Highlands suggest that a more structured mechanism was responsible for the dispersal.

(8) Emissary: In this model, high status/rank individuals in Zone A would send representatives to Zone B carrying desired elite goods, i.e. Greater Nicoya polychrome ceramics. Their intent would have been social, political and/or economic. Such a model could be supported by the quantitative and contextual occurrence of Greater Nicoya ceramics in the Central Valley; we will also return to this model below.

(9) Colonial: This model implies dispersal of cultural materials through domination of one area by another; this is clearly not the case in Costa Rica.

(10) Port-of-Trade: This is a special form of central place activity (Chapman 1957), in which a protected enclave allowed contact and trade between groups that did not, or could not, interact under normal circumstances. Again, this model is not supported by the available Greater Nicoya and Central Valley data.

Thus none of the ten models set forth by Renfrew seems individually applicable to the case of the dispersal of Greater Nicoya ceramics to the Costa Rican Central Valley, but the down-the-line, central place, and emissary models all seem to have something to offer to the development of a composite model. There are 3 principal factors to consider: (1) the ceramic data do support an interpretation of central place(s) of production for most Middle and Late Polychrome polychrome ceramics, (2) there is doubt that prehistoric Costa Rican social organization in either the Central Valley or Greater Nicoya was sufficiently complex to have evolved full-time specialist emissaries, and (3) the contextual data for both production in Greater Nicoya

(centralized) and deposition in the Highlands (principally mortuary) indicates elite interaction. Snarskis (personal communication) has stated that Greater Nicoya polychromes occur regularly, but always in small quantities in Central Valley sites; this could certainly be interpreted as local elite access to status goods rather than trading activities.

It is suggested that within the spatial limits of the Greater Nicoya and Central Valley areas that the elite themselves were the agents of dispersal. This is a point of view I have stated previously (1980b) but have modified here to include the possibility of some sort of elite down-the-line contact (cf. Dillehay 1984).

Dillehay describes in some detail the manufacture of and procurement of ritual paraphernalia (including ceramic vessels) by Mapuche machi (shaman). He notes (p. 5) that:

For ritual items to be perceived by the community as a material manifestation of the extended relationship between machi and ancestors, their production and distribution must be hidden from the society at large. This is achieved by intentionally separating all manufacturing and handling phases of these goods from the more mundane economic transactions of domestic products, which are carried out through barter, trade, or reciprocal exchange. The result is that common people see ritual paraphernalia only in their finished form during ceremonies and so perceive these items as referents to the ancestor world.

Dillehay notes that this is not unlike Helms' (1979) idea of prestige and power gained from foreign places and persons in ancient Panama. Finally, he points out that the annual production of ritual goods is limited and that some objects may continue to be utilized in the society for 400 or more years; this might be another explanation for worn and cracklaced vessels. Another possible explanation is suggested by Dillehay's observation (1984:24) that "Thus...there is a hierarchical ranking among the interacting machi. The weaker or less successful machi must often substitute poorer quality materials...or they are forced to continue using a worn object long after it should have been replaced."

While it is clear there are differences between the Mapuche, ancient Panama, and Costa Rica, these different examples clearly suggest the possibility of elite-based networks which involve the transfer of relatively small quantities of goods for ritual and not economic purposes. The general scenario appears to fit the available Costa Rican data, and combines Renfrew's idea of a "prestige-chain" (1975:50) with that of special representative transfer of centrally produced goods. I am suggesting the descriptive category "elite emissary" to embody the mutually useful aspects of all three models. In the specific example of the Central Valley and Greater Nicoya, were the objectives of these elite emissaries economic, political or social?

Neither purely economic nor principally political relationships seem to be demonstrated by the available data. It seems most likely that the primary behavior represented is social, and that given the

contextual data, that the emphasis was mortuary, although not exclusively. Greater Nicoya ceramics may have reached the Central Valley by two separate means: (1) through elite exchange networks who employed the polychrome ceramics as power symbols; and (2) by direct visits by Greater Nicoya elite personages to the Central Valley. While these efforts may often have been related to mortuary activities, it does not seem this emphasis was as singular as I have phrased it previously (Lange 1980b).

The elite emissary model would explain the relatively tight degree of control of access to Greater Nicoya ceramics seen in the Central Valley and also the rather tight temporal parameter in which the bulk of the ceramic dispersal took place during Middle Polychrome times. Temporal control is still inadequate to be sure whether or not we are dealing with heirloom items.

CONCLUSION

Review of the available distributional and chronological data pertaining to Greater Nicoya ceramics found in the Costa Rican Central Valley indicates that: (1) there is a distinction between a northern sector and a southern sector of Greater Nicoya; (2) that during the Zoned Bichrome and Early Polychrome Periods ceramic manufacture was relatively disperse and very few ceramics from Greater Nicoya found their way to the Highlands; (3) that the greatest dispersal of Greater Nicoya ceramics into the Highlands was during the Middle Polychrome period, and that the principal types found in the Highlands were those characteristic of the southern sector; (4) that southern sector Middle Polychrome types are basically absent from the northern sector; (5) that while quantities of northern sector types were dispersed into the southern sector during the Middle and Late Polychrome times, very few found their way to the Central Valley; and (6) that regardless of time period, the majority of Greater Nicoya ceramics found in the Central Valley have been reported from mortuary rather than domestic contexts. The same general observations seem applicable to the Atlantic Watersheds of Costa Rica and Nicaragua.

The chronological, quantitative (both absolute and proportional), and distributional data for Greater Nicoya ceramics in the Central Valley all demonstrate that economic trade was not the mechanism of transfer from the former to the latter. It is hypothesized that the mechanism of transfer was instead one of elite interaction. Such an elite network would maintain inter-regional relationships structured through ritual activities and goods. Currently, there is no way of knowing whether or not these relationships were fictive or actual. Regardless of the basis for the relationships, such structured connections would have facilitated the movement of luxury goods between elites. The importance of such relationships is shown through their presence in Costa Rica over almost a 2,500 year period, first through jade (greenstones) and later through polychrome ceramics. Additional data, and specific testing of hypotheses, are needed to substantiate, refine, or reject the "elite emissary" model proposed here.

NOTES

1. The use of the term "Central Valley" in this paper generally encompassed the area of the Meseta Central (1000 M) and the Atlantic slopes down to the altitude of Turrialba and surrounding area (650 M); as Skirboll (1983) noted, combining the two regions has become accepted practice in recent summaries (Stone 1977, Snarskis 1981).
2. As Easby (1981:135) has noted "Archaeologists speaking of "jades" usually mean lapidary work, the carving of stones generally." This has certainly been the case in Costa Rican archaeology, where everything from slate to actually jadeite has been included under the term "jade." However, now that Bishop's research (Lange, Bishop, and van Zelst 1981) has identified the Motagua Valley area of Guatemala as the only known source of jadeite in Mesoamerica and Central America, the use of the term "jade" in Costa Rica has clear historical and processual implications. While the use of the generic term "greenstone" would be preferable to the generic use of "jade," the latter term is probably so embedded in the literature and nomenclature as to be unchangeable. I would suggest that the term "jade" in the future carry the generic sense indicated by Easby, and that "Motagua" or some other geological/geographical source prefix preceded the use of the term when applied to compositionally defined jadeite. Bishop, Sayre, and van Zelst (1983) have concluded that while some Motagua jade reached Costa Rica, there also must be a more local source in or near northwestern Costa Rica.
3. This current paper is an updated and expanded version of an earlier paper in Spanish which was submitted to the University of Costa Rica.

ACKNOWLEDGMENTS

The direction of the present paper benefitted greatly from discussions with Oscar Fonseca and Luis Hurtado de Mendoza during a visit to Costa Rica in November, 1982, and further discussions during the symposium "Inter-regional Ties in Costa Rica" sponsored by the Carnegie Museum of Natural History in April, 1983. The JFM Foundation of Denver, Colorado supported Lange's and Day's participation in the Carnegie Symposium, funded two conferences on Greater Nicoya ceramics, and sponsored neutron activation research under the supervision of Dr. Ronald L. Bishop at the Brookhaven National Laboratory in New York. This research has allowed us to delimit the production area of Greater Nicoya ceramics in a much more precise way than previously possible. Rebecca A. Bishop was the technician for the Brookhaven research.

The JFM Foundation also helped to make possible my visits to Nicaragua and Costa Rica in October 1982 and Nicaragua again in March 1983 for the purpose of gathering additional ceramic samples from the northern sector of Greater Nicoya. On the latter trip, I was accompanied by Dr. Payson Sheets of the University of Colorado-Boulder and he assisted greatly in the success of the visit, always working with "mucho gusto." Olga Martah Montiel of the Ministry of Culture, Leonor de Rocha of the National Museum, Amelia Barahona and Anibal Martinez of Patrimonio Historico, Dr. Jaime Incer B. of the Banco

Central de Nicaragua, and Roberto Parrales S. of IBM de Nicaragua, all helped to make these visits extremely productive.

Dr. Wolfgang Haberland encouraged the inclusion of samples from his Ometepe Island excavations for inclusions in the Brookhaven data base, and Jane Day helped me sort through the boxes and pick the samples. I also want to thank Oscar Fonseca Z., Luis Hurtado de Mendoza, Michael J. Snarskis, and Richard Magnus for the loan of materials from excavations under their supervision for inclusion in the Brookhaven Data base. Lorena San Roman de Gallegos, Director of the National Museum of Costa Rica, facilitated the export of the samples, and Silvia Salgado saw to their shipping.

I am particularly indebted to my fellow Denver Ceramic Conference colleagues whose collective efforts have greatly advanced the field of Greater Nicoya studies: Suzanne Abel-Vidor, Claude F. Baudez, Ronald L. Bishop, Winifred Creamer, Jane S. Day, Juan Vincente Guerrero, Paul F. Healy, Silvia Salgado, Robert Stroessner and Alice Tillet.

Suzanne Abel-Vidor also made valuable comments on an earlier draft of this paper, as did Payson Sheets, Jane Day, and Michael Snarskis.

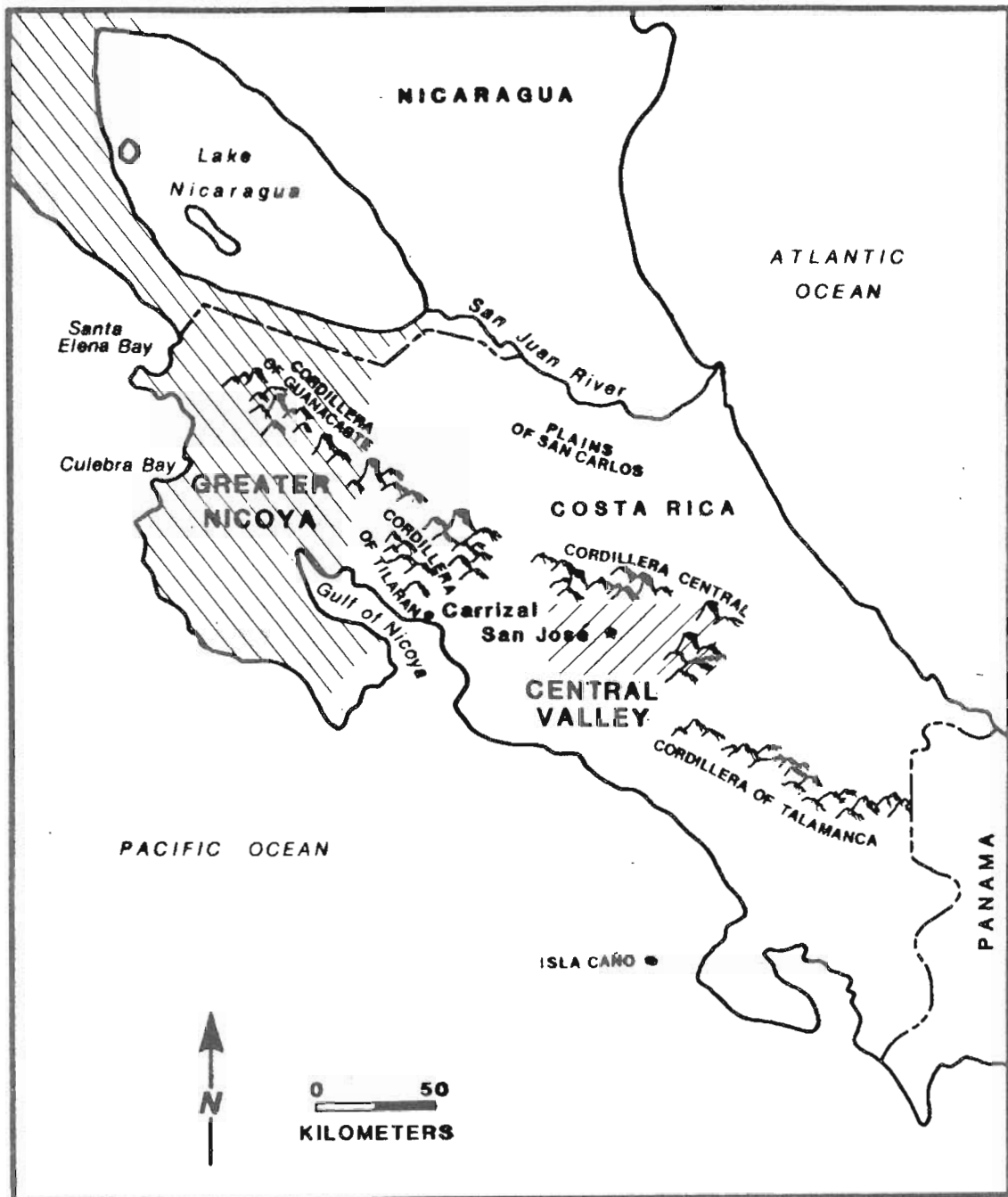


Figure 1

REGIONAL PERIODIZATION

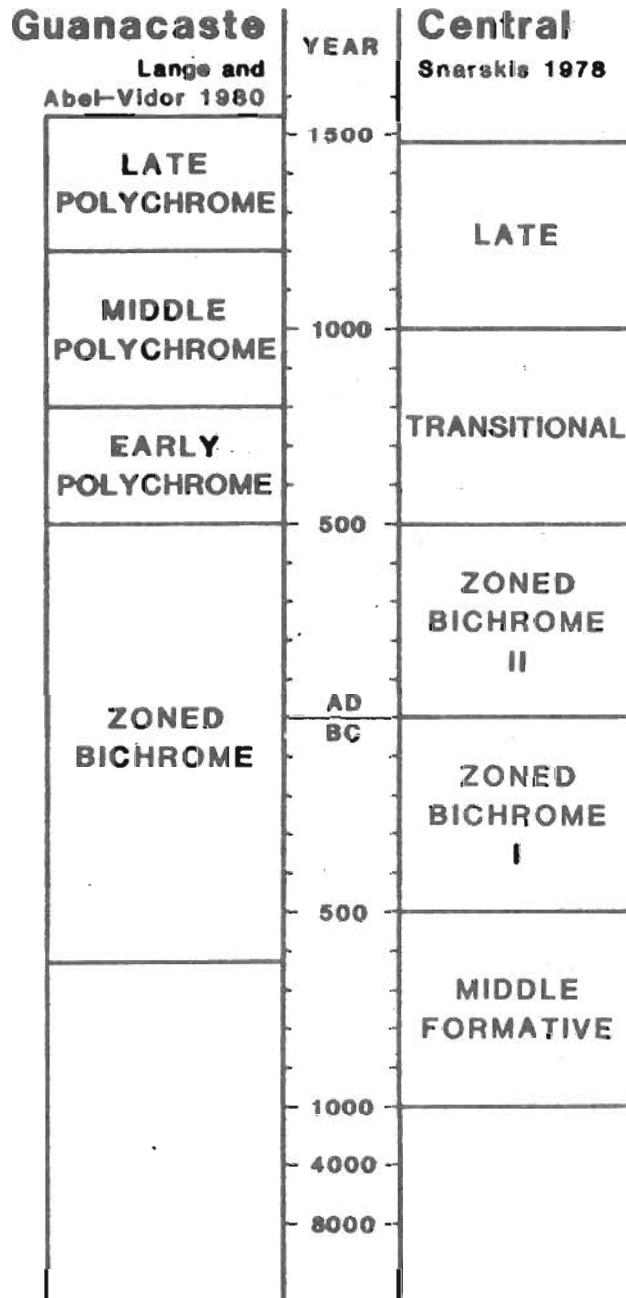


Figure 2

TABLE 1.
SELECTED GREATER NICOYA CERAMIC DISTRIBUTIONS

TYPE	Sites							Line Total
	Chra	HT	T Val	ChEsc	Vdr	LasM	Rivas	
% Vallejo P (N)		5	-1	2	1	1	1	-1
0	62	7	125	20	2	112	328	
% Luna P. (N)		2					1	-1
0	26	0	0	P	P	153	179	
% Madeira P. (N)				2	2	3	2	1
0	0	0	108	48	5	394	555	
% Pataky P. (N)		5					1	1
0	61	0	0	0	0	170	231	
% Granada P. (N)		-1					2	1
0	5	0	0	0	0	360	365	
% Casares P. (N)		1					1	-1
0	15	0	0	0	0	128	143	
% Papagayo P. (N)		8	3	7	14	21	20	12
0	100	269	461	349	37	3662	4878	
% Murrillo A. (S)	28	3	4	3	1	44		3
432	39	366	201	25	77	0	1140	
% Jicote P*(S)		8	6	1	1			2
0	102	532	47	23	P	0	704	
% Tempisque P.*(S)		2						-1
0	22	0	0	0	0	0	22	
% Tempisque I/A (S)	70							3
1082	0	0	0	0	0	0	1082	
% Bramadero P. (S)		1	-1	1	-1	3		-1
0	9	1	50	6	6	P	72	
% Gillen B/T*(S)		2						-1
0	20	0	0	0	0	0	20	
% Palmares I*(S)			1					-1
0	0	67	0	P	P	0		
% Santa Marta P (S)	-1	4			4			-1
1	53	P	P	98	P	0	152	

Table 1 cont.

TYPE	Chra	HT	TVal	Ch	Esc	Vidor	Las M	Rivas	Line Total
%					-1			56	27
Sacasa S. (N)	0	0	0	9		0	P	10,485	10494
%		4	6	1		1			2
Cabuyal P. (S)	0	45	519	37		13	P	0	614
%		1	6	3		3			2
Asientillo P. (S)	0	10	550	197		65	0	0	822
%		2				1			-1
Altiplano P. (S)	0	31	0	0		12	P	0	43
%	-1	3	10	20		15	7	-1	7
Mora P. (S)	1	42	901	1244		382	13	2	2585
%		3	-1	-1		-1			-1
Mora P.,* Guabal V. (S)	0	34	10	20		4	0	0	68
%		2							-1
Mora P.,* Chircot V. (S)	0	29	P	P		P	0	0	29
%		3	5	15		6			4
Birmanía P. (S)	0	39	401	969		163	0	0	1572
%	1	2	-1					1	-1
Potosi A. (N)	21	29	3	0		P	0	105	158
%								1	-1
Velasco P. (N)	0	0	0	0		0	0	175	175
%		3	1	6		3	1	1	2
Galo P. (G)	0	36	88	350		63	1	123	661
%		7	4	16		7	4		4
Carrillo P. (S)	0	92	380	1013		174	7	0	1666
%		-1		2		2	13	4	2
Chavez W/R (N)	0	4	0	95		45	22	796	962
%		9	9	-1		9		3	4
Tola T. (G)	0	116	780	11		231	P	592	1730
%		2	9	1		7			3
Zelaya P. (S)	0	28	787	39		185	0	0	1039

Table 1 cont.

	Chra	HT	T Val	ChEsc	Vdr	LasM	Rivas	Line Total
%		7	8	12	5		-1	4
Guinea I. (S)	0	86	675	763	117	0	1	1642
%		-1					-1	-1
Usulután (N)	0	6	0	0	P	0	24	30
%		8	5	2	18	2	4	5
Charco B/R (G)	0	99	447	105	462	4	791	1908
%		-1	1	5	-1		2	2
Rosales E (G)	0	4	79	288	8	0	424	803
						1	1	-1
Schettel I (N)	0	0	0	0	0	2	109	111
%		1	22	2	2		1	6
Bocana I (G)	0	17	1913	125	48	0	134	2237
TOTALS	1537	1261	8775	6257	2541	176	18740	39287

NOTE: For each type the upper line of figures indicates the percentage of the total sample of each site's ceramic assemblage represented by that type; the lower line represents the actual number of specimens (sherds and vessels) found at each site. Under the "Total" column on the far right, the percentage represents each type's presence as part of the total sample, while the lower line again represents the total number of specimens.

KEY: N= Northern sector (Nicaraguan) dominance
 S= Southern sector (Costa Rican) dominance
 G= General distribution in northern and southern sectors
 P= Present at site, but not quantified in sample
 -1= less than 1 percent
 * = new type or variety (or changed) that was probably included under other types or varieties in previous classifications

SUMMARY:

	North	South	General	TOTAL
Late Polychrome	6	5	0	11
Middle Polychrome	2	8	0	10
Early Polychrome	1	1	2	5
Zoned Bichrome	3	3	4	10

TABLE 2. Greater Nicoya, Guayabo and Las Huacas

TYPE	GN Total	Years	Gybo Total	% of GN Total	Las H Total	% of GN Total
Papagayo P. (N)	4878	600	P		1	-1
Mora P. (S)	2584	600	3	-1		
Mora P. Chircot V. (S)	29	600			1	4
Birmania P. (S)	1572	600	18	1	3	-1
Altiplano P. (S)	43	400			3	4
TOTAL	9106		21	-1	8	-1

TABLE 3. Greater Nicoya, Chircot, and Orosi

TYPE	GN Total	Years	Chrct Total	% of GN Total	Orosi Total	% of GN Total
Mora P. (S)	2584	600	3	-1		
Mora P. Chircot V. (S)	29	600	3	10	1	3
Birmania P. (S)	1572	600	5	-1	2	-1
Altiplano P. (S)	43	400	1	2		
Gillen B/T (S)	20	400	1	5		
TOTAL	4248		13	-1	3	-1

TABLE 4. Greater Nicoya, Los Limones, and Santiago

TYPE	GN Total	Years	L Lim Total	% of GN Total	Sant Total	% of GN Total
Pataky P. (N)	231	400	1	-1		
Papagayo P. (N)	4878	600	1	-1	1	-1
TOTAL	5109		2	-1	1	-1

TABLE 5. Greater Nicoya, Barrial de Heredia and Ochomogo

TYPE	GN Total	Years	B d H Total	% of GN Total	Ocho Total	% of GN Total
Papagayo P. (N)	4878	600	P		P	
Mora P. (S)	2584	600	P		P	
Mora P. Chircot V. (S)	29	600	P		1	
Birmania P. (S)	1572	600	P		P	
Altiplano P. (S))	43	400	P			
TOTAL	9106		376	4%		

TABLE 6. Greater Nicoya, El Molino (Cartago), and Tibas

TYPE	GN Total	Years	Cart Total	% of GN Total	Tibas Total	% of GN Total
Rosales E. Claro V. (G)	803	600			1	-1
Mora P. (S)	2584	600	3	-1		
Altiplano P. (S)	43	400	3	6		
TOTAL	3430		6	-1	1	-1

NOTE: Tables 1-6 show the total ceramic counts from Greater Nicoya of particular types, the time span over which they are thought to have been produced in Greater Nicoya, the total number of examples of each type known at different sites in the Central Highlands, and what percentage of the known Greater Nicoya production is represented by the Highland totals. The symbol "-1" indicates less than 1%.

TABLE 7.

TYPE	GREATER NICOYA AND HIGHLAND/ATLANTIC COMPARISON		HIGHLAND TOTAL	% OF GREATER NICOYA TOTAL
	Total for GN	% for GN		
Vallejo P.	328	1		
Luna P.	179	1		
Madeira P.	555	2		
Pataky P.	231	1	1	-1
Granada P.	365	1		
Casares P.	143	1		
Papagayo P.	4878	18	6	-1
Murrillo A.	1140	3		
Jicote P.*	704	3		
Tempisque P.*	22	-1		
Tempisque I/A	1082	3		
Bramadero P.	72	-1		
Gillen B/T*	20	-1	1	-1
Palmares I	67	-1		
Santa Marta P.	151	-1		

Table 7 cont.

Sacasa S.	10,494	27		
Cabuyal P.	614	2		
Asientillo P.	822	3		
Altiplano P.	43	-1	4	9.0
Mora P.	2585	7	9	-1
Mora P. Guabal V.*	68	-1		
Mora P. Chircot V.*	29	-1	6	2.0
Birmania P.	1572	4	10	-1
			+376 Mora, Papagayo, Birmania and Chircot from Barrial de Heredia	
Potosi A	158	-1		
Velasco Bl.Banded	175	-1		
Galo P.	661	2		
Carrillo P.	1666	4		
Chavez W/R	962	2		
Tola T.	1730	4		

Table 7 cont.

Zelaya P.	1039	3		
Guinea I.	1642	4		
Usulután	30	-1		
Charco B/R	1908	5		
Rosales E.	803	2	1	-1
Schettel I.	111	-1		
Bocana I.	2237	6		
TOTALS	39287		414	18

KEY: -1 indicates less than 1 percent

* Recently defined types/varieties which were probably included in other types/varieties in previous classifications.

Highland sites represented in the total are: Guayabo, Las Huacas, Los Limones, Chircot, Orosi, Santiago, Barrial de Heredia, Tibas, El Molino (Cartago), and Ochomogo.

REFERENCES CITED

- Abel, Suzanne
1978 An Interpretation of Two Burnt Clay Features in an Early Central American Village: Vidor Site, Bay of Culebra, Guanacaste, Costa Rica. M.A. Thesis, Department of Anthropology, Brown University.
- Abel-Vidor, Suzanne
1980a Dos hornos precolombinos en el sitio Vidor, Bahia Culebra, Guanacaste. *Vinculos* 6:43-50.
1980b The Historical Sources for the Greater Nicoya Archaeological Subarea. *Vinculos* 6:155-176.
1981 Ethnohistorical Approaches to the Archaeology of Greater Nicoya. In *Between Continents/Between Seas: Precolumbian Art of Costa Rica*, edited by Elizabeth P. Benson, pp. 85-92. New York: H.N. Abrams.
- Abel-Vidor, Suzanne and Jane S. Day
1981 The Complementary Use of Ethnohistory and Archaeology for Prehistoric Research in the Guanacaste Area of Costa Rica (and southwestern Nicaragua). Paper presented at the annual meeting of the American Society for Ethnohistory, Colorado Springs.
- Accola, Richard M.
1978 A Decorative Sequence of Prehistoric Ceramics from the Vidor Site, Guanacaste, Costa Rica. M.A. Thesis, Department of Anthropology, University of Texas.
- Agency for International Development (AID)
1965 Costa Rica, analisis regional de recursos fisicos (atlas). Alliance for Progress, Washington, D.C.
- Aguilar P., Carlos H.
1972 Guayabo de Turrialba, Arqueologia de un sitio indigena prehispanico. San Jose: Editorial Costa Rica.
- Andrews V, E. Wyllys
1976 The Archaeology of Quelepa, El Salvador. Middle American Research Institute Publication 42. New Orleans: Tulane University.
- Balser, Carlos
1980 Jade precolombino de Costa Rica. San Jose: Instituto Nacional de Seguros.
- Baudez, Claude F.
1967 Recherches Archeologiques dans la Vallee du Tempisque, Guanacaste, Costa Rica. *Travaux et Memoires de l'Institut des Hautes Etudes de l'Amérique Latine* 18. Paris.
- Baudez, Claude F. and Pierre Becquelin
1973 Archeologie de Los Narajos, Honduras. *Collection Etudes Mesoamericaines* 2 (Mexico: Mission Archeologique et Ethnologique).

- Beaudry, Marilyn P.
 1984 The Ceramics of the Zapotitan Valley In The Zapotitan Valley of El Salvador: Archeology and Volcanism in Central America, edited by Payson D. Sheets. Austin: University of Texas Press.
- Binford, Lewis
 1962 Archaeology as Anthropology. *American Antiquity* 28:217-225.
- Bishop, Ronald L., Edward V. Sayre, and Lambertus van Zelst
 1983 Characterization of Mesoamerican Jade. Paper presented at the symposium "The Application of Science to the Fine Arts" held at the Museum of Fine Arts, Boston.
- Blanco, Aida
 1984 Arqueologia de Salvamento del Sitio C39-EC Ochomogo, Costa Rica. *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Bray, Warwick
 1984 Across the Darien Gap: A Colombian View of Isthmian Archaeology. In *The Archaeology of Lower Central America*, edited by F. Lange and D. Stone, pp. 305-338. Albuquerque: University of New Mexico Press.
- Chapman, A.
 1957 Port of Trade Enclaves in Aztec and Maya Civilization. In *Trade and Market in the Early Empires*, edited by K. Polanyi, C.M. Arensberg, and H.W. Pearson, pp. 114-153. Glencoe, Illinois: Free Press.
- Coe, Michael D.
 1962 Preliminary Report on Archaeological Investigations in Coastal Guanacaste, Costa Rica. *Akten, der 34th International Amerikanisten Kongressen, Wien* 1:358-365.
- Creamer, Winifred
 1983 Production and Exchange on Two Islands in the Gulf of Nicoya, Costa Rica, A.D. 1200-1550. Ph.D. disseratation, Department of Anthropology, Tulane University.
 1984 A Survey of the Gulf of Nicoya, Costa Rica. *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Dawson, Susan
 1979 Archaeological Survey in the San Carlos Plains: Upala, Costa Rica, B.A. Thesis, Department of Anthropology, Lawrence University.
- Day, Jane S.
 1982 New Approaches in Stylistic Analysis. Paper presented at the 44th International Congress of Americanists, Manchester.
 1984 New Approaches in Stylistic Analysis: The Late Polycrome Period Ceramics from Hacienda Tempisque, Guanacaste Province, Costa Rica. Ph.D. dissertation, Department of Anthropology, University of Colorado-Boulder.

- Day, Jane S. and Suzanne Abel-Vidor
 1980 The Late Polychrome Period: Guanacaste, Costa Rica. Paper presented at the 79th annual meeting of the American Anthropological Association, Washington, D.C.
- de la Cruz, Ellen
 1981 Costa Rican Mace Heads: Their Symbolic Significance and Role in Information Exchange. M.A. Thesis, Department of Anthropology, Southern Illinois University-Carbondale.
- Diehl, Richard, R. Lomas and J. Wynn
 1974 Toltec Trade with Central America: New Light and Evidence. *Archaeology* 27:182-187.
- Dillehay, Tom D.
 1984 Ritual Paraphernalia, Ceremony and Ideology in Mapuche Society. Ms. on file, University of Kentucky.
- Easby, Elizabeth
 1981 Jade. In *Between Continents/Between Seas: Precolumbian Art of Costa Rica*, edited by Elizabeth P. Benson, pp. 135-152. New York: H.N. Abrams.
- Faulwell, James
 1970 A Burial Grouping with a Murillo Grooved Pot and other Skeletal Material from the Las Marias site. In *Archaeological Research in the Sapoa Valley Area*, edited by F.W. Lange, pp. 1-20, Chicago: Associated Colleges of the Midwest.
- Finch, Will O.
 1977 Preliminary Report on an Archeological Survey of Hacienda Jerico. Ms. on file, National Museum of Costa Rica.
 1984 A Preliminary Survey of Hacienda Jerico, Costa Rica. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Finch, Will O. and Kim Honetschlager
 1984 Preliminary Archaeological Research on Isla Del Cano, Costa Rica. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Fonseca Z., Oscar and Victor Acuna
 1984 Los petroglifos de Guayabo de Turrialba y su contexto. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Fonseca Z., O. and L. Hurtado de Mendoza
 1982 Algunos resultados de la Investigaciones en la Region de Guayabo de Turrialba. *Cuadernos de Antropologia* No. 1. San Jose: Universidad de Costa Rica.

- Guerrero M., Juan Vicente
 1981 Informe preliminar sobre el proyecto de rescate arqueológico en el sitio La Fabrica, Grecia. Ms. on file, National Museum of Costa Rica.
- Gutierrez, Maritza
 1984 Hacia Una Interpretacion de la Llamadas "Tumbas de Totella." In Journal of the Steward Anthropological Society. Urbana: University of Illinois, in press.
- Hartman, Carl V.
 1901 Archaeological Research in Costa Rica. The Royal Ethnographical Museum in Stockholm. Stockholm: Ivar Haeggstroms Boktryckeri A.B.
 1907 Archaeological Researches on the Pacific Coast of Costa Rica. Memoirs of the Carnegie Museum of Natural History 3:1-188.
- Healy, Paul F.
 1974 Archaeological Survey of the Rivas Region, Nicaragua. Ph.D. dissertation, Department of Anthropology, Harvard University.
 1980 The Archaeology of the Rivas Region, Nicaragua. Waterloo (Ontario): Wilfred Laurier University Press.
- Helms, Mary W.
 1979 Ancient Panama: Chiefs in Search of Power. Austin: University of Texas Press.
- Hoopes, John W.
 1979 Recent Archaeological Investigations at the Site of La Guinae, Tempisque River Valley, Guanacaste, Costa Rica. B.A. thesis, Department of Anthropology, Yale University.
- Hurtado de Mendoza, Luis
 1981 Aplicaciones de Fisica Nuclear en la Arqueologia de Costa Rica y America Central. Ciencia y Tecnologia 5:61-106. San Jose: University of Costa Rica.
- Hurtado de Mendoza, Luis and Ana Cecilia Arias
 1984 Ceramica y Patronos de Asentamiento de la Regiona de Guayabo de Turrialba. In Journal of the Steward Anthropological Society. Urbana: Univerity of Illinois, in press.
- Lange, Frederick W.
 1971 Culture History of the Sapoa River Valley, Costa Rica. Logan Museum of Anthropology, occasional Papers No. 4. Beloit, Wisconsin: Beloit College.
 1979 Shells, Spoons, Maces and stools: A Look at Social Organization in Pre-Columbian Costa Rica. Paper presented at the 78th annual meeting of the American Anthropological Association, Cincinnati.
 1980a Una Ocupacion del Policromo Tardio en Sitio Ruiz, cerca de Bahia Culebra. Vinculos 6:81-96.
 1980b Pacific Ocastal Ceramics in Highland Costa Rican Mortuary Contexts: Commerce or Ritual? Paper presented at the 45th annual meeting of the Society for American Archaeology, Philadelphia.

- 1984 The Greater Nicoya Archaeological Subarea. In *The Archaeology of Lower Central America*, edited by F. Lange and D. Stone, pp. 165-194. Albuquerque: University of New Mexico Press.
- Lange, Frederick W. and Ronald L. Bishop
 1984 Settlement Pattern and Jade Research on the Santa Elena Peninsula. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Lange, Frederick W., Ronald Bishop, and Lambertus van Zelst
 1981 Perspectives on Costa Rican Jade: Compositional Analyses and Cultural Implications. In *Between Continents/Between Seas: Precolumbian Art of Costa Rica*, edited by Elizabeth P. Benson. pp. 167-175. New York: H.N. Abrams.
- Lange, Frederick W. and Doris Z. Stone (eds.)
 1984 *The Archaeology of Lower Central America*. Albuquerque: University of New Mexico Press.
- Lange, Frederick W. and Payson D. Sheets
 1983 Report on a preliminary survey of the Nicaraguan lakes region, submitted 3/14/83 to the Ministerio de Cultura, Managua.
 1984 Preliminary Archaeological Survey in Pacific Coastal Nicaragua. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Lange, Frederick W., Suzanne Abel-Vidor, Claude F. Baudez, Ronald L. n.d. Bishop, Winifred Creamer, Jane S. Day, Juan Vicente Guerrero, Paul F. Healy, Silvia Salgado, Robert Stroessner, and Alice Tillet
 New Approaches to Greater Nicoya Ceramics. To appear in *Recent Research in Isthmian Archaeology* edited by Frederick W. Lange. London: British Archaeological Reports.
- Norr, Lynette
 1979 Stone Burial Mounds and Petroglyphs of the Zoned Bichrome Period. Paper presented at the 44th annual meeting of the Society for American Archaeology, Vancouver.
 1984 Archaeological Site Survey and Burial Mound Excavations in the Rio Naranjo/Bijagua Valley of the Guanacaste Cordillera. In *Journal of the Steward Anthropological Society*. Urbana: University of Illinois, in press.
- Norweb, Albert H.
 1961 *The Archaeology of the Greater Nicoya Subarea*. Ms. on file, Peabody Museum of Archaeology and Ethnology, Harvard University.
 1964 Ceramic Stratigraphy in Southwestern Nicaragua. *Actas, 35th International Congress of Americanists* 1:551-561.

- Renfrew, Colin
 1975 Trade as Action at a Distance: Questions of Integration and Communication. In Ancient Civilizations and Trade, edited by J. Sabloff and C.C. Lamberg-Karlovsky, pp 3-59. Albuquerque: University of New Mexico Press.
- Ryder, Peter
 1979 Preliminary Study of the Guayabo de Bagaces Region, Guanacaste, Costa Rica. Paper presented at the 44th annual meeting of the Society for American Archaeology, Vancouver.
 1980 Mojica: A Zoned Bichrome Cemetery in Northwestern Costa Rica. Paper presented at the 45th annual meeting of the Society for American Archaeology, Philadelphia.
 1984 Hacienda Mojica. In Journal of the Steward Anthropological Society. Urbana: University of Illinois, in press.
- Sheets, Payson D.
 1984 Preliminary Archaeological Survey in the Zone of Arenal Volcano. In Journal of the Steward Anthropological Society. Urbana: University of Illinois, in press.
- Skirboll, Esther
 1983 Ceramics from the Central Highlands sites of Curridabat and Concepcion. Paper presented at the symposium "Interregional Ties in Costa Rican Prehistory." Carnegie Museum (Pittsburgh), 27 April.
- Snarskis, Michael J.
 1978 The Archeology of the Central Atlantic Watershed of Costa Rica. Ph.D. dissertation, Columbia University.
 1979 El Jade de Talamanca de Tibas. Vinculos 5:89-107.
 1981 The Archaeology of Costa Rica. In Between Continents/Between Seas: Precolumbian Art of Costa Rica, edited by Elizabeth P. Benson, pp 15-84. New York: H.N. Abrams.
 1984 Central America: The Lower Caribbean. In The Archaeology of Lower Central America, edited by F. Lange and D. Stone, pp 195-232. Albuquerque: University of New Mexico Press.
- Snarskis, Michael J. and Aida Blanco
 1978 Dato Sobre Cermica Policromada Guanacasteca Excavada en la Meseta Central. Vinculos 4:106-113.
- Stone, Doris Z.
 1977 Pre-columbian Man in Costa Rica. Cambridge: Peabody Museum Press.
- Sweeney, Jeanne W.
 1975 Guanacaste, Costa Rica: an analysis of Pre-columbian ceramics from the northwest coast. Ph.D. dissertation, Department of Anthropology, University of Pennsylvania. Ann Arbor: University Microfilms.
 1976 Ceramic Analysis from Three Sites in Northwest Coastal Guanacaste, Vinculos 2:37-44. San Jose: National Museum of Costa Rica.

Vasquez L., Ricardo

1982 27HM: un sitio en Cartago con tumbas de cajon. Tesis de Licenciatura, inedita. Presentada a la Facultad de Ciencias Sociales, Universidad de Costa Rica, San Jose.

1984a Excavaciones de Muestreo en el Sitio Nacascolo: Un Paso Adelante Dentro Del Proyecto Arqueologico Bahia Culebra. In Journal of the Steward Anthropological Society. Urbana: University of Illinois, in press.

1984b Background to Chapter on Central Highlands Section. In Journal of the Steward Anthropological Society. Urbana: University of Illinois, in press.

Vasquez L., Ricardo and David S. Weaver

1980 Un analisis osteologico para el reconocimiento de las condiciones de vida en sitio Vidor. Vinculos 6:97-105.

Wallace, Henry and Richard M. Accola

1980 Investigaciones arqueologicas preliminares de Nacascolo, Bahia Culebra, Costa Rica. Vinculos 6:51-65.