

OUT OF THE PALACE DUMPS

Ceramic production and use at Buenavista del Cayo

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Abstract

An interdisciplinary approach to Late Classic Maya polychrome-painted ceramics from Buenavista del Cayo and Cahal Pech, Belize allows for preliminary observations relevant to a better understanding of elite pottery production and use in the western Belize Valley. The combination of typological and contextual data from archaeological investigations of ceramics along with art-historical stylistic analyses and ceramic-paste chemical-composition data identifies ordinary and special-purpose vessels excavated from palace-midden contexts as having been created in the same elite-oriented or “palace” workshop(s) at Buenavista del Cayo. The method allows for the identification of unslipped, monochrome, and polychrome pottery excavated from “palace” contexts at nearby Cahal Pech as products of the “palace” school workshop(s) at Buenavista del Cayo, which implies movement of the ruling elite of the site between the two locales. The method also allows for the identification of a group of multiphase special-purpose ceramics excavated from Buenavista del Cayo “palace” middens whose chemical divergence from the other “palace-school” pottery provides evidence for the existence of different ceramic-paste recipes existing simultaneously within the same “palace” ceramic school or pottery tradition.

This paper describes initial results of an interdisciplinary study of Late Classic-period (A.D. 550–850) Maya polychrome pottery excavated from several middens and other deposits associated with palace structures and elite residences at Buenavista del Cayo, Cahal Pech, and Las Ruinas de Arenal in western Belize (Figure 1).¹ These ceramic remains represent both local and foreign production as defined by archaeological type/variety analysis, art-historical stylistic and epigraphic investigations, and chemical data obtained through neutron-activation analysis of the pottery. The study combines these four approaches to investigate the cultural and historical information represented by these ancient ceramic remains.

Although the type/variety method of ceramic analysis was developed to recover cultural and historical data from the archaeological record, its application over the years by Maya archaeologists has been less than conscientious in many cases. The lack of diligent utilization of this method has diminished its analytical capabilities and effectiveness as a means of addressing questions of

and reconstructing social process and culture history. This is particularly so at the varietal level wherein archaeological ceramists often either do not designate a variety or simply do not critically apply varietal identifications from type collections of other sites. As designated by James Gifford (1976), the varietal level identifies local, and perhaps even individual, ceramic-workshop behavior. As a result, the type/variety analysis of Classic Maya ceramics remains primarily an effective chronological tool while not achieving its full potential as an indicator of sociocultural patterns.

The current study addresses both the type and, especially, the varietal components of the type/variety method through the addition of stylistic analysis and chemical data. By combining methods and data sets, it is possible to sharpen the focus and improve the precision of the study of ancient Maya ceramics.² These complementary data allow for a more succinct identification of locally manufactured and imported objects as well as the recognition of products of specialized production units, such as palace work-

¹ Fieldwork at these and other sites in the upper or western Belize Valley was carried out between 1984 and 1991 by the San Diego State University Mopan-Macal Triangle Archaeological Project under the direction of Jennifer Taschek and Joseph Ball. The principal goal of the project has been to document the internal sociobehavioral structure and organization of a representative Late Classic Lowland Maya community in terms of component groups, the activities carried out by them, and the relationships that existed among them. For preliminary overviews of the project and its findings see Ball (1993), Ball and Taschek (1991), and Taschek and Ball (1992).

² Dean Arnold (1980, 1981) suggested this type of approach was appropriate to analyze the archaeological ceramic record. Along with Neff and Bishop (e.g., Arnold et al. 1999), he has investigated the feasibility of linking chemical compositional and stylistic subgroups within a ceramic type and how the resulting data might strengthen the inferential potentials of pottery in the service of sociocultural inquiry. To date, while community-based production may be readily identified using compositional data, production at the level of smaller social units is more challenging (see also Arnold et al. 1991; Stark et al.).

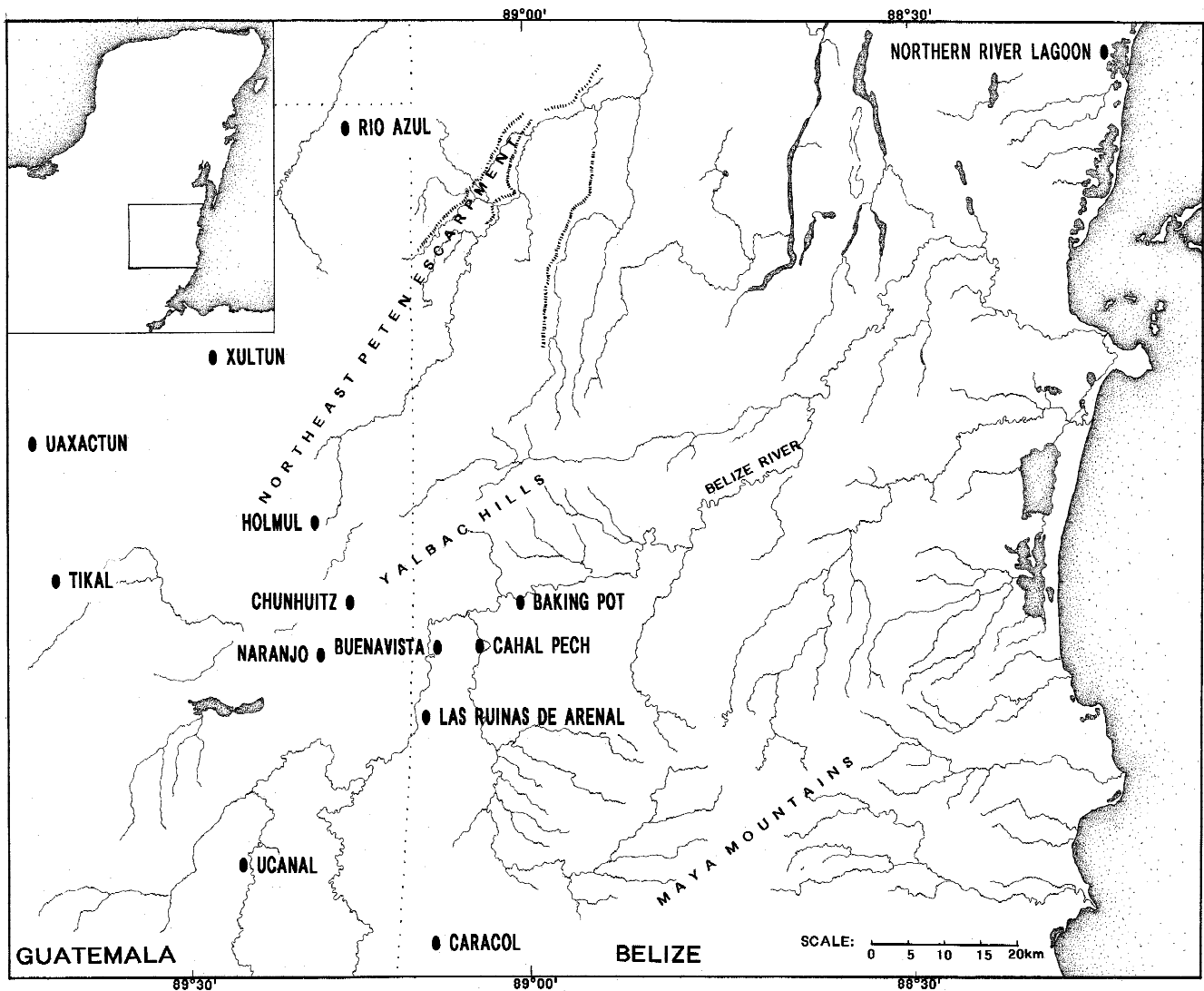


Figure 1. Map of the eastern Peten region of Guatemala and western Belize. Map by Jennifer T. Taschek and Joseph W. Ball.

shops.³ This is particularly important when dealing with the specialized elite polychrome ceramics that are a hallmark of the complex and competitive sociopolitical environments of the Late Classic period. The data resulting from our interdisciplinary investigation of the ceramic records from these sites thus can contribute important particulars regarding their social and political history and our understanding of these particulars. The focus of the present study is the pottery corpus excavated at Buenavista del Cayo.

The approach taken here is based first on the analysis of pottery style. As used in this study, style is defined as a constellation of technical, formal, iconographic, and epigraphic elements. Together these features represent the unique expression of a group of socially related ceramic artists, their patrons, and other consumers

³ Also see Arnold (1983, 1993) for other examples from the pre-Columbian archaeological record and the theoretical development of the relationship of style to sociopolitical structure and the identification of distinct social groups within a specific geographic locus.

of the pottery (Ackerman 1962; Earle 1990; Layton 1981; Lemmonier 1986; Rice 1987; Sackett 1990; Weissner 1984). Thus, style functions as a visual index of social relations and may even be regarded as representing a particular corporate community or social unit.

The chemical data used in this study are a product of the Maya Ceramics Project, Smithsonian Center for Materials Research and Education, Smithsonian Institution. This project was created to investigate Classic Maya painted-pottery production, combining both stylistic and chemical analyses to identify individual styles of Classic-period painted pottery and to indicate possible locations for communities and/or workshops where they were produced. The chemical data were generated through the use of the highly sensitive technique of instrumental neutron-activation analysis (INAA). This technique permits many elemental constituents of a ceramic paste to be determined simultaneously with good precision, several being determined at or below the parts-per-million level. Such sensitivity is required in order to discover those paste compositional differences that reflect the use of different clay resources

within a fairly small geographical area as well as the specific mixtures of clays and tempering materials that represent the idiosyncratic “paste recipes” of pottery producers working closely together.

Simply stated, neutron-activation analysis involves the exposure of atomic nuclei in a pottery paste sample to a source of neutrons. Certain atomic nuclei capture neutrons and are elevated to a higher energetic state, producing radioactive isotopes. These energetic radioisotopes decay to stable nuclei, some emitting radiation in the form of gamma rays. The emitted gamma rays can be detected, counted, and sorted by their respective energies that are specific for the various radioisotopes. By comparing the emissions from the archaeological sample with those from a sample of reference material containing known elemental concentrations, the amount of certain elemental constituents in the unknown ceramic paste can be calculated.⁴

Dean Arnold's (1971) work among the contemporary Maya potters of Ticul, Yucatan, and Jeffrey Howry's (1978) research among the Chamula potters of highland Guatemala identify the kinds of idiosyncratic and consistent production methods involved in the manufacture of “successful” pottery. In turn, these are the kinds of patterns of crafting behavior that may be identified by INAA of ceramic pastes.⁵ Arnold (1971) and Howry (1978) independently discussed Maya potters' persistent use of specific raw clay resources and the proportionally consistent mixtures of clays and tempers created by these potters to fashion acceptable clay bodies. These paste recipes are particular to individual workshops and potters, which can render their ceramic products chemically distinguishable from those of other pottery producers within the region and even among different potters in the same community. Applying these data to an archaeological situation, pottery that shares a distinct paste-chemistry compositional profile should represent the output of a group of potters working closely together within one community and, possibly, even within one workshop (Arnold 1993; Arnold et al. 1991, 1999). The linking of chemically identifiable groups of pottery with societal subunits is strengthened when the chemical groups can be observed to correlate with other more traditional archaeological attributes of form, style, and contents of hieroglyphic texts.

Raymond Thompson (1958), who conducted research among Maya potters in northern Yucatan, identified variations in the pottery produced by a number of contemporary communities. The ceramics from each community were characterized not only by a specific constellation of paste features, but also by attributes of vessel shape and surface decoration, these latter being core features of style. Applying Thompson's (1958) findings to the archaeological record, a group of visually similar pottery vessels whose

paste composition is equally homogeneous should represent the output of a particular group of full-time or part-time ceramicists creating pottery in a face-to-face production environment, that is, in the same community and possibly even in the same workshop (see Ball 1993). An analysis of archaeological pottery that examines both its typological and stylistic features as well as its subtle differences in paste composition, therefore, should identify the products of specific areas, communities, workshops, and even individuals.

This hypothesis can be tested by a focused analysis of pottery excavated from discrete archaeological contexts at the site of Buenavista del Cayo, Belize. More than 140 of these Late Classic-period painted potsherds were chosen for chemical sampling. Many of these specimens form discrete groups based on trace elemental chemical data that, in turn, correspond to typological and stylistic groupings. Such chemical, typological, and stylistic homogeneity indicate specialized workshop production, in some cases production within a workshop which probably was spatially and socially attached to an elite residential environment or palace (here termed a “palace workshop”). It is also probable that some of these pottery types and styles from elite contexts at Buenavista were produced for specific audiences and uses on the sociopolitical stage of Late Classic-period western Belize and the adjacent eastern Peten region, Guatemala.

CHINOS BLACK-ON-CREAM POTTERY

Investigations of the Chinos Black-on-cream ceramic type, first identified at Uaxactun, Guatemala (Smith 1955; Smith and Gifford 1966:156), demonstrate the analytical effectiveness of this multidisciplinary approach (Figure 2). Sherds of this type have been found at many sites in western Belize and eastern Guatemala, including Buenavista del Cayo, Cahal Pech, Las Ruinas de Arenal, Baking Pot, Caracol, Naranjo, Holmul, Chunchutz, and Uaxactun. Myriad unprovenienced whole vessels of the type also are known from private and public collections in Guatemala, Belize, the United States, and Europe. The chemical profiles of the sampled provenienced and unprovenienced examples of this pottery suggest that production occurred throughout the region (Figures 3 and 4).^{6,7} The existence of a local production center for the

⁴ The Maya Polychrome Ceramics Project generally follows the established INAA analytical procedures discussed in the following publications: Perlman and Asaro (1969), Blackman (1986), Bishop et al. (1982). The Maya Polychrome Ceramics Project began under the auspices of the Department of Chemistry, Brookhaven National Laboratory, and moved in 1982 to the Smithsonian Center for Materials Research and Education (SCMRE, formerly the Conservation Analytical Laboratory), Museum Support Center, Smithsonian Institution in Washington, DC. The analyses of additional samples have been carried out at the SCMRE facilities operating at the National Institute of Standards and Technology (NIST; formerly the National Bureau of Standards). The elemental concentrations used for inferring chemical similarities among the ceramic pastes of the analyzed samples include Rb, Cs, Ba, Sc, La, Ce, Eu, Lu, Hf, Th, Ta, Cr, Fe, Co, Sm, Yb, and Ca.

⁵ Arnold (1971:20, 39) called this complex of knowledge and habitual actions an “ethnominerological cognitive system.”

⁶ A Q-mode factor analysis was carried out to provide a general structural overview of the data set, using a proportional measure of similarity, which would compensate for minor variations arising from proportional difference in amounts of similar temper. The analysis used the concentrations of Sc, Cr, Fe, Rb, Cs, La, Ce, Eu, Yb, Lu, Hf, and Th, expressed as a percent of the range. Three factors were extracted that accounted for 94.6% of the total variation (37, 36, and 21%, respectively). Variation along the A-axis (top to bottom) represents the major variation in the alkali elements Rb and Cs. The B-axis is positively weighted toward all elements, especially Cr, except for the strongly negative loading of Th. The C-axis is strongly weighted negative loadings of Sc, Fe, Hf, and Th.

⁷ Factor analysis of the derived Buenavista groups and “Eastern Peten” Chinos vessels was carried out on a correlation matrix of the logged elemental concentrations for Sc, Cr, Fe, Cs, La, Ce, Sm, Eu, Yb, Lu, Hf, and Th. Unlike the Q-mode analysis discussed above, the R-mode factor analysis is more sensitive to the absolute magnitude of elemental abundance and is thus more likely to reflect distinct paste preparation “recipes” rather than proportionality of raw material resources. The factors with eigenvalues greater than 1 were extracted, accounting for 78% of the variability (44, 19, and 15%, respectively). Factors were rotated to varimax positions. The pattern for the factor loading shows high correlations of the rare earth elements on Factor 1. Factor 2 reflects the strong correlations of the transition elements and Factor 3 is dominated by a very high (.93) loading of Th.

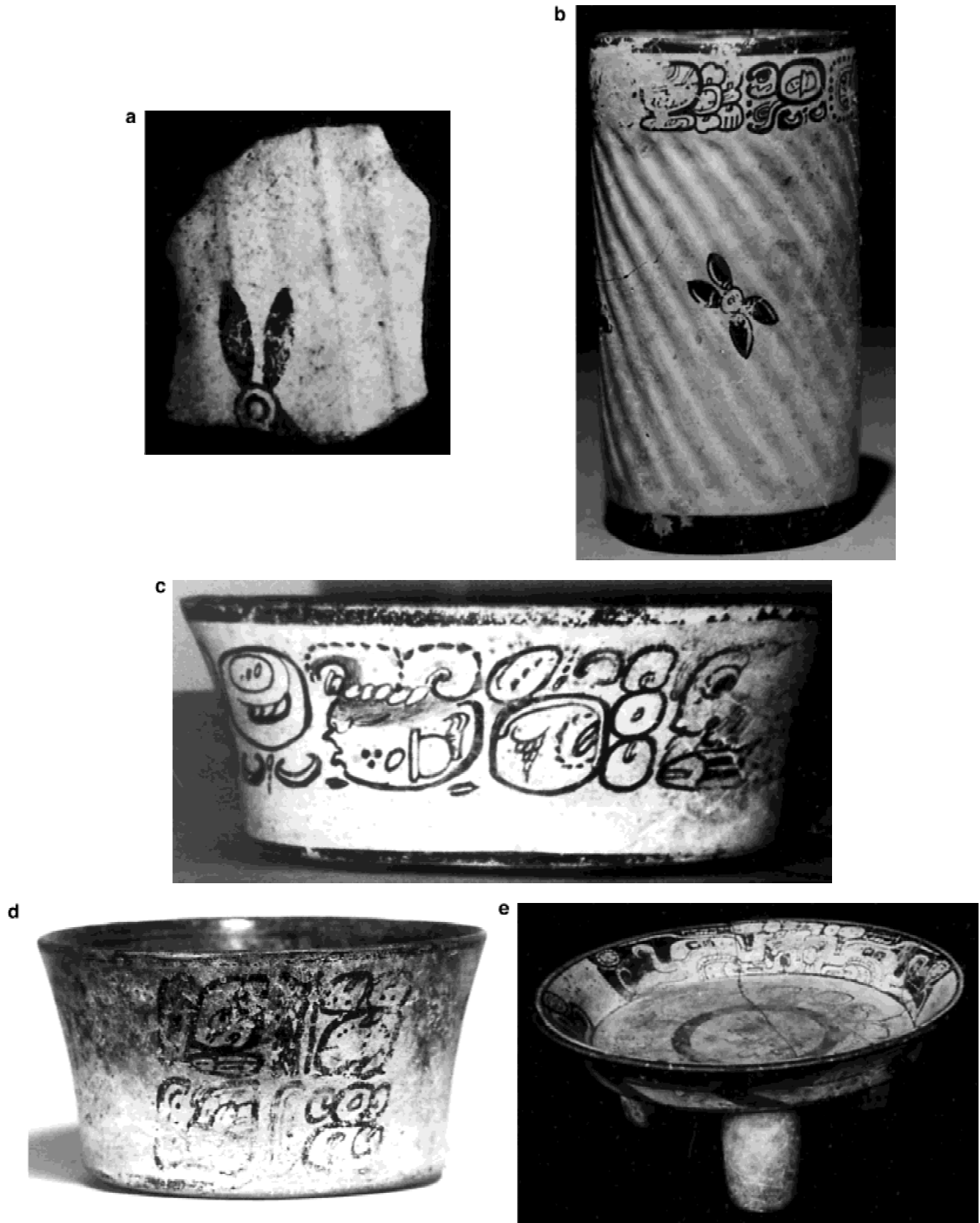


Figure 2. Chinos Black-on-cream ceramic type vessels: (a) MSU221, excavated at Uuaxactun, Guatemala; (b) MSI417, unprovenienced cylinder vessel; (c) MS1839, unprovenienced dish; (d) MS0948, unprovenienced dish; and (e) MS5320, unprovenienced plate. Photographs by Dorie Reents-Budet (a, c, e), J. Kerr (b), and Ronald L. Bishop (d).

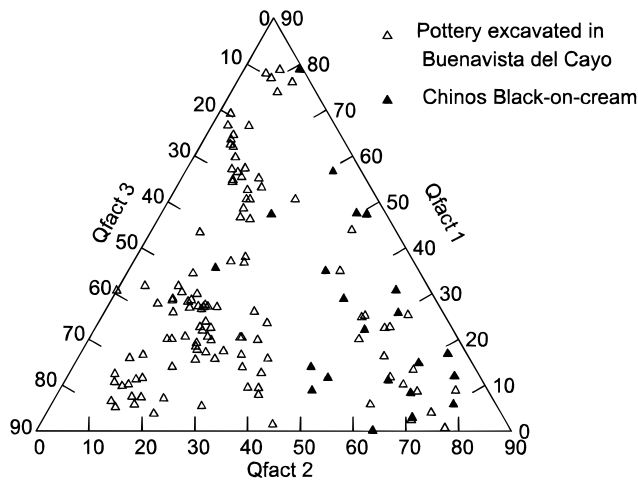


Figure 3. Q-mode triangular plot of chemical profiles of Chinos Black-on-cream ceramic type sherds and whole vessels and Buenavista ceramics. Chart by Ronald L. Bishop.

type in the western Belize Valley, however, is indicated by a conjunction of stylistic, chemical, and contextual data which together point to Buenavista as the location of the workshop(s) where these particular vessels were created (Figures 4 and 5). Buenavista-produced Chinos Black-on-cream pottery is distinct from its varietal representatives produced elsewhere in the eastern Peten, especially notable for their simple iconographic program such as a “floral” (or *k'in*) motif or stylized representations of insects, these motifs surrounded by open pictorial space (Figure 5). The Buenavista vessels also are distinguishable by their relatively small size and straight-sided cylindrical vase form or flat-bottomed dishes

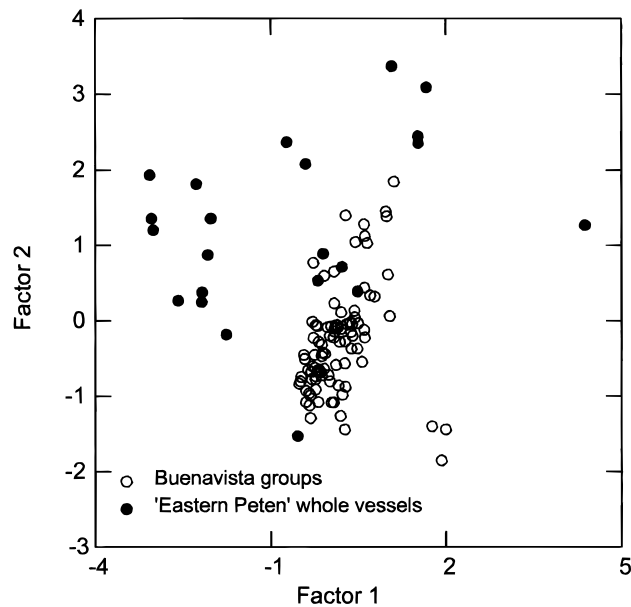


Figure 4. R-mode, varimax rotated, factor plot of eastern Peten Chinos Black-on-cream vessels and sherds excavated from palace-midden deposits at Buenavista del Cayo, Belize. Chart by Ronald L. Bishop.

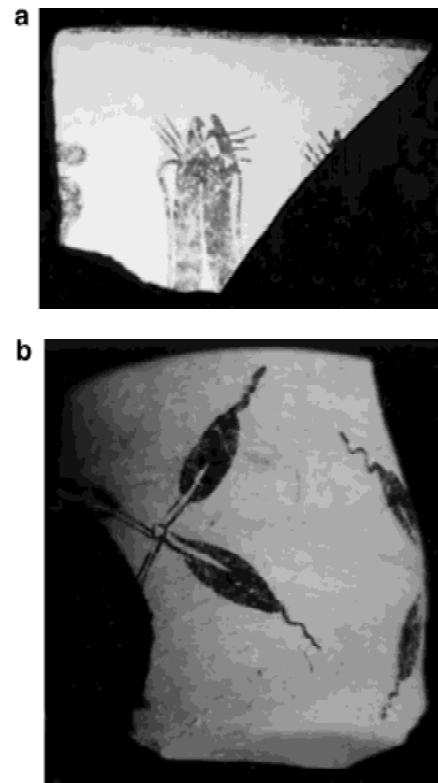


Figure 5. Chinos Black-on-cream vessels produced at Buenavista and excavated from palace middens at the site: (a) MSBU57 and (b) MSBU72. Photographs by Dorie Reents-Budet.

with out-flaring walls. No composite shapes or large (tall and wide) cylinder vases are known from the Buenavista corpus.

Imported examples of Chinos Black-on-cream are equally recognizable both chemically and stylistically. For example MSBX77 (Figures 3 and 6b) was excavated from Buenavista Palace dump 2 (Figure 7). The chemical profile of this sherd more closely resembles that of sherds found at Naranjo (Guatemala), whose paste-composition profiles and pottery style indicate they all are products of workshops located at Naranjo and in its immediate environs. Similarly, the painting style of MSBX77 recalls that of a talented artist who probably was a member of the ruling elite of Naranjo and who produced vessels at the behest of the contemporary Naranjo ruler (Houston et al. 1992:506–507; Reents-Budet et al. 1993; Reents-Budet et al. 1994:55–65; Stuart 1987). A number of unprovenienced vessels are known to have been produced by this artist (Herring 1997:38–43; Reents-Budet et al. 1994:Figures 2.30–2.32), known by the Naranjo toponymic title Ah Maxam found in his name phrase (Stuart 1987). Ah Maxam’s products are characterized by solid outlines of a standard thickness; closed glyphic forms which are slightly convex in shape; the use of the alternative “vase” word *y-uch’naab* rather than *y-uch’ab*; painted imagery filling the available pictorial space, combined with judicious use of open background, to highlight images and direct the eye through the pictorial program; and curvilinear motifs visually balanced with the hieroglyphic texts. These same stylistic features distinguish the Chinos Black-on-cream MSBX77 sherd from the majority of this ceramic type in the Buenavista pottery corpus. These stylistic features and the paste compositional chemical data point

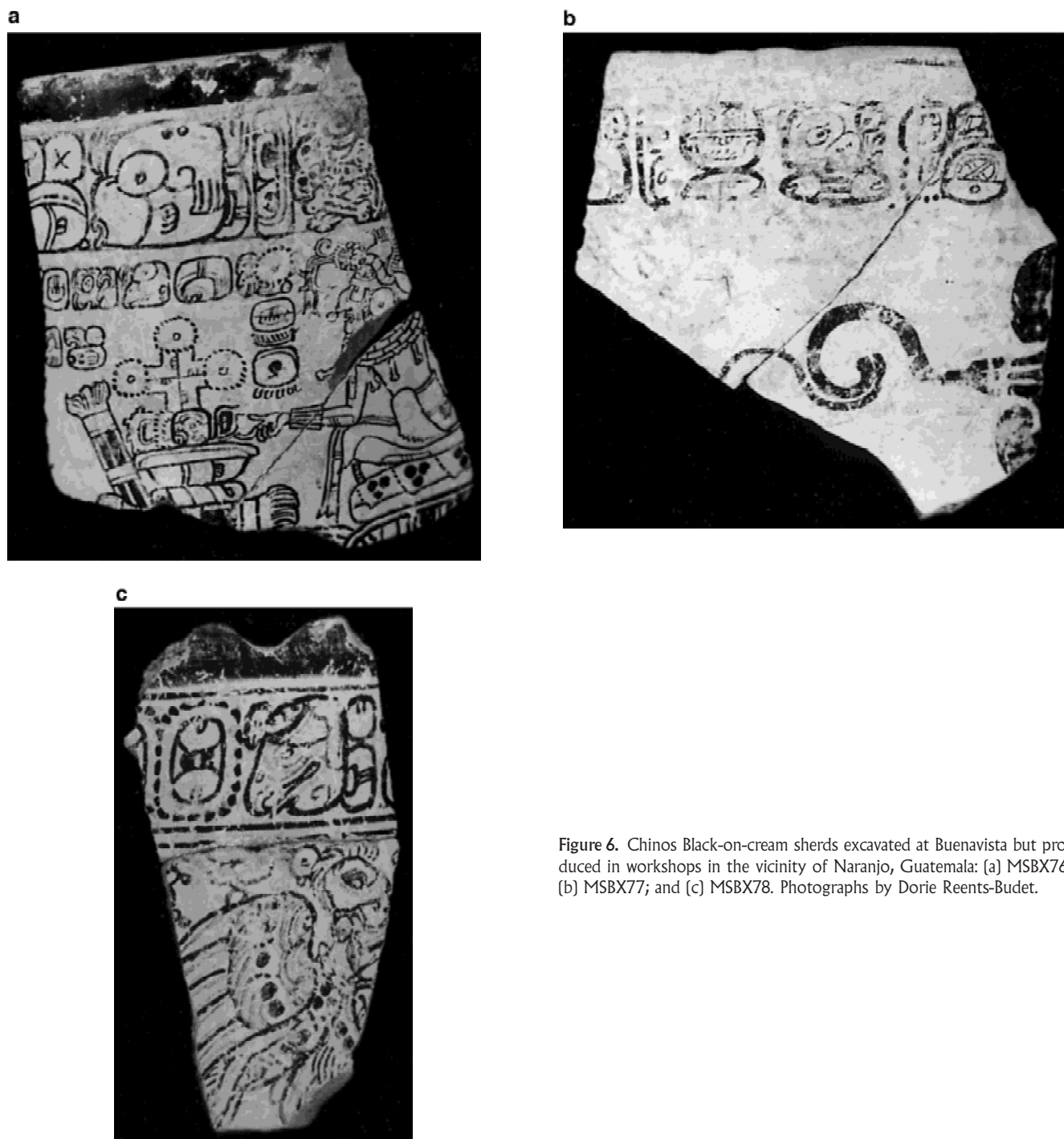


Figure 6. Chinos Black-on-cream sherds excavated at Buenavista but produced in workshops in the vicinity of Naranjo, Guatemala: (a) MSBX76; (b) MSBX77; and (c) MSBX78. Photographs by Dorie Reents-Budet.

to MSBX77 having been made in a workshop located in the Naranjo vicinity and imported to Buenavista.

Four stylistic criteria distinguish eastern Peten Chinos Black-on-cream vessels from their Buenavista counterparts. These criteria include a wider range of vessel shapes and sizes (Figure 8a–c), highly controlled and elegant brush strokes denoting accomplished artistry (Figure 8a), and judicious pictorial narrative programs composed of hieroglyphic texts and a repeated iconographic motif. The style also is characterized by the presence of a full ver-

sion of the Primary Standard Sequence (PSS) (Coe 1973) dedicatory hieroglyphic phrase but with a few idiosyncratic glyphic components (Reents-Budet et al. 1994:133–135).

In contrast to the eastern Peten vessels, Buenavista-produced Chinos Black-on-cream vessels generally lack PSS texts. Further, the eastern Peten PSS texts often end with the name phrase of the patron and/or owner of the vessel (Figure 8a). Occasionally these name phrases include the Xultun emblem glyph or toponyms referring to Xultun locales or other sites located along the Naranjo-

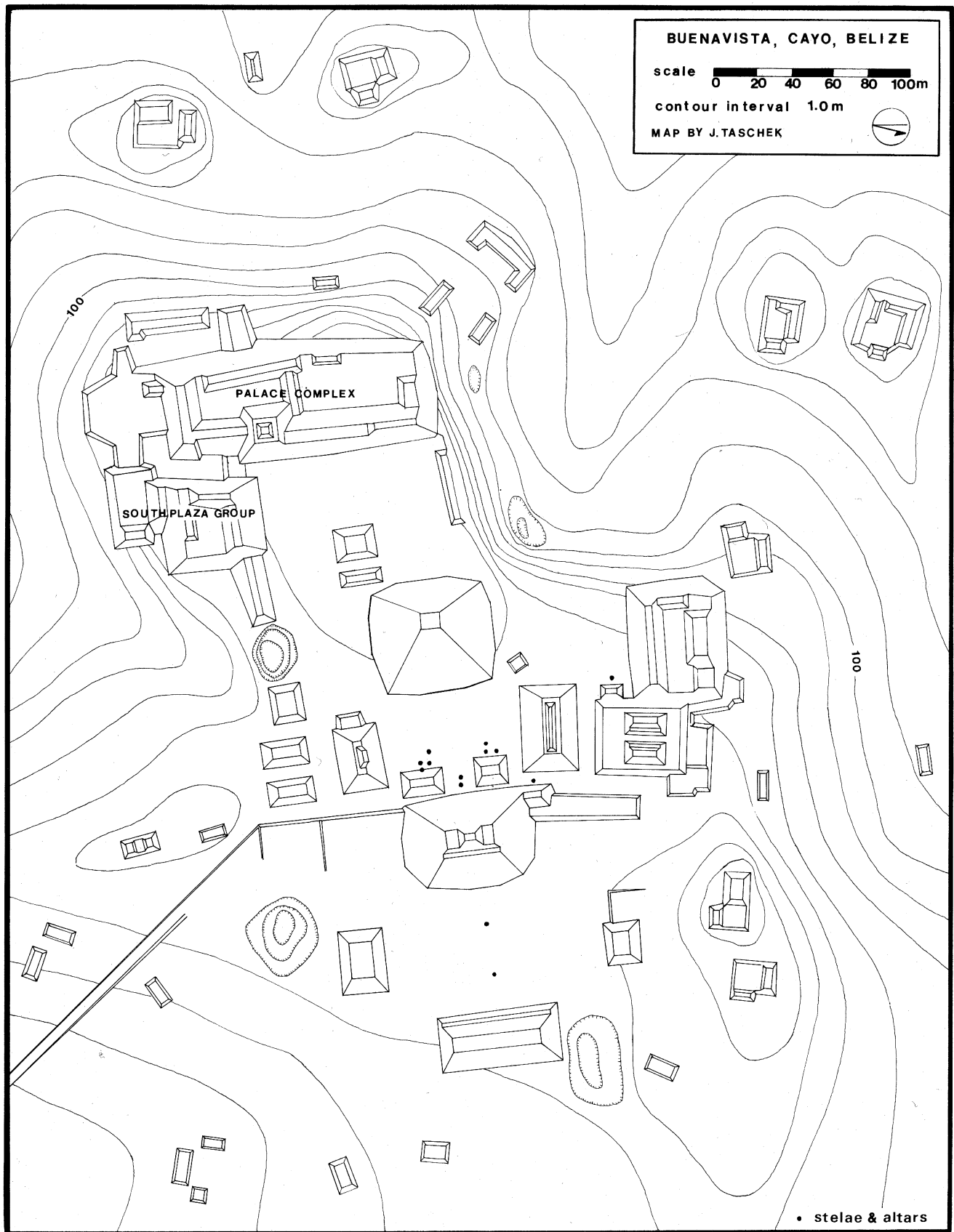


Figure 7. Map of central area of Buenavista del Cayo, Belize, noting location of the Palace and South Plaza Group elite residential compounds. Map by Joseph W. Ball and Jennifer T. Taschek.

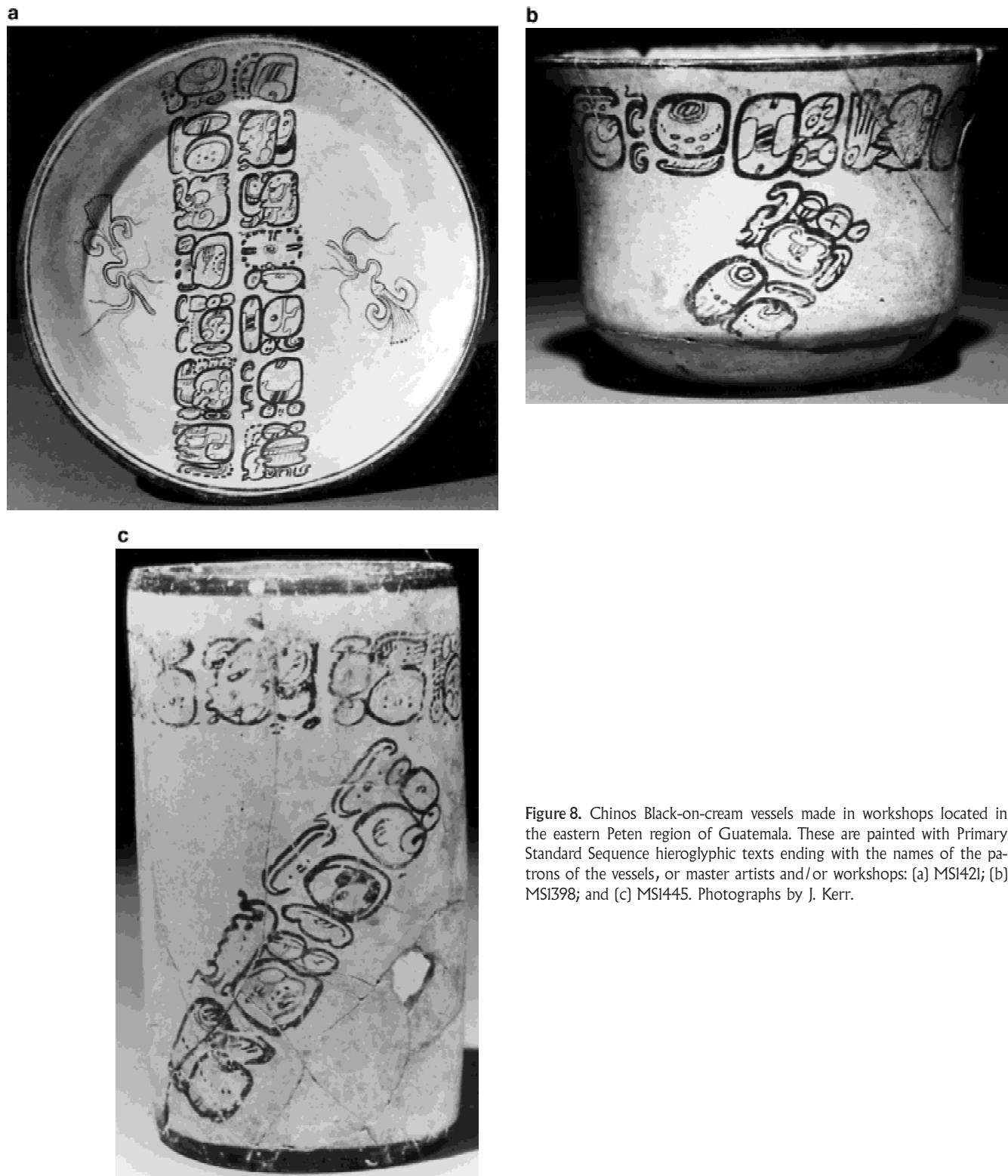


Figure 8. Chinos Black-on-cream vessels made in workshops located in the eastern Peten region of Guatemala. These are painted with Primary Standard Sequence hieroglyphic texts ending with the names of the patrons of the vessels, or master artists and/or workshops: (a) MS1421; (b) MS1398; and (c) MS1445. Photographs by J. Kerr.

Xultun corridor (Figure 8b). Some texts terminate with a final phrase that Barbara MacLeod (in Reents-Budet et al. 1994) argued may be the name of the workshop where the vessel was created (e.g., MS1398 and MS1445; Figure 8b, c). MacLeod suggested the reading of these phrases as *u-yul u-kun* (emblem glyph and/or

personal name), or “his craft, his station” (site name or toponym/patron’s or master artist’s and workshop’s name) (MacLeod in Reents-Budet et al. 1994:133–135). These stylistic criteria combine to indicate that, although Buenavista was participating in the general ceramic sphere of the eastern Peten, it intentionally devel-



Figure 9. Cabrito Cream-polychrome cylinder vases: (a) MSI374; the paste chemistry, painting style, and hieroglyphic text of this vase combine to indicate it was made in a workshop located in the vicinity of Naranjo, Guatemala and (b) MSH013; this vessel was excavated from an elite burial at Holmul, Guatemala. Photographs by J. Kerr (a) and Dorie Reents-Budet (b).

oped a local style which renders its products immediately recognizable within the ceramic record.

CABRITO CREAM-POLYCHROME POTTERY

Another ceramic type found in large quantities at Buenavista, as well as at many other sites in the region, is Cabrito Cream-polychrome (Figures 9 and 10). This type is often referred to as “Holmul-style” pottery, based on its discovery in burials at Holmul, Guatemala (Merwin and Vaillant 1932:Figure 9b). The many visibly distinct styles (or “varieties”) of this type, each of which constitutes a separate ceramic expression, indicate multiple centers of production (Reents-Budet et al. 1994:179–186). Unfortunately, routine procedure by most ceramic typologists has been to designate all of these vessels as Cabrito Cream-polychrome: Cabrito Variety (or Zacatel Cream-polychrome: Cabrito Variety), thereby effectively homogenizing socioculturally indicative stylistic variation.

When specimen coordinates are plotted relative to R-mode factors 1 and 2, sampled provenienced and unprovenienced Cabrito Cream-polychrome Holmul-style vessels generally do not form discrete groups but instead are distributed broadly throughout the plot (Figure 11).⁸ This may reflect an expected range of chemical variability given the hypothesized use of multiple clay- and temper-resource procurement zones by the producers of this pottery style as well as the idiosyncratic creative behaviors of the myriad workshops and pottery artists located throughout the region. The samples excavated at Holmul, for example, while internally heterogeneous, can function compositionally as a site-specific group

⁸ R-mode factor analysis was carried out on a data matrix consisting of Buenavista Cabrito Cream-polychrome and other Late Classic polychrome pottery type excavated at Holmul and Naranjo, and unprovenienced samples. Factors were extracted as discussed in Footnote 7, accounting for 82% of the variability (49, 18, and 15%, respectively). Factor 1 has high correlation with the rare earths while Factor 2 is highly loaded on the transition elements. Factor 3 is strongly correlated with Th.



a



b

Figure 10. (Continued on facing page.)

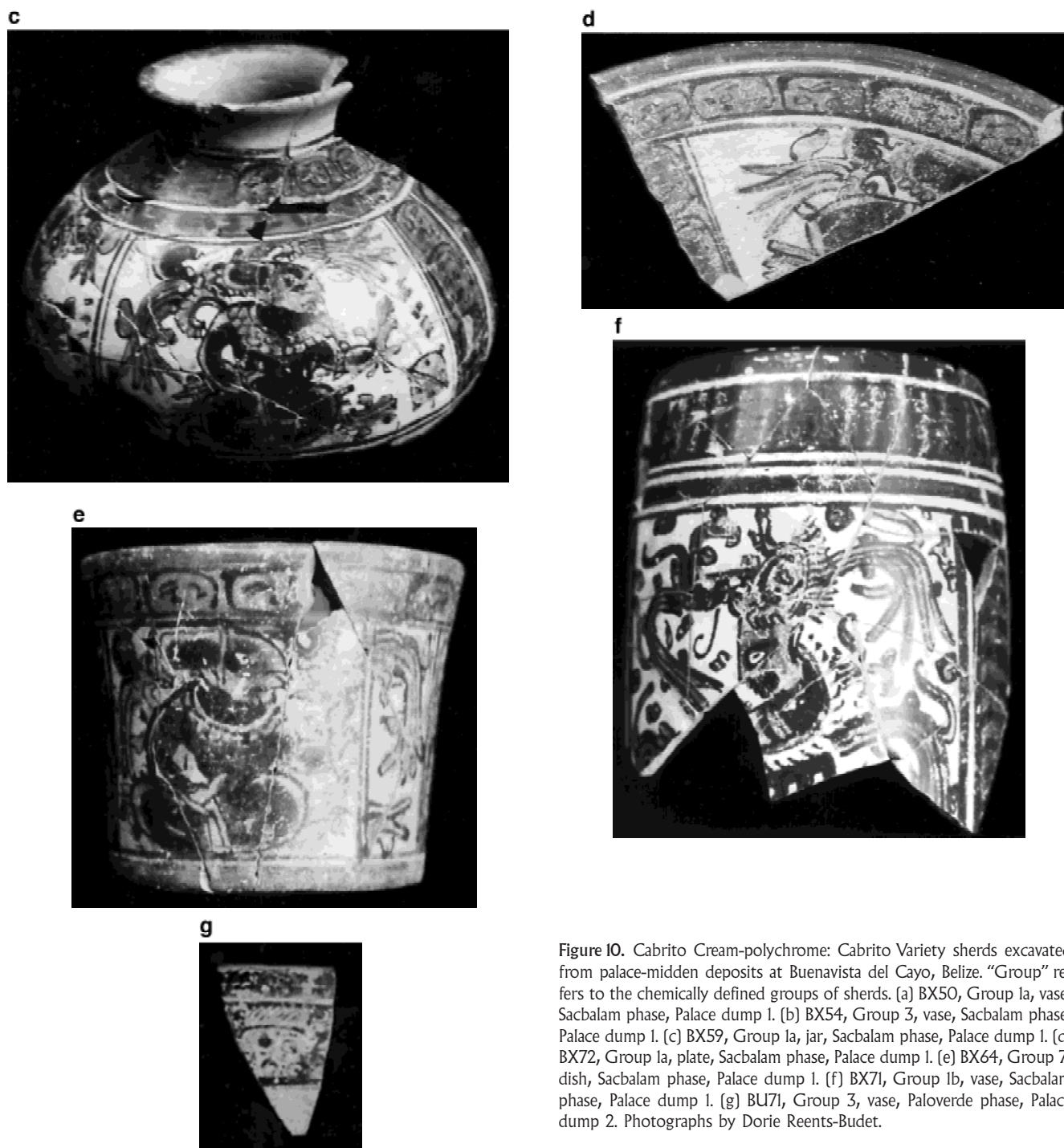


Figure 10. Cabrito Cream-polychrome: Cabrito Variety sherds excavated from palace-midden deposits at Buenavista del Cayo, Belize. “Group” refers to the chemically defined groups of sherds. (a) BX50, Group 1a, vase, Sacbalam phase, Palace dump 1. (b) BX54, Group 3, vase, Sacbalam phase, Palace dump 1. (c) BX59, Group 1a, jar, Sacbalam phase, Palace dump 1. (d) BX72, Group 1a, plate, Sacbalam phase, Palace dump 1. (e) BX64, Group 7, dish, Sacbalam phase, Palace dump 1. (f) BX71, Group 1b, vase, Sacbalam phase, Palace dump 1. (g) BU71, Group 3, vase, Paloverde phase, Palace dump 2. Photographs by Dorie Reents-Budet.

and are found to be separate from unprovenienced samples that represent production at many sites in the eastern Peten-western Belize region from Río Azul in the north to Ucanal in the south. A number of specimens exhibit chemical similarity to sherds found at Naranjo. A large quantity of Cabrito Cream-polychrome Holmul-style pottery was found during excavations at Buenavista. In contrast to the tendency for the majority of sampled Holmul-style pottery to cluster, the Buenavista samples are found to form several chemically coherent groups. These groups are separate from

all other sampled specimens of Holmul-style pottery from throughout the western Belize-eastern Peten region (e.g., Cabrito Cream-polychrome and other typological representatives).

These data reflect a distinctiveness of the Buenavista material that is paralleled by its stylistic uniqueness. For example, the Holmul-style pottery from Buenavista is characterized by barrel-shape cylinders rather than the more common straight-sided cylindrical form (Figure 10a, b, f). The Buenavista material also is characterized by a wider range of vessel shapes including dishes,

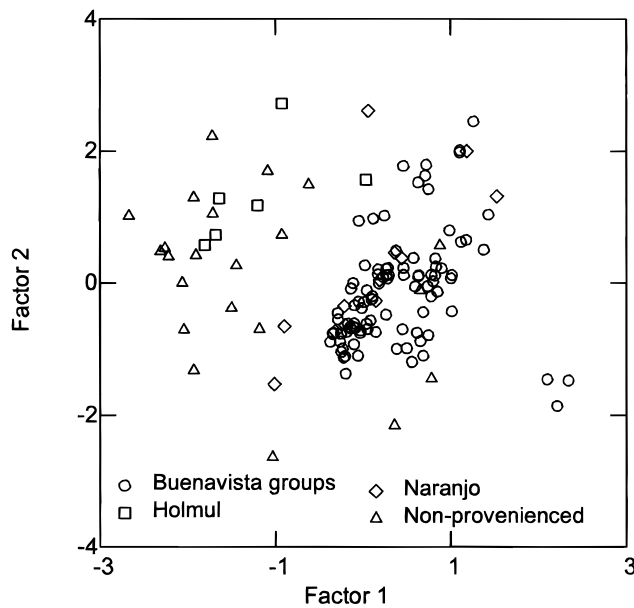


Figure 11. R-mode, varimax rotated, factor analysis plot of Cabrito Cream-polychrome and other Late Classic polychrome pottery types excavated at Holmul and Naranjo (Guatemala) and Buenavista del Cayo, and unprovenienced samples. Chart by Ronald C. Bishop.

plates, and restricted-neck jars (Figure 10c–e). The latter form was rarely painted in polychrome during the Classic period, yet they are numerically well represented in the Buenavista corpus. Characteristic of the Buenavista painters' works is their use of only two values of the red-slip paint (red and orange), the orange possibly being a dilution of the red slip. This contrasts markedly with Cabrito Cream-polychrome from other sites in the region whose artists often exploited the myriad subtle variations in value and hue that are possible to achieve with this water-based medium.⁹ The Buenavista Cabrito Cream-polychrome corpus is further distinguished by the artists' extensive use of postfiring-applied Maya-blue pigment to embellish vessel rims and bases (e.g., MSBX50 and MSBX64; Figure 10a, e). Although this feature is noted on some of the finest examples of Cabrito Cream-polychrome vessels made at other sites, it is rarely found on the less well-painted examples—except at Buenavista. These artists embellished many vessels with Maya-blue pigment, including those whose painting is not of the highest quality.

A number of other stylistic features distinguish Buenavista Cabrito Cream-polychrome vessels. Most notably, Buenavista painters characteristically exercised little care in making outlines or in adding iconographic details to the depicted human figures (cf. Figures 9a and 10b). They also rendered figures facing to the viewer's right, which runs counter to the Classic-period canon wherein principal figures usually face to the viewer's left. As noted above, the Buenavista Holmul-style tradition is distinguished by the absence of Primary Standard Sequence hieroglyphic texts which are replaced by "pseudo-glyphs" (glyph-like shapes that mimic hieroglyphs but which seemingly lack logographic or phonetic values encoding spo-

⁹ Slip paint is created by combining mineral pigments and water with highly levigated clays. Slip paint is called *terra sigillata* in modern ceramic parlance.

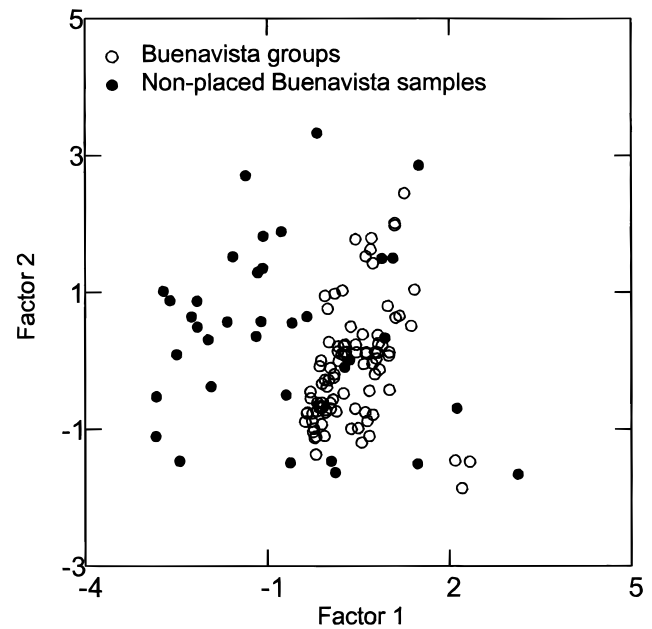


Figure 12. R-mode, varimax rotated, factor analysis plot of selected palace-midden sherds and chemically non-grouped Buenavista del Cayo samples. Chart by Ronald L. Bishop.

ken language). In short, the Buenavista-produced Cabrito Cream-polychrome Holmul-style pottery is both chemically and stylistically distinct from the broader typologically defined corpus.

Because we have chemically analyzed hundreds of sherds from numerous tightly controlled archaeological contexts at Buenavista, we can address complex questions concerning local versus non-local production and, more significantly, several questions regarding the distribution and use patterns of local versus non-local wares. The majority of Cabrito Cream-polychrome Holmul-style whole vessels and potsherds excavated at Buenavista exhibit a strong tendency to cluster together with other chemically sampled Buenavista-excavated pottery, including other polychrome types as well as bichromes and monochromes (Figure 11; note relationship of "grouped" samples to outliers in Figure 12).¹⁰ These data strongly suggest that Buenavista Holmul-style vessels, along with most of the other sampled pottery from the site, represent local production. Yet within the corpus of analyzed Buenavista pottery, there is detectable, archaeologically informative, sherd-to-sherd (i.e., vessel-to-vessel) stylistic, typological, and chemical covariation.

In the search for culturally meaningful patterns within this micro-scale diversity, our investigation began by chemically assessing pottery excavated from the palace compound at Buenavista and an adjacent elite residential complex called the South Plaza Group (Figure 7). Most of the samples come from on-floor refuse deposits at both locations. A hierarchical agglomerative cluster analysis was carried out using a complete linkage clustering of a matrix of

¹⁰ R-mode factor analysis was carried out on samples with Buenavista provenience. Factors were extracted from a correlation matrix of logged elemental concentrations and varimax rotated. The factor loading matrix follows the general pattern described in Footnote 8. Seventy-seven percent of the variability is represented in the first three factors, accounting for 46, 18, and 13%, respectively.

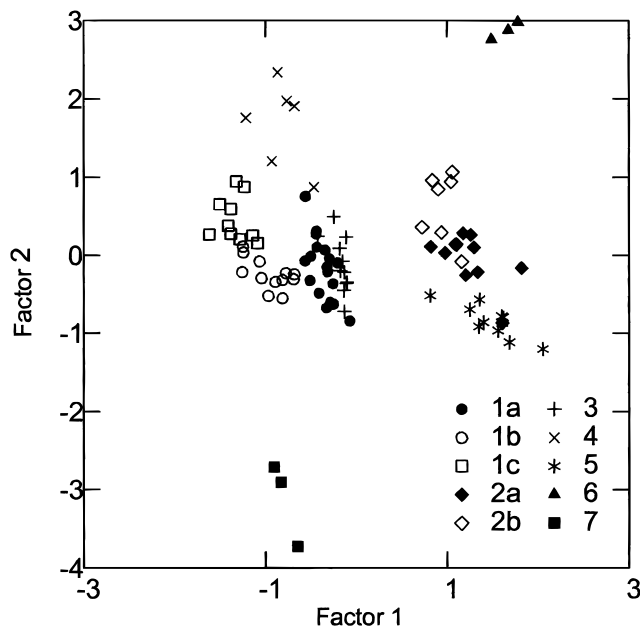


Figure 13. R-mode, varimax rotated, factor analysis plot of the seven groups identified from the ceramic remains excavated from elite residential (palace) midden deposits at Buenavista del Cayo and Cahal Pech, Belize. Chart by Ronald L. Bishop.

Euclidean distances based on the logged concentration values of 14 major, minor, and trace elemental constituents.¹¹ A dendrogram was generated that defined groups of chemically related sherds as well as the extent of the chemical cohesiveness within and dissimilarity among these groups. This first analytical step isolated seven chemically cohesive groups of sherds that appear to represent discrete units of ceramic production, and whose provenience and chemical coherency suggest production for specific uses and/or audiences. Aspects of the compositional distinctiveness of these groups are illustrated in an R-mode factor analysis plot of factors 1 and 2 (Figure 13).¹²

Each of the groups can be characterized typologically and stylistically by proportions of well-formed and finely painted polychrome pottery versus less elaborately decorated and technically less well-made vessels. It generally has been assumed, and to some degree demonstrated, that these differences correlate with consumer audience and use, the former category comprising elite pottery which functioned as specialized service ware and social currency, the latter being general-purpose wares distributed among

all status levels of Maya society (Ball 1993; Ball and Taschek 1991; Houston et al. 1992; Reents 1985; Reents-Budet et al 1994; Robertson 1980; Taschek and Ball 1992). The clustering of the samples into discrete groups based on chemical profiles, which also correspond to one or the other of these audience and use stylistic categories, serves to strengthen the likely validity of these inferences. Conjointly, the typological and stylistic characteristics of each chemically defined group suggest that Classic-period ceramic workshops recognized and responded to these parameters and were specialized accordingly.

Three of the groups (1a, 2a, and 7) are composed almost exclusively of Cabrito Cream-polychrome and Zacatel Cream-polychrome sherds, predominately from Palace dump 1 (Depositional Context BV 31-1:7 sherds)¹³ and Palace dump 2 (Depositional Context BV 32-3:12 sherds).¹⁴ Also included in these three groups are sherds from Palace dump 5 (Depositional Context BV 28-1:4 sherds),¹⁵ Palace dump 3 (Depositional Context BV 35-1:1 sherd),¹⁶ the South Plaza Group (two sherds), and redeposited Palace core refuse (two sherds). A few sherds in Groups 1a and 2a come from archaeological contexts outside Buenavista: three (MSBU11, MSBU12, and MSBX74) were recovered from deposits within the palace complex at nearby Cahal Pech, and one (MSBX80) was found at Northern River Lagoon, a site on the central Belizean coast. These vessels provide evidence of local and long-distance interaction by the Buenavista producers and local (including western Belize Valley) users of these specialized ceramics.

The sherds from these three groups represent three successive ceramic phases spanning two major periods (Figure 14). Nearly 80% derive from the full Late Classic Mills and Paloverde phases (A.D. 650–750 and 750–825; Tepeu 2) (Figure 4), and one-fifth pertain to the terminal Late Classic Sacbalam phase (A.D. 825–925).¹⁷ Palace dumps 2, 3, and 5 were composed entirely of Late

¹³ Depositional Context BV 31-1 is a ninth-century deposit of secondary refuse comprising both elite domestic trash from Structures 31, 32, and other nearby palace buildings, and debris from one or more pottery painters' work places. An extensive assortment of related debris includes among other items fragments of ceramic levigation vats for a calcareous white slip, a variety of modeling, smoothing, scraping, and burnishing tools, and several small paint-pots holding traces of red, yellow, and Maya-blue pigments.

¹⁴ Depositional Context BV 32-3 is a late eighth-early ninth-century deposit of secondary refuse made up of elite domestic trash from throughout the palace complex.

¹⁵ Depositional Context BV 28-1 is an early ninth-century deposit of secondary refuse deriving from the principal residential buildings and courtyard-area of ruling elite family of Buenavista.

¹⁶ Depositional Context 35-1 is a mid- to late-eighth-century deposit of secondary refuse associated with Structure 35, tentatively identified as the residential quarters and work place of a lower-tier member family of the Buenavista elite.

¹⁷ In addition to the designated complexes, Jaime Awe (1993) and David Cheetham (Cheetham and Awe 1996) has recognized an early Formative offering or cache assemblage at Cahal Pech which he named the Cunil complex. It is Ball's opinion, based on multiple discussions with Awe and extensive personal observation in 1991–1992, that the composition and context of the Cunil complex suggest it should be set apart as a ceremonial ceramic subcomplex situated either within or anterior to another full ceramic complex (for the definition and discussion of this analytical construct see Willey et al. [1967]; also see Ball [1996, 1977:142–146]). We have adopted "Cunil" in this sense for Cahal Pech, but because it remains a site-specific ceremonial ceramic subcomplex at this point and no evidence of its existence has been found at either Buenavista or Las Ruinas (or anywhere else in the Upper Belize Valley), it is not included in our chronology chart (for the precedent for this analytical treatment see Ball [1977]).

¹¹ A complete linkage method of forming clusters was selected that admits a sample to a cluster based on the distance of the sample to the farthest member of the group. Although prone to distorting the actual relationships expressed in the matrix of Euclidean distances and thus leading to many residual samples with low cluster relation, complete linkage has the tendency to form tight, discrete clusters, useful when inspecting a data matrix for the products of particular workshops or individuals.

¹² R-mode factor analysis was carried out using a correlation matrix of logged elemental compositions. Only the samples that displayed reasonable clustering tendency on the complete linkage cluster analysis were included. The component loadings accounted for 82% percent of the variation (51, 19 and 12%, respectively). Extracted factors were varimax rotated. The factor matrix revealed the strong correlation of the heavy rare earths, Cs, and Th with factor 1. The second factor reflected particularly the variation of the transition elements while factor 3 reflected an inverse relationship between iron and the rare earths.

LAS RUINAS-BUENAVISTA-CAHAL PECH

| Christian Calendar G.M.T. | MAJOR PERIODS | Las Ruinas Buenavista Cahal Pech | Baking Pot (Barton Ramie) |
|---------------------------|-------------------|----------------------------------|---------------------------|
| 1100 | TERMINAL | ? ? ? ? ? | New Town |
| 1000 | CLASSIC | Jirones | |
| 900 | | Sacbalam | Spanish Lookout |
| 800 | LATE CLASSIC | Paloverde | |
| 700 | MIDDLE CLASSIC | Mills | Tiger Run |
| 600 | | Gadsden | |
| 500 | EARLY CLASSIC | Ahcabnal | Hermitage |
| 400 | | Madrugada | |
| 300 | LATE PRECLASSIC | Xakal | Floral Park |
| 200 | | | Mount Hope |
| 100 | MIDDLE PRECLASSIC | Umbral | Barton Creek |
| BC/AD | | | |
| 100 | MIDDLE PRECLASSIC | Kanluk | Jenney Creek |
| 200 | | | |
| 300 | MIDDLE PRECLASSIC | Kanluk | Jenney Creek |
| 400 | | | |
| 500 | MIDDLE PRECLASSIC | Kanluk | Jenney Creek |
| 600 | | | |
| 700 | MIDDLE PRECLASSIC | Kanluk | Jenney Creek |
| 800 | | | |
| 900 | MIDDLE PRECLASSIC | Kanluk | Jenney Creek |
| 1000 | | | |

Figure 14. Ceramic chronologies for the upper (western) Belize Valley. Chart by Joseph W. Ball and Jennifer T. Taschek.

Classic Tepeu 2 (Mills-Paloverde phases) materials as were the several sampled South Plaza Group deposits. Palace dump 1 contained a late Paloverde and Sacbalam mix but consisted primarily of the later material.

Group 1a includes pottery dating from the Mills, Paloverde and Sacbalam phases (A.D. 650–925). Interestingly, all are similar chemically and stylistically even though these sherds represent distinct typological units. This correlation suggests that these sherds represent the output of a single polychrome-pottery workshop whose production spanned two archaeological time periods yet whose potters retained the same paste recipe and maintained a degree of stylistic coherency through time. This same kind of stylistic continuity across Classic-period archaeological phases has also recently been noted at Calakmul (Reents-Budet and Bishop 1998).

Stylistically and typologically, the majority of sherds in Groups 1a, 2a, and 7 are painted in the Holmul style and are either Cabrito Cream-polychrome or Zacatel Cream-polychrome. The four main Late Classic vessel shapes are represented in these three groups (cylinders, dishes and bowls, plates, and restricted-neck jars). The iconographic program features the “Holmul Dancer” theme which concerns the cosmological charter of power of the Classic-period ruling elite (Reents 1985; Taube 1985). Stylized renderings of seated lords, however, also occur in the three groups (also see Clarkson 1978; Houston et al. 1992; Reents-Budet 1991). Their hieroglyphic texts are composed exclusively of pseudo-glyphs which are devoid of the usual hieroglyphic additives of prestige such as a patron or owner’s nominal phrase, an emblem glyph or toponym, and the artist’s title or nominal phrase. Nearly all are embellished with Maya-blue pigment which, in other contexts, was used seemingly to lend special status to elite and religious objects.¹⁸

The combined evidence from the chemical, typological, stylistic, iconographic, epigraphic, and contextual analyses indicates that these three groups of Cabrito Cream-polychrome and Zacatel Cream-polychrome pottery from the Palace dump at Buenavista represent the specialized production of painted vessels intended for use by an elite audience. These are the kinds of Classic-period vessels which elsewhere functioned as specialized service wares during important elite events and as social currency in the realm of gift exchange (Houston et al. 1992; Reents 1985; Reents-Budet et al. 1994). We suggest that the vessels in Groups 1a, 2a, and 7 were produced to serve these same functions at Buenavista and that by the Sacbalam phase, if not earlier, this production took place in what might be called a palace-workshop environment. This ascription implies social and economic as well as spatial connections with an elite residential compound, in this instance within what was probably the residential compound of the ruling family of Buenavista.

It should be noted that the Cabrito Cream-polychrome and Zacatel Cream-polychrome samples in Group 7 (Figure 15) are markedly different chemically from Groups 1a and 2a, although stylistically all three are similar to each other (especially those in Group 1a). This chemical diversity and stylistic similarity may in-

dicating the simultaneous presence of two ceramic-paste traditions within a single stylistic school such as one might find in two different workshops producing elite ceramics for the same audience, in this case the high-status families residing in the Palace and South Plaza Group at Buenavista.

It should be noted that two of the samples in the group (MSBX64 and MSBX70; Figure 15b,c) date from the terminal Late Classic Sacbalam phase while one is of the earlier Paloverde vintage (MSBX61; Figure 15a). Thus their chemical differentiation almost undoubtedly does *not* reflect paste recipe changes made by the potters but instead indicates relative conservatism through time in paste recipe and production. This replicates the Group 1a pattern wherein there is chemical continuity in ceramic pastes across three Late Classic phases. Group 7, then, represents a distinct ceramic-production tradition separate from that of Groups 1a and 2a, yet all three reside within the same stylistic tradition.

Two of the other chemically defined groups (Groups 1b and 3; Figure 13) are related closely to Groups 1a and 2a. Each, however, is separable both chemically and stylistically from the neighboring cluster (Group 1a from Groups 3 and 1b). All share the inclusion of the specialized Holmul-style pottery (Cabrito Cream-polychrome and Zacatel Cream-polychrome) decorated with the Holmul Dancer program. The vessels in Groups 1b and 3, however, are distinguishable by three stylistic characteristics: (1) lesser amounts of, or a total lack of, pictorial polychrome painting; (2) a wider variety of simple imagery composed of only iconographic motifs; and (3) relatively poor-quality vessel formation. These stylistic features recall the kinds of pottery frequently excavated from non-elite residential middens at other Maya sites, and thus suggest their use as daily palace food-service ware and for similar “in-house” domestic functions. These groups, relative to the other groups considered, also contain a greater range of vessel forms (such as flaring-sided dishes).

Noteworthy in Groups 1b and 3 is the absence of Maya-blue pigment embellishing the labial or basal bands of the vessels. Nearly all date from the terminal Late Classic and Terminal Classic Sacbalam and Jirones phases. Their chemical divergence from Group 1a may be due, in part, to ceramic-paste recipe changes between full Late Classic Mills-Paloverde and terminal Late Classic Sacbalam-Jirones times. At the same time, this chemical differentiation may be explained by variations in paste recipes reflecting differing functions and/or consumer markets for these vessels. Herein, then, typology and context conjoin to identify Groups 1b and 3 as vessels intended for daily food service and more general purpose uses in both high- and low-status elite environments throughout the Buenavista community as well as the possibility of use in non-elite settings. Still, the general chemical similarity among these samples points to their all having been produced by the same workshops that manufactured the specialized Holmul-style vessels in Group 1a. In other words, all may have been produced by what Ball (1993; see also Coggins 1975) elsewhere has termed a “palace school” or attached workshops.

Tangential to the chemically and stylistically defined core of special purpose ceramics recovered from the central elite residential complexes at Buenavista are four groups (Groups 1c, 2b, 4, and 5) whose typological and stylistic characteristics mark them as general service ware vessels (Figures 13 and 16). Among the features underlying this assessment is the multiplicity of ceramic types found among the four groups. Included are polychromes and bichromes, incised monochromes, and unslipped-burnished vessels (e.g., Cabrito Cream-polychrome, Benque Viejo Orange-poly-

¹⁸ Maya-blue paint is known to have been used by the Maya to embellish sacred objects. For example, Maya-blue paint was applied to balls of copal incense found in burials and offering caches at Tikal and in the Cenote of Sacrifice at Chichen Itza, these offerings dating to the Classic and Postclassic periods. Also, at Tikal, the royal Burial 196 contained a series of Maya-blue-painted sculptures representing the deity K’awil (God K) (Coe 1965), under whose aegis the Classic-period rulers held power (Schele and Freidel 1990).

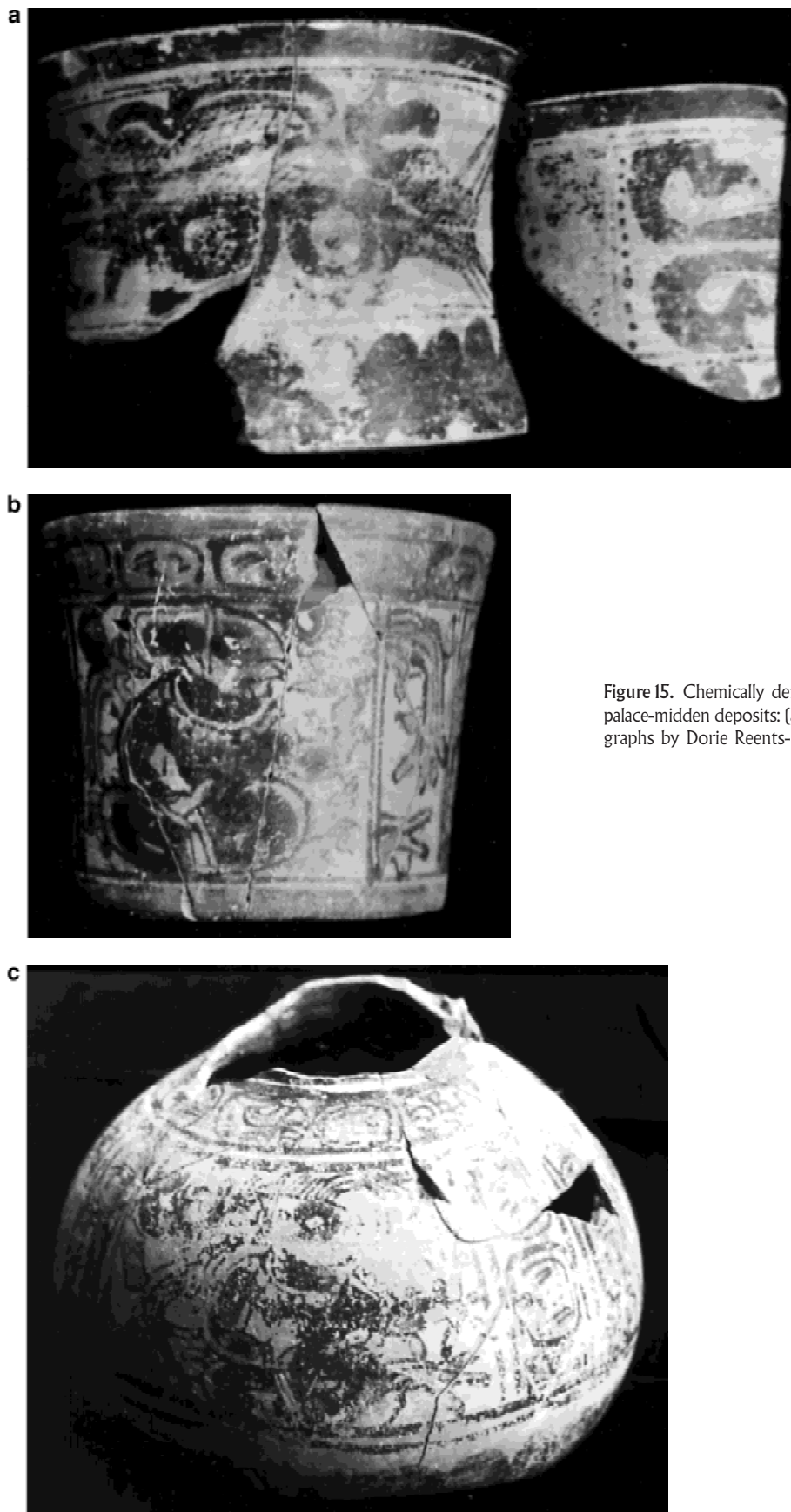


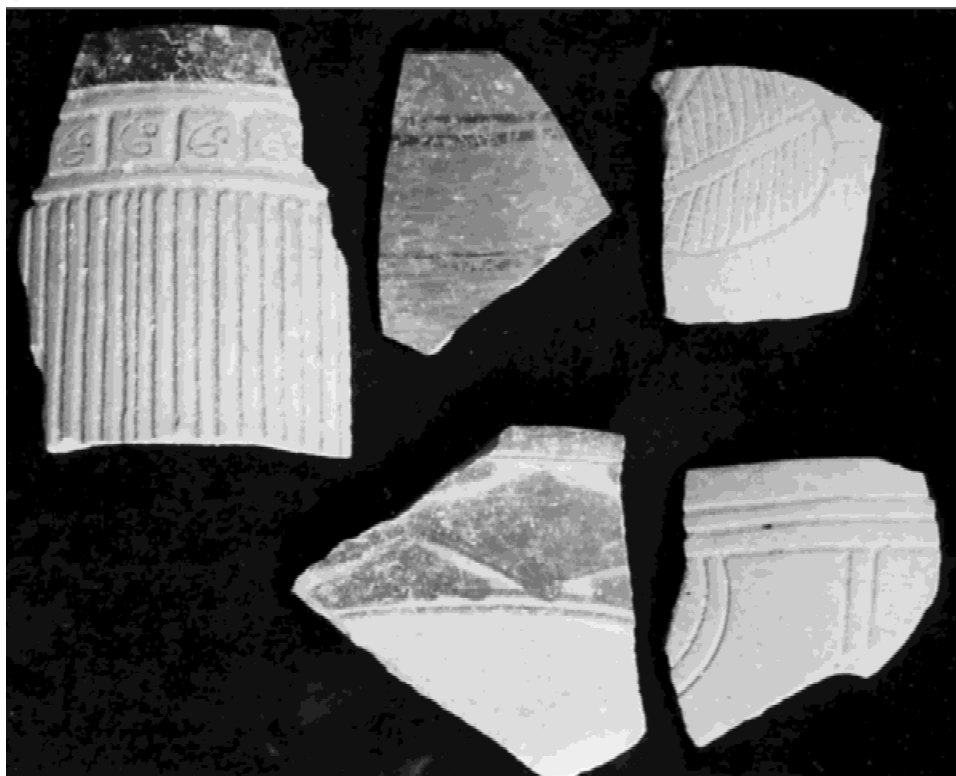
Figure 15. Chemically defined Group 7 sherds from Buenavista del Cayo palace-midden deposits: (a) MSBX61; (b) MSBX64; and (c) MSBX70. Photographs by Dorie Reents-Budet.

a



Figure 16. Sherds of general-use pottery from Buenavista del Cayo palace-midden deposits; chemically defined Groups 1c, 2b, 4, and 5. Photographs by Dorie Reents-Budet.

b



chrome, Velloso Orange-polychrome, Xunantunich Black-on-orange, Chinos Black-on-cream, and Chaa Creek Composite). In addition, unlike the special-purpose groups discussed above, the form repertoire of these four groups runs the gamut of Late Clas-

sic ceramics including cylinder vases, round-sided bowls, low-walled dishes, plates, and a ceramic drum. Moreover, although the Holmul Dancer iconographic theme is present on a few Cabrito Cream-polychrome specimens, this elite iconographic program is

absent from the majority of the four groups' vessels. Instead, the Cabrito Cream-polychrome examples are painted with geometric decorative motifs or simplistic renderings of seated human figures, neither of which seems to carry the same sociopolitical ideological message as does the Holmul Dancer theme. Thus, it seems probable that these four groups consist of vessels that neither functioned as distinctive ritual service ware nor were intended to be used as social currency, the giving, possession and use of which would promote the prestige and authority of the elite.

As noted, these four groups are linked chemically to pottery manufactured by the Buenavista palace-school workshop(s). General-use pottery Groups 1c and 4 align chemically with Group 1a (and its Group 1b and 3 mixed-use ceramics), and general-use pottery Groups 2b and 5 align chemically with Group 2a (Figure 13). Group 4 is particularly interesting because it includes samples from dishes of the ceramic type Benque Viejo Orange-polychrome: Old Bank Variety found in analogous and apparently contemporaneous structural-offering deposits at Las Ruinas de Arenal (MSBU21 and MSBU22), Cahal Pech (MSBX73), and within the South Plaza Group at Buenavista (MSBU25). The common access to and comparable ritual use of these vessels document the participation by the elites of these three sites in the same or overlapping social, political, economic, and ideological spheres.

The Buenavista-produced samples excavated at Las Ruinas de Arenal are separable from the others by their slightly higher concentrations of the light, rare earth elements and the correspondingly lower concentrations of heavy, rare earths. These minute chemical variations indicate a slightly different paste recipe than those used for the majority of sherds in this study, the difference being responsible for the spatial extension of the Las Ruinas group on the factor plot (see the three samples at the top right side of Group 4; Figure 13). This chemical variation may indicate a minor change in the specific clay and temper mixture used for these offering dishes which, in turn, serves today to identify the products of one potter or work group within the Buenavista palace workshop(s).

Groups 2b and 5 are the most diverse typologically and stylistically (Figure 13; note their positions above, within, and below palace-workshop Group 2a). Not only is a broad range of vessel forms represented in these two groups, but the forms also contain the largest number of unslipped and incised bowls and dishes painted with simple geometric motifs among the seven groups under discussion. Sherds from these two groups were excavated from

several palace middens at both Buenavista and Cahal Pech as well as from on-floor deposits at two suburban elite residential units outside the core area of Buenavista. Despite their apparent stylistic and typological divergence, however, these vessels are so close chemically to the special-purpose elite pottery produced by the Buenavista palace workshops that we provisionally suggest that they were manufactured in these specialized settings. As previously noted, the intergroup chemical divergence most likely reflects the potters' idiosyncratic formulations of specific ceramic pastes using similar raw materials to produce particular kinds of pottery.

One intriguing small cluster of chemically similar samples was identified by the aggregative clustering program. All three samples (MSBU51, MSBU91, and MSBU86; Figure 17) are Cabrito Cream-polychrome sherds from straight-sided square vases. The sherds come from Palace Dump 2 and date from the Paloverde ceramic phase. Stylistic assessment indicates that MSBU51 and MSBU91 were painted by the same person, and their nearly identical chemical compositions are similar to multiple samples taken from a single same square vase. This group provides substantial evidence for a specific ceramic-paste recipe used exclusively for an unusual vessel form which may be the singular expression of one potter or workshop, the square vessel having a specialized function and/or meaning to its consumer audience. The chemical distinctiveness of this group from the other Buenavista samples suggests a high degree of specialization within the workshop(s) responsible for this and the other six groups of pottery associated with the primary elite residences of Buenavista.

FUNCTIONS OF PAINTED POTTERY

To better appreciate the significance of these detailed interdisciplinary ceramic analyses to our pursuit of a historical reconstruction and understanding of Classic Maya culture, a brief discussion of the functions of Maya polychrome pottery is in order. Although Classic Maya painted pottery commonly is associated with burial contexts as accompaniments of the honored dead, its pervasive occurrence in virtually all contexts at Maya sites points to its having also been an integral part of daily life. Among the living, polychrome pottery functioned in a number of ways including food-service vessels used by both the elite and the not-so-elite. This service function is preserved in the PSS texts of the pottery which



Figure 17. Square or rectangular-shaped vessels from chemically defined Group 1, Buenavista del Cayo: (a) MSBU51 (left) and MSBU91 (right) and (b) MSBU86. Photographs by Dorie Reents-Budet.

record the vessel form and its food contents (Houston and Taube 1987; Houston et al. 1989; MacLeod 1990; Reents-Budet et al. 1994; Taube 1989). For example, PSS texts on cylinder vases state they are drinking vessels (*uch'ab*) for beverages made from cacao (*kakaw*), and plate forms are labeled as plates (*lak*) for tamales (*wah*) (Houston et al. 1989).

Secondly, the pictorial polychrome pottery functioned as records of historical events and religious mythology and ideology. The imagery includes palace scenes replete with polychrome vessels depicted in use, renderings of tribute payment, ritual-dance performances, religious rites, and representations of the more central and esoteric aspects of Maya religious mythology. Today, this painted imagery is an exceptionally rich source of Classic Maya recountings of their society, political history, and religious ideology.

A third nonfunerary function of the finely painted polychrome pottery was as social currency in high-status contexts, the vessels serving sociopolitical purposes via ceremonial gift-giving and tribute-payment rites (Reents-Budet et al. 1994). A good example of this practice is represented by the presence at Buenavista of a Holmul-style vase originally commissioned by, and probably belonging to, the powerful Naranjo ruler Lord K'ak Tiliw (Houston et al. 1992; Reents-Budet et al. 1994; Taschek and Ball 1992). Even today this vessel provides a striking visual and sociohistorical statement when compared to the less artistically accomplished versions of this pottery style at Buenavista.

John Pohl (1994; also see Pohl and Byland 1994) has argued compellingly that the analogous elite pictorial polychrome ceramics of the pre-Columbian Mixtec of Oaxaca functioned specifically as chocolate or pulque drinking vessels and as elite gifts, both of which were integral to the process of securing marriage bonds among the Mixtec nobility. Pohl effectively demonstrated the central importance of marriage to the process of political integration (or disintegration). He even suggested that marriage alliances were as equally important a political mechanism as was warfare among the Mixtec. Pohl cited Mary Elizabeth Smith's (1973:30–31) discussion of the Mixtec phrases for marriage, most of which make reference to "drinking chocolate" or "drinking pulque" and "joining tribute." Similarly, Dennis Tedlock (personal communication 1994) noted that three of the sixteenth-century authors of the *Popol Vuh* (Tedlock 1996) carry the titles of "great toastmaster," "great convener of banquets," and "marriage negotiator." These social positions were immensely important to the sociopolitical fabric of sixteenth-century Maya communities, and remain so today among the Maya of highland Guatemala and Chiapas, Mexico (Vogt 1990). As implied by the sixteenth-century titles and modern ethnographic observations, then, ritual drinking, feasting, and the exchange of gifts are integral to the pan-Mesoamerican marriage brokering process.

Applying these scholars' observations to Classic Maya polychrome pottery, it is probable that some vessels were created to function as ritual gifts and drinking vessels for the elaborate process of securing marriage bonds, these matrimonial alliances having had broader implications for the social politics of the increasingly competitive environment of the Late Classic period (Martin and Grube 1994a, 1994b; Schele and Freidel 1990; Schele and Mathews 1991). Given the enormous productivity and creativity of the Maya artists who made these polychrome vessels, and considering the likelihood that at least some vessels were created to be used during marriage brokering and related rites, we argue that the marriage alliance was an extremely powerful force during the Classic period. It follows that we should pay at least as much

attention to such nonviolent sociopolitical processes as marriage as we have to the aggressive processes of warfare.

The narrative programs painted on the Classic-period pictorial ceramics likely were related to the intended sociopolitical and ritual use of the vessels. Of particular note in the context of this paper is that specific mythological or supernatural iconographic programs, including the "Holmul Dancer" theme, recur on pottery styles from other regions, especially a restricted group of stylistically similar plates created in and around Tikal (Culbert 1993: Figure 48; Reents-Budet et al. 1993; Reents-Budet et al. 1994:197–199). Yet other sites or polities employed different iconographic narratives such as the supernatural Paddler Twins program associated with late Tzakol 3-early Tepeu 1 pottery from Naranjo, Guatemala (Reents-Budet et al. 1994:203–207).

These iconographic narratives must have carried ideological messages connected to regional expressions of sociopolitical power which was based on perceived connections to religious mythology and the supernatural (Schele and Freidel 1990; Freidel et al. 1993). It follows that the Maya would have featured these kinds of statements on pottery whose primary function was as "social currency" exchanged among the elite as an integral part of the processes of securing relations among the ruling elite. The sharing by sites and polities of a mythological narrative on the elite ceramics and the geographic boundaries among the usage of these programs imply sociopolitical boundaries. The integration of an analysis of the myriad narratives of pottery styles and the geographical distributions of styles with archaeological and epigraphic data, therefore, promises to help elucidate the ebb and flow of cross-polity alliances during the Late Classic period (Culbert 1991; Marcus 1973, 1976; Martin and Grube 1994a, 1994b, 1995).

CONCLUSIONS

By combining art-historical stylistic analysis and ceramic-paste chemical characterization with typological and contextual data regarding ceramics from archaeological investigations, this interdisciplinary approach to Late Classic Maya pictorial polychrome pottery makes possible some preliminary observations relevant to a better understanding of Classic-period elite society in the eastern lowlands. Among the hundreds of thousands of archaeologically excavated and approximately 160 chemically sampled sherds from elite contexts at Buenavista del Cayo, Cahal Pech, and Las Ruinas, 97 samples exhibit sufficient chemical similarity to form discrete groups. These divide into two principal clusters, each composed of special purpose vessels most likely created in an elite-oriented pottery workshop (or workshops) located in the upper (western) Belize Valley and specifically at the site of Buenavista del Cayo, Belize. Appended to each cluster are several additional sets of chemically related groups of pottery that include both special-use polychrome vessels and unslipped, monochrome and bichrome pots serving more commonplace roles as daily service ware. Given the kinds of imagery painted on these vessels, the emerging patterns of polychrome pottery use throughout the Maya regions, and the local contextual derivations of the analyzed samples, the producer workshop (or workshops) most probably was associated with the ruling elite of Buenavista del Cayo, a preeminent Late Classic center in the upper Belize Valley.

This study also identifies a multiphase series of special purpose ceramics (Group 7; Figure 17) whose aggregate chemical profile diverges from those of pottery produced by the Buenavista "palace school" even though their stylistic attributes place them firmly

within the tradition of the workshop. This group provides evidence for the existence of different ceramic-paste recipes existing side-by-side within the same elite ceramic “school.” Should similar patterns be found at other Maya sites, we may wish to reconsider the ethnographically based perception of elite status-oriented Classic Maya ceramic workshops as static units domineered by unchanging tradition. Instead, we may view these elite workshops as dynamic entities overseen by individuals strongly inclined to creative experimentation and characterized by internal differentiation and specialization.

This study provides fertile ground for in-depth investigations into ancient Maya ceramic production. Related questions currently being examined concern the actual relationship of the high-status occupants of the Buenavista and Cahal Pech palace groups and the broader pattern of interactions *vis-à-vis* the movement of

specially manufactured polychrome vessels among the Late Classic centers and households of the western Belize Valley and beyond. Ultimately, the conjunctive approach exemplified by this study should provide not only a more soundly based and detailed portrayal thereof but also a richer understanding of Classic Maya society and culture than could ever be gained from ceramic typological, stylistic, technological, or epigraphic studies alone. Almost 50 years ago, Maya archaeology was called to task—inaccurately and unfairly—for its lack of either a theoretical orientation or a conjunctive approach to its data (Taylor 1948). The present interdisciplinary examination of Late Classic polychrome pottery from the western Belize Valley demonstrates once more that today, as then, reality could not be farther from the truth; theory and multidisciplinary approaches are central to ancient Maya research.

RESUMEN

Este artículo describe algunos resultados iniciales de un estudio multidisciplinario de vasijas policroma mayas del período clásico tardío (650–850 d.C.) excavadas de varios basureros y otros depósitos asociados con las estructuras de los palacios y residencias élites en Buenavista del Cayo, Cahal Pech y Las Ruinas de Arenal en el oeste de Belice (Figura 1). Estos restos cerámicos representan producciones locales y extranjeras, los cuales están definidos por análisis tipo: variedad y análisis estilístico, investigaciones epigráficas y datos químicos obtenidos a través del análisis de activación de neutrones aplicados a las vasijas. El estudio combina estas cuatro metodologías para entender mejor la información cultural y histórica representada por estos restos cerámicos antiguos. Aunque el método del análisis cerámico tipo: variedad fue desarrollada originalmente para recobrar datos culturales e históricos del registro arqueológico, sigue siendo principalmente una herramienta cronológica que sólo raramente logra su potencial como un indicador sociocultural. El estudio actual aumenta el método tipo: variedad con un análisis estilístico y análisis de composición química que en combinación ajustan el enfoque y mejoran la precisión de tales estudios cerámicos. Estos datos complementarios permiten una identificación más precisa de los objetos fabricados localmente e importados así como el reconocimiento de los productos de unidades especializadas de producción conocidas como “talleres del palacio.” Los datos resultando de nuestra investigación interdisciplinaria de la cerámica de estos sitios pueden contribuir datos importantes respecto a sus historias sociales y políticas y nuestra comprensión de la información. Nuestro esfuerzo está basado primero en el análisis del estilo del pintor; es decir, la constelación de los elementos técnicos, formales, iconográficos y epigráficos. Juntos, estos rasgos representan la expresión distintiva de un grupo de alfareros relacionados, sus patrocinadores y otros consumidores de esta cerámica. Así, el estilo funciona como un índice visual de relaciones sociales e incluso podría considerarse como representante de una comunidad corporativa o unidad social particular. Los datos químicos usados en este estudio son un producto del Proyecto Cerámica Maya del Laboratorio de Conservación Analítica de la “Smithsonian Institution.” Este proyecto se empezó para investigar la producción de la cerámica pintada de los mayas clásicos a través de la combinación de análisis estilísticos y químicos para identificar estilos individuales de la alfarería pintada clásica y para sugerir las localidades posi-

bles de las comunidades o talleres de producción. Los datos químicos se generan a través del uso de la técnica muy sensible de análisis instrumental de la activación de neutrones. Combinando los análisis estilísticos y la caracterización química de la pasta de la cerámica con los datos contextuales y tipológicos, este estudio interdisciplinario de la alfarería policroma maya del clásico tardío hace posible algunas observaciones preliminares para llegar a un entendimiento mejor de la sociedad élite del período clásico en las tierras bajas orientales. Dentro de los miles de tiestos recuperados de los contextos élites de Buenavista del Cayo, Cahal Pech, y Las Ruinas, se seleccionaron 160 para ser probado químicamente. De estos, 97 muestras exhiben similitud química suficiente para formar grupos discretos. Estos se dividen en dos racimos principales, cada uno compuesto de vasos de propósito especial muy probablemente creados en un taller (o talleres) de alfarería élite localizado en el Valle de Belice occidental, específicamente en el sitio de Buenavista del Cayo. Dado los tipos de imágenes pintados en estos vasos, los modelos que surgen del uso de la cerámica policroma a través de las regiones mayas, y las derivadas de la caracterización química de las muestras analizadas, se sugiere que el (los) taller (es) del productor probablemente era asociado con la élite gobernante de Buenavista del Cayo, un centro clásico tardío preeminente en el Valle de Belice superior. Nuestro estudio identificó también una serie multifase de cerámica de propósito especial cuyo perfil químico se distingue de aquellos de la alfarería producida por “la escuela del palacio” de Buenavista aunque sus atributos estilísticos la ponen firmemente dentro de esta tradición del taller. Este grupo provee evidencia de la existencia de otra composición de pasta dentro de la misma escuela o tradición élite de cerámica. Otras preguntas que examinamos se tratan de la relación de los ocupantes nobles de los palacios de Buenavista y Cahal Pech y el modelo más amplio de interacciones relativas al movimiento entre los centros y casas del clásico tardío del Valle de Belice occidental y más allá de vasijas policromas especialmente fabricadas. El enfoque conjuntivo ejemplificado por este estudio debe proporcionar tanto un retrato más válido y detallado de la cultura y la sociedad maya antigua como una comprensión más rica de estos que se podría alcanzar por medio de los estudios tipológicos, estilísticos, tecnológicos o epigráficos exclusivamente.

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