Inside the current issue:

From the Editors of Mono y Conejo ................................................................. 2
Special Report on Prehispanic Irrigation ......................................................... 3
Research Reports from Belize ........................................................................ 16
Mono y Conejo: the Journal of the Mesoamerican Archaeological Research Laboratory publishes contributions on original research throughout greater Mesoamerica. Mono y Conejo provides a public medium for the description and reporting of anthropological interests. Flexible in format, the journal accepts and publishes works on archaeology, art history, ethnohistory, and related cultural-historical issues. Published at irregular intervals, each issue constitutes a single volume.

Editors of the Journal

Fred Valdez, Jr. fredv@mail.utexas.edu ph: (512) 471-5946 fax: (512) 232-7050
Brett A. Houk brethouk@gmail.com ph: (512) 496-8242 fax: (512) 232-7050

Editorial Advisory Board

R. E. W. Adams archaeology The University of Texas at San Antonio
Jaime J. Awe archaeology Institute of Archaeology, Belize
Darrell Creel archaeology The University of Texas at Austin
William Doolittle geography/land use The University of Texas at Austin
Richard Flores cultural studies/folklore The University of Texas at Austin
Thomas Hester archaeology The University of Texas at Austin
Julia Guernsey art and iconography The University of Texas at Austin
Martha Menchaca social anthropology The University of Texas at Austin
John Morris archaeology Institute of Archaeology, Belize
F. Kent Reilly art and iconography Texas State University at San Marcos
Enrique Rodriguez archaeology The University of Texas at Austin
Brian Stross anthropological linguistics The University of Texas at Austin
David Stuart epigraphy The University of Texas at Austin
Mariah Wade ethnohistory The University of Texas at Austin
Samuel Wilson archaeology/ethnohistory The University of Texas at Austin

Cover photo: Huexotla Bridge, near Texcoco (photo by William Doolittle).

Mono y Conejo is a copyright of the Mesoamerican Archaeological Research Laboratory. All rights reserved.
# Table of Contents

## From the Editors

*Fred Valdez, Jr.*  
*Introduction to Volume 4*  
*Trett A. Houk*

## Special Report

*William E. Doolittle*  
*An Epilogue and Bibliographic Supplement to Canal Irrigation in Prehistoric Mexico: The Sequence of Technological Change*  

## Research Reports

*David M. Hyde*  
*Two Late Preclassic Incised Cache Vessels from Colha, Belize*  

*Brett A. Houk*  
*Rebecca E. Bria*  
*Michael G. Lyndon*  

*Salvaging Say Kah*  

*Salvaging Say Kah*  

21
Welcome to Volume 4 of Mono y Conejo! Those familiar with Mono y Conejo will notice a few stylistic changes to the journal; we hope these are well accepted. We are especially pleased to have a “Special Report” section for the contribution by Dr. William Doolittle. This volume also includes two research reports that provide several insights into current research in the Maya area. Each contribution is discussed below.

The Special Report on canal irrigation in Mexico was first published in Spanish in the second edition of Dr. Doolittle’s book. The first edition, Canal Irrigation in Prehistoric Mexico: The Sequence of Technological Change, was printed 14 years before the second edition, Canales de riego en el México prehistórico: la secuencia del cambio tecnológico. The second edition included an epilogue and bibliographic supplement not included in the first edition. Mono y Conejo is privileged to have Professor Doolittle’s English version for publication. The contribution is a wonderful read and serves as a fine overview of canal irrigation. It clearly achieves its goal as a supplement to the original book and brings us all up to date on the subject. We greatly appreciate William Doolittle’s trust in Mono y Conejo and believe he will be equally pleased with the production.

The Research Reports include a study of early writing by David Hyde and an interesting summary of significant research at Say Kah by Brett Houk, Rebecca Bria, and Michael Lyndon. David Hyde’s contribution examines a pair of Late Preclassic cache vessels from Colha, a Maya site in northern Belize. Dr. David Freidel studied the same vessels in the 1980s, concluding that the incised designs on the vessels’ interiors were a precursor to the “flayed-face shield” iconography of later period monuments. Freidel concluded the imagery was related to ritual sacrifice. David Hyde offers a competing hypothesis that the designs are actually early forms of the ahau glyph.

The research report on Say Kah is a summary of the first two seasons of investigations at the site since its rediscovery. Located southeast of La Milpa, Belize, Say Kah is a minor site made somewhat legendary among researchers in the region because it was “lost” shortly after being discovered. Like many ruins in the area, Say Kah was looted several decades ago, and Brett Houk and his co-authors report on attempts to salvage data from the heavily damaged structures in the main plaza at the site. The article’s most significant contribution, however, may be its reporting of a modeled stucco façade partially preserved on an early building at the site.

As you read Volume 4, we are already assembling Volume 5 of Mono y Conejo for publication later this year. We would like to encourage researchers working across Mesoamerica to send us articles and reports for consideration. The past two issues have been weighted heavily toward research in Belize, and we hope to broaden the geographic scope of our journal in coming issues. Thank you for your continued interest and support.
An Epilogue and Bibliographic Supplement to Canal Irrigation in Prehistoric Mexico: The Sequence of Technological Change

William E. Doolittle
Department of Geography and the Environment
The University of Texas at Austin

Fourteen years passed between publication of the first and second editions of Canal Irrigation in Prehistoric Mexico: The Sequence of Technological Change (University of Texas Press, 1990). The second edition, Canales de riego en el México prehistórico: la secuencia del cambio tecnológico (Universidad Autónoma Chapingo, Museo Nacional de Agricultura, Departamento de Irrigación, 2004), was not only published in Spanish, but it contains a new chapter—an epilogue—and a bibliographic supplement. The epilogue, Chapter 8, includes corrections and additions. The bibliographic supplement contains references to new and previously overlooked materials.

Given that the first edition was published in English, it seemed only appropriate for the second edition to appear in Spanish for the benefit of readers in México. Doing so, however, made the epilogue less available to the English readers. To correct this situation, an English translation of the epilogue and the bibliographic supplement are offered here.

8. Epilogue

Bringing a decade-old piece of scholarship up-to-date could be a daunting task. In the case of canal irrigation in prehistoric México, however, it is actually quite easy. There are two reasons for this. First, the number of oversights and errors in the first edition are relatively few, and minor. Second, there has been only a limited amount of new research carried out since the original publication. This is not to say that archaeologists have not been working or that they are not interested in canals and agriculture, but rather that the number of canals recently discovered is few, and the number of long-known canals which have received further study are similarly not very numerous.

Correcting and updating the first edition involves five separate, but interrelated tasks. These are: discussing works not included originally, correcting errors and misinterpretations, addressing critics, addressing research conducted since the appearance of the original volume, and summarizing all of the above in the context of the original conclusions.

Works Not Included in the First Edition

Various Oversights

Every effort was made to be as comprehensive as possible in writing the first edition of this book. Indeed, any work claiming to be a synthesis of all work done on the topic to date should be as inclusive as possible. To a very great degree the original volume was successful in this regard. No one has come forth complaining that something was overlooked. Perhaps readers were being kind with their silence. However, scholars interested in topics as controversial as the social, political, and economic implications of irrigation, and the role of canals in the evolution of civilization, can be a rather critical and vocal group. Their silence on this point suggests that no works of major consequence were inadvertently missed in the preparation of the first edition. I know for a fact that I did not intentionally exclude any relevant works. In fact, I went to great lengths to do just the opposite. Despite my great efforts, however, some works did manage to avoid my search. Fortunately, none of these change my original interpretations very much.

The oldest irrigation canal for which there was evidence that I did not cite in the first edition is at the site of Cuicuilco (site 12, Figures 1.1, 3.1, and 3.17). I cited three published works by Palerm and Wolf, but in 1992 Eric Wolf sent a copy of an unpublished paper coauthored by him and Palerm to Carlos Cordova, then a graduate student in the Department of Geography, The University of Texas at Austin. Carlos shared the paper with me. The paper contains little that did not appear in print later (Palerm 1961b, 1973; Wolf 1959), except that it is more of a warm, personal reflection than a cool, professional description of their discovery, and it concluded that the “Cuicuilco complex may have been fed by irrigation canals, though it is doubtful that irrigation played a major role in its agricultural complex” (Wolf and Palerm 1956). Curiously, in a discussion of the central highlands of Mexico the very next year, Palerm and Wolf (1957:12) claim, in another work not cited in the first edition, that “we do not have proof of irrigation before the Toltec period, though its existence seems probable.” Evidently, these two distinguished scholars remained very cautious about their discoveries at Cuicuilco.

The next oldest system for which there are publications I missed involves the site of Izapa, just outside the city of Tapachula, Chiapas, and the Soconusco region as a unit. At
Izapa, archaeologists found that a small swampy area was converted into a reservoir sometime between 300 and 50 B.C. (Lowe, Lee, and Martinez Espinoza 1982:167–168, Fig. 8.8; 173). This conversion involved building a rock dam, and “drains” that had rock-lined sides, but earthen bottoms leading both to and away from the reservoir (Lowe et al. 1982:169, Fig. 8.9; 170, Fig. 8.10; 172, Fig. 8.11). Most interesting, these features were found underneath a “modern irrigation canal” (Lowe, Lee, and Martinez Espinoza 1982:171). For the purposes of this volume, the site should be given the number 14a and added to Figures 1.1 and 3.1. In terms of technology, however, there is nothing in regards to canal irrigation that was not known earlier from sites elsewhere.

As for the presence of ancient canal irrigation throughout the Soconusco, the works of geographers Robert C. West, John P. Augelli, and John F. Bergmann were inexplicably missed in the preparation of the first edition. West and Augelli (1976:235) claimed that “native cacao groves…were cultivated by canal irrigation,” citing Begmann (1969:93) who noted that in 1586 Fray Alonso Ponce “reported a good stream with which the Indians irrigated their cacao orchards.” These citations, of course, refer to a much later period than constructions at Izapa, and they are more than vaguely reminiscent of the work on Angel Palerm discussed in Chapter 7 (see also Figure 7.1). They are not all that important in terms of understanding the sequence of technological change, but they should have been included.

The next most recent site/area for which information was overlooked during the writing of the first edition involves the Tlajinga Plain (site 18, Figures 1.1 and 3.17). One work, and an early one at that, is an article by René Millon, Clara Hall, and May Díaz (1962). In it, they pointed out that there was little archaeological evidence of prehistoric irrigation around Teotihuacan, but that on the basis sixteenth century maps, the locations of present-day canals probably reflect the locations of prehistoric canals. A later work also not found in time for inclusion in the first edition is a chapter by Deborah L. Nichols (1987) in an edited volume. It provides a wealth of detailed information about canals, stream channelization, and floodwater irrigation in the area. In so doing, it provides solid archaeological evidence for canal irrigation at Teotihuacan. Nichols confirmed the inference of Millon, Hall, and Díaz, and substantiated that irrigation was both widespread, and small in scale. In terms of the technological development of irrigation in ancient México, however, neither of these recently discovered works provide information that requires a change of earlier interpretations.

The next site for which evidence was overlooked in the writing of the first edition is the Xiquila aqueduct (site 21, Figures 1.1 and 3.17). Actually, the evidence overlooked is not terribly critical, but it is insightful. Figures 3.14 and 3.15 of the first edition show examples of a trellis-like aqueduct and hollowed-long conduits. These examples, intended as parallels for ancient technologies, come from far northern México and New Mexico and involve non-native people. Better parallels would have been similar devices used near the indigenous community of Cherán, Michoacan, and reported in an old monograph by Ralph L. Beals (1946:15, plate 3).

Moving northward and into later times, two book chapters were overlooked prior to publication of the first edition, and two early unpublished papers came to light only after publication. The two overlooked chapters were in an edited volume dealing with Tula and the Toltecs (Site 27, Figures 1.1, 4.1, and 4.7). In it, Robert H. Cobeán and Alba Guadalupe Mastache (1989:39) mention irrigation systems, including canals several kilometers in length. They provide no other information, but they do cite earlier work by Mastache (1976), work that was cited in the first edition. Similarly, Dan M. Healon, Robert Cobeán, and Richard A. Diehl (1989:246) mention small-scale irrigation in the area, provide no details, but cite the work of Peña and Rodríguez (1976), work that was included in the first edition.

The two recently-found unpublished papers came to my attention thanks to Anne I. Woosley, who was at the time, Director, Amerind Foundation, Inc. Quite by accident, she discovered in the files of the Amerind two early papers by Charles C. DiPeso pertaining to canal irrigation at Casas Grandes (site 30, Figures 1.1, 4.1 and 5.1). The two papers are more important in terms of the history of archaeology than the sequence of technology, as the findings of both were later published in works cited in the first edition. One paper (DiPeso 1969) discussed the damming of Veraleño Spring and the diversion of its waters, while the other (DiPeso 1975) outlined the drainage basin irrigation model and preferred that the technology diffused to the north from Mesoamerica.

Speaking of the diffusion of canal technology, I noted in the first edition that Emil W. Haury (1976:50) argued that irrigation diffused into the American Southwest from Mesoamerica and that Richard B. Woodbury (1962:303) suggested that irrigation might have originated in the Southwest independently of any Mesoamerican influence. This assessment of opinions still holds true, however, in a publication overlooked in the writing of the first edition, Haury (1962:122) noted that “[i]rrigation was only nominally practiced in Mesoamerica” and an “alternative is to entertain the thought that canals [in the Southwest] were spontaneous…..” In other words, he too considered an explanation other than diffusion, and should have been so credited in the first edition.

Taking a different approach, another inadvertently overlooked publication (Gritzner 1969) argued that canal irrigation in the American Southwest was the result of diffusion from South America. This opinion appears not to have been well received at the time it was proposed. More recent research (discussed below) illustrates that it was simply wrong. Regardless, the article and its point should have been addressed in the first edition, if for no other reason than to illustrate that a third explanation of technological change involving ancient canals in North America has been proposed.

The Inca never got to the Southwest, but the Spaniards did reach México, and when they did, the first city they
encountered and described was Zempoala (site 31, Figure 1.1). I argued that this site’s irrigation system has been the subject of much speculation and supposition, but little systematic study. Details are lacking from the few studies that have been conducted there. Surprisingly, a guidebook published 30 years prior to my study contains some of the best information. It does not, however, contain a great deal of information. Two things it mentions are a main canal that transported water from the Río Chachalacas to fields and a distribution system consisting of smaller canals (Anonymous 1960:28–29). Despite this newly found information, Zempoala remains nearly insignificant in terms of its contributions to the development of canal irrigation technology. Everything done at this site was done earlier elsewhere. The same cannot be said of the Basin of México, the terminus of the first Spanish encounters.

The irrigated terrace garden of Nezahualcoyotl, and related water control features at Cerro Tetzocotzingo near Texcoco (site 14 [late period], Figures 1.1, 5.1, 5.9, 5.10 and 5.11) were intriguing to Hernan Cortes, and everyone else who has seen them. My account of the site and its aqueducts are adequate, but doubtless would have been more accurate had I seen Zelia Nuttall’s (1937) book on Mexican gardens ahead of time. One item this work includes, and that is missing from mine, is a discussion of baked clay pipes along the top of the aqueducts (Nuttall 1937:23). Clearly, this is one element of irrigation technology possessed by the Aztecs and incorrectly reported as lacking in my assessment (Table 7.1).

The Aztecs also built two aqueducts to transport water from Chapultepec to Tenochtitlan (site 32, Figures 1.1, 5.1, 5.6, 5.7, and 5.8). The first of these two aqueducts was destroyed by a flood that resulted in the construction of the second one. This fact was reported in the first edition, but without citation. A reference has been found subsequently (Vega Sosa 1979:95–96). It describes the flood in some detail, thereby providing context for the reconstruction of the aqueduct using more advanced technology.

Finally, there is a site containing material remains of ancient canal irrigation that was neither reported nor discussed in the first edition simply because a reference to it was not found until recently. This site, which should have been discussed under site number 5 [late period] (Figures 1.1 [bold line near end] and 5.1), is not really impressive, however. Constructed shortly before A.D. 1450, on the slopes of Cerro Yehualica near Calpulalpan, Tlaxcala, a canal carried water from an ephemeral stream channel 1,200 meters to small parcels on the interfluvе. The canal was described as deep ("profundo") and varying in width from 1 to 3 meters (C. de Brasdefer 1979:78, 86, Foto 10). It bifurcated and water was deposited into two separate reservoirs of undetermined size, but perhaps as much as 3 meters deep (C. de Brasdefer 1979:86, Foto 9). On the basis of this description, one can only conclude that it was similar to some of the very earliest canals known from México. Although it should have been mentioned in the first edition, this system really adds little to understanding the sequence of technological change.

Two other published articles not included in the first edition merit attention here. The first is that of Jorge Angulo V. (1988), the second is that of Ronald Spores (1969). Angulo discussed at length a number of food production strategies for the site of Chalcatzingo. Although his article includes mention of canals and related irrigation features, it really discusses only what was possible. It includes no definitive evidence of irrigation, certainly not of sufficient quantity and quality that any conclusions can be made about technology involved. Furthermore, as was discussed in the first edition (see “Development of Floodwater Systems” in Chapter 2), many of the features first thought to be related to irrigation at Chalcatzingo later turned out to be other forms of water control. The article by Spores, a classic in Mesoamerican archaeology, mentions irrigation and its importance in the Nochixtlán Valley, but it does not include any details about canals. It draws parallels based on environmental conditions and settlement locations, both of which suggest that canals were used prehistorically, but it provides no material evidence about the technology. It is, in many regards, similar to articles and monographs about the Valley of Oaxaca and the Cuicatlan Cañada, both of which are nearby and in the same state (see “Other Prospects” in Chapter 2).

Maya “Canals”

Of all the questions asked, and comments made, about the first edition of this book, the most common point of concern involves the lack of any discussion of what most people call “canals” in the Maya area. There, artificial watercourses have been reported at several Classic period Maya sites. At some sites, these features appear to have served nonagricultural purposes. For example, some were used as moats (Webster 1974), others as canoe routes (Siemens and Puleston 1972), and still others were fishponds (Thompson 1974). Some sites, however, do have waterways constructed prehistorically for agricultural purposes. For example, there are numerous raised field complexes (e.g., Siemens and Puleston 1972) across the region. For the most part, these features involve land reclamation or drainage rather than irrigation; they facilitated the removal of excess water rather than the transport of water to otherwise dry fields.

Of all the sites with canal-like features on the Yucatán Peninsula, the one that has garnered the most attention is Edzná. There, a large pyramid complex stands in the center of several features called “canals” that radiate outward like spokes from the hub of a wheel. On the basis of this radial pattern, it was concluded the construction was “precise,” “deliberate,” and “a carefully planned effort” (Matheny et al. 1983:80, 81). At one time, construction was even seen as having been carried out according to some celestial or religious plan (Matheny 1976:640–641). Some scholars (e.g., Hauck 1973:47) once postulated that these features drained agricultural fields. Others (e.g., Dahlin 1985:179–180) have tended to interpret them as irrigation canals. Another explanation, which follows, has been overlooked, but has a great deal of merit.
I spent the better part of one day examining Edzná, its “canals,” and the surrounding terrain in January 1987, with one of the world’s premier archaeologists and geomorphologists. On the basis of this survey, it became clear that Edzná is situated in a polje, a valley formed by the coalescence of sinkholes (Butzer 1976:306). The bottom of this feature is not exposed as the valley is filled with sediment. The so-called “canals” are not artificial at all, but rather are natural. They are grikes, solution-enlarged structural joints found in karstic landscapes (e.g., Jennings 1985:35). Evidence for this interpretation is three-fold. First, the radial pattern as seen from the air, so uncommon among archaeological sites, is common for grikes (e.g., Williams 1969). As sinkholes collapse and coalesce, fissures form not unlike the star-shaped cracks that occur in car windshields when hit by small rocks. Second, many of the so-called “canals,” the fissures, have one relatively straight side and one irregular or jagged side (see Matheny 1976:642, Fig. 3). Artificially excavated canals tend to have two straight and even sides. A hallmark characteristic of grikes, however, is to have one jagged side and one straight side due to the fissures being inclined rather than vertical (Sweeting 1972:86). Third, grikes, known as zanjones elsewhere in the Caribbean Basin, appear in photographs (Monroe 1964:128, Fig. 5) to be identical to the so-called “canals” at Edzná. To be sure, the grikes at Edzná might have been artificially modified by the ancient inhabitants of the site, but they were not excavated to transport water to fields. This is probably why “the direction of flow is not well understood” by, and “the precise function...remains unclear” to, some archaeologists (Scarborough 1993:34).

In sum, I did not discuss these features in the first edition of the book because they are not canals. They had nothing to do with irrigation and their existence contributed nothing to the sequence of technological change.

Corrections

Factual and Editorial

Fortunately, surprisingly few factual errors occur in the first edition. That is, to say, few errors have been found. There may be more, but they have not been identified. The errors are actually quite minor, but for the sake of accuracy must be corrected in this edition.

The single greatest error occurs in Chapter 4, in the discussion of canals in the Casas Grandes area. The last line of the fourth paragraph refers to a canal “between Llano Largo and the old mission south of Casas Grandes.” It should read, “north,” not “south.”

The other errors are not really of fact, but rather typographic and transpositional. In Chapter 7, early in the discussion of Post-contact Renovations, there is a reference to “Kinney 1981.” It should read “Kinney 1918.” The first reference in the Bibliography mentions “el área.” This should read “el área.”

Finally, although it is not an “error,” per se, there is one item that probably should have been described differently than it was in the first edition. In Chapter 3 and in Figure 1.1 and Table 6.1, I refer to canals on the Llano de la Taza. In reality, I was referring to canals throughout the Tehuacan Valley, of which the Llano de la Taza is only one part.

Interpretational

Two interpretations proffered in the first English edition are in need of correcting here. Fortunately, both are based on new evidence, and are not required as a function of incorrectly made misinterpretations.

The very last paragraph in Chapter 5 discusses an arched bridge near Texcoco. Borrowing from a nineteenth century writer (Tylor 1861), I accepted the interpretation that this bridge was pre-Hispanic and demonstrates how close the Aztecs came to discovering the idea of the arch. In retrospect, and, after having seen the bridge and having its history explained to me by Carlos Cordova (1997:244–252), I have to admit that it is neither pre-European nor evidence that the Aztecs were anywhere close to developing the true arch. This is not to say that Tylor was entirely wrong; he was not. The bridge he depicted, and which was redrawn for this book (Figure 5.13), is entirely sixteenth century. However, there was a bridge at this same location earlier, a bridge built by the Aztecs sometime in the fifteenth century, if not earlier. Physical evidence of this bridge still exists at the same location.

Figure 8.1 is a photograph of the Huexotla Bridge taken from the channel of the Río San Buenaventura, looking east and upstream. Three things are evident in this photograph. First, the bridge described and depicted graphically by Tylor (see also Figure 5.13) is obvious in the background. That bridge is entirely of sixteenth century construction. Second, in the right foreground is a feature that looks something like a truncated pyramid. It is of rock rubble construction with a masonry façade. This feature is actually the abutment of the bridge constructed in Aztec times. There are remains of a similar feature on the opposite bank of the barranca and on the other side of, and partially covered by, the historic and current bridge.

Unlike the bridge built in historic times and still in use today, the Aztec bridge was in all likelihood not arched. Although nothing remains of the span, it seems probable, on the basis of the flat-topped abutments, that wooden planks would have been used to bridge the barranca. Wooden planks were, of course, used to bridge the earthen islands built as part of the aqueduct/causeway from Chapultepec to Tenochtitlan (Figure 5.6). They were also quite common in Mesoamerica prior to the arrival of the Spaniards (see e.g., Flint 1992:Figs. 1–5).

The third thing evident in Figure 8.1 is that the bases of the abutments of the Aztec-built bridge and its later Spanish-built counterpart are not at the same elevation. The abutments of the later bridge have their footings in the present-day, tepetate-bottom channel. This means that the barranca channel has either not degraded (decreased in elevation) during the past 450 years or that it has gone through both aggradation (increased in elevation) and degradation processes, becoming stable today at an elevation identical to
that at the time of construction. In contrast, the base of the abutment of the Aztec bridge is 2.6 meters higher than the current and sixteenth century channel bottom. The barranca channel obviously degraded after the Aztec bridge was built and before its Spanish counterpart was constructed (Cordova 1997:247, Fig. 5.28).

Curiously, the Aztec abutments of this bridge were not recorded in what is perhaps the most thorough archaeological survey and assessment of the Texcoco region (Parsons 1971:136–139, 376–379). The railings of the Spanish-built bridge can be seen in a photograph published in that report (Parsons 1971: Plate 50b), although the bridge itself is not the topic of the photograph. Clearly, the Huexotla Bridge has, until recently, had a sequence of construction that avoided archaeological detection and understanding for nearly 150 years. As for canal irrigation, and the sequence of its technological change, the Huextola Bridge, contrary to what was stated in the first English edition of this book, provides no relevant evidence.

The second interpretation proffered in the first edition that is in need of correcting involves events immediately following the arrival of the Spaniards. In Chapter 7, in the discussion of “Post-contact Renovations,” I note that rock rubble construction, with fragments of small rocks used to fill the chinks between the larger rocks, seems to be a New World trait, and that such a construction technique was not used in aqueducts built in Spain. Well, I could not have been more wrong. To be sure, masonry aqueducts far outnumber rubble aqueducts in Spain, but a reconnaissance trip through that country in 1997 revealed that some aqueducts built before A.D. 1500 were constructed of rock rubble.

This fact does not change my conclusion that historic aqueducts in Mexico seem to be a mix of Spanish architecture and indigenous engineering. Indeed, given that the Aztec bridge at Huexotla was not arched, as initially thought, means that the concept of the arch did in fact come from Spain. My conclusion that historic-era aqueducts in Mexico involved native engineering not only remains intact, but is also reinforced by another discovery made during my first trip to Spain. All of the aqueducts I saw in Spain, which is nearly all of them that remain either in whole or in part, are characterized by arches that are relatively tall and narrow. That is, the spans of the arches are relatively short. In contrast, some of the historic-era aqueducts in Mexico, including the earliest one built in the 1500s near Zempoala, Hidalgo (Figure 7.2), have very wide spans. These aqueducts clearly are better engineered than their counterparts in Spain. In terms of water control engineering, something very interesting and mysterious was going on in Mexico between Spaniards and natives during the 1500 and 1600s. This is the topic of my current and on-going research project.

A Monumental Misunderstanding

In contrast to the harmlessness of the Huexotla Bridge and Spanish misinterpretations stand comments made in the first English edition that some scholars have seen as very harmful. Specifically, I have heard by means of more than one second-hand source that certain Mexican archaeologists took umbrage with my treatment of the
distinguished Mesoamericanist Angel García Cook and his work. I cannot say exactly what concerns these scholars as none has confronted me directly with the issue, including Dr. García Cook himself, who must have read my book. I can only surmise that in the two places in the first edition where I discuss sites at which he worked, I treat his conclusions with some reservation, rather than accepting them outright and offering great praise. In an attempt to placate those who were, and remain offended, I wish to use this opportunity to clarify my position.

One place I mention García Cook is in Chapter 3, in the discussion of canal networks on the Llano de la Taza. Here I state that his areal measurements seem to apply more to the entire floor of the Tehuacan Valley than to those parts of the valley in which remnants of ancient canals are found. Surely such an assessment, by itself, would not spark a controversy, much less fury. Accordingly, the problem may lie in my discussion of Tlaxcala in Chapter 2. There, I do state that the evidence for the use of canals for irrigation is “tentative,” that detailed descriptions of dams “are lacking,” that the interpretation of the system’s function is “debatable,” and “cannot be accepted categorically,” and, finally, that dates are “regarded as suspect” by other archaeologists. All in all, this does not sound flattering, I admit. However, these statements are justified. They were not made casually, maliciously, or without good reason. I viewed the evidence as “tentative” simply because García Cook drew parallels between the system he studied and the site of Chalcatzingo. Fields at Chalcatzingo were not irrigated by means of canals (see e.g., Angulo V. 1993, and above), and, therefore, are not a valid basis of comparison. As for descriptions being “lacking,” I can only say that science mandates description prior to interpretation, and not interpretation with little or no description. The prehistoric masonry dams about which García Cook has written, have, unfortunately, not been adequately described in print. Detailed drawings as well as discussions of their number, setting, configuration, morphology, construction, etc. remain unpublished. With such information “lacking” one can do little other than to question interpretations of function. Hence, I said such were “debatable.” Finally, I did not challenge García Cook’s chronology of these features. In fact, I accepted it. It was others, indeed some very prominent Mesoamerican archaeologists, with whom I talked who advised me there is not general acceptance of his dates. If I am guilty of anything, it is making public information that formerly was kept private. For making this mistake, I am truly apologetic.

In conclusion, I wish to say that I never meant to denigrate Dr. García Cook or minimize his obviously great contributions to Mesoamerican archaeology. In the context of prehistoric canal irrigation, his work in Tlaxcala had to be discussed. Unfortunately, it is not without some problems. Fortunately, on the basis of the information he does provide, it is clear that the sites he studied played a minimal, if any, role in the sequence of technological change.

Works Published Since the First Edition

Although the number is not great, some studies of prehistoric irrigation canals have been carried out in Mexico during the past 11 years. Six previously known sites or locales with ancient canals have received additional attention and five new sites or locales have been reported. Five new discoveries might not seem like many, but given that a mere 33 sites were recorded previously, field research carried out during the previous decade actually increased the number of known canal irrigation locales by 15 percent. Following the same format used in Oversights (above), canal sites and locales both recently discovered and recently restudied are discussed here in the chronological order of their actual development.

The most recent irrigation discoveries in Mexico have the distinction of involving some of the earliest canals. South of the town of Ticuman, in the Yautepc Valley of Morelos, Charles D. Frederick (2000) found a flat-bottom canal measuring 5.0 meters wide by 1.0 meter deep, and dating perhaps as early as 1050 B.C. Given that it was found in the cutbank of the Río Yautepc, it was concluded that this canal carried water diverted out of a perennial stream.

This finding was supported by investigations of a canal system found north of Ticuman in 1996 and excavated archaeologically in 1999 (Frederick et al. 1999) and again in 2000. This system involved a series of seven canals, one overlapping another. The earliest canal in the system dates to ca. 650 B.C. and the last canal dates to A.D. 750. Overall, the canals changed in both size and cross-sectional shape. Progressing from the lowest (oldest) to the highest (youngest) the canals began as as wide (4.5 meters) features with straight bottoms and evolved into narrow (1.4 meters) features with U-shaped and V-shaped cross sections. The canals were never very deep (< 50 centimeters). That they were sequentially buried and rebuilt indicates that sedimentation was a continual problem that irrigators had to battle.

Initial excavations revealed heavy travertine accumulations on the upper canals and none on the lower canals, suggesting that the earlier canals might have involved runoff from surrounding slopes or ephemeral tributary streams, and that the later canals carried water diverted out of the perennial river (Frederick et al. 1999:100–101). More detailed excavations and geomorphic analyses, however, revealed traces of travertine in even the earliest canals and in the ancient channel beds of the Río Yautepc. It was then concluded that this system, from its earliest beginnings, relied on water diverted directly out of the river, and that water chemistry changed through time (Frederick 2000).

The recently discovered prehistoric canals near Ticuman in the Yautepc Valley should be given the number 1a in Figures. 1.1, 2.11, 2.12, and 3.1. Their importance in terms of the sequence of technological change involves moving back the date at which water was diverted out of perennial streams 750 years (Figure. 6.1)

The famous Purron Dam (site 4, Figures. 1.1, 2.11, 2.12 and 3.1) was the subject of a recent study focusing on
labor requirements for initial construction and sequential reconstructions, ecological conditions, and social and political implications (Spencer 1993:48–58). This study did not involve any new excavations, so it revealed nothing new in terms of technology or its sequence of development. However, this study demonstrates that during its later phases the dam impounded far more water than was ever needed to sustain the local population dependent on the irrigation of crops. It argues that water could have been used to irrigate a variety of tropical plants as a surplus of agricultural products.

The spectacular terraced site of Hierve el Agua (site 9, Figures. 1.1, 2.11. 2.12, 3.1, 3.17, 4.1) continued to be the subject of debate well after publication of the first English edition of this book in 1990. The principal adversaries in the debate maintained their respective positions, but each presented new and supportive data. James A. Neely (1990) first presented a brief overview of new information in Spanish for a largely Mexican audience. He then teamed up with a geologist and a paleobiologist (Neely et al. 1990). The result of this joint effort was not only a thorough presentation and analysis of the data, much of which had not been previously published, but also an assessment of neighboring salt production sites and how they differ from nearby terraced agricultural sites, a study of diatoms (single-celled algae encased within a silica cell wall) trapped in travertine coating the canals and terraces, and a study of water chemistry. They also present an elaborate discussion of why the site could not have been used for salt production. Their case was sufficiently convincing for one objective third party to describe it as “a reasoned and for the most part professionally phrased examination [that] falsifies the salt-evaporation thesis and supports their own agricultural interpretation” (Dunnell 1992:558).

No sooner had the issue seemingly been settled when two articles appeared which demonstrated that attempts to grow maize with water from Hierve el Agua were unsuccessful (Henderson 1991:720; Hewitt 1994). These two papers were immediately followed by a rejoinder (Neely et al. n.d).

Doubtless, the debate about Hierve el Agua will either continue or be resurrected in the future. However, despite the disagreements on issues such as water chemistry, none of the adversaries has challenged to any great extent my 1990 interpretations of the site’s technological characteristics. The only exception to this is that Neely, Caran, and Winsborough (2000:149) think the drop structures, or registros, were prehistoric and not historic as I had concluded (Doolittle 1989:844–845). They argue that the structures might look recent as the users of the site in pre-European times probably removed the travertine periodically to keep the structures functioning properly. This argument seems plausible and acceptable, and accordingly Table 7.1 needs to be revised. Assuming these registros were prehistoric, then they are the only such structures known from ancient Mexico. They were invented at Hierve el Agua and diffused to no other area.

The next oldest canal irrigation site for which there is new evidence presented since publication of the first edition of this book is Cuicuilco (site 12, Figures 1.1, 3.1, and 3.17). As mentioned previously, in the section on Oversights, Eric Wolf sent Carlos Cordova information about canals at the site while the latter was conducting research on palaeolandforms and the volcanic impacts on the site and its surrounding environments. In a resulting publication (Cordova et al. 1994:590, Fig. 6, 591) the locations of the canals are noted on a map, and it is reported that “[t]oday these structures are no longer discernable, because of the construction of buildings and streets.” Whatever information about canal irrigation technology, and its sequence of change, that Cuicuilco might have held is now lost for eternity.

A canal site with a sequence of use beginning about the same time as that of Cuicuilco, but in the opposite corner of the Basin of Mexico, and subjected to restudy since publication of the first edition of this book is Otumba (site 13, Figures. 1.1, 3.1, 3.3, 3.17, 4.1, 4.8, 5.1). Actually, the fieldwork and labwork involved in this restudy were conducted while the first edition was in the final stages of preparation. My book and the research report (Charlton 1990) appeared almost simultaneously. The restudy involved reopening trenches excavated previously and the archaeological excavation of some new trenches to better understand the directions the canals flowed and their implications. The results of these efforts were three-fold. First, the discovery of datable artifacts in the trenches reconfirmed the dates of construction and use. Second, the directions of the canals—main, lateral, and field—did indeed vary far too much for water to have come from one source. As initially suspected, Formative canals (Otumba I in the first edition) and Aztec canals (Otumba II in the first edition) carried water from different sources. Third, agricultural intensification was taking place, and the hydraulic situation was much more complicated than previously thought. As important as these findings are for better understanding ancient irrigation and culture in the Basin of Mexico, they do not change any interpretations made in the earlier English version of this book. Indeed, they reconfirm them.

The next oldest locale for which there has been some recent work on prehistoric irrigation canals is the Tehuacan Valley, or, as was listed in the original English edition, the Llano de la Taza (site 15, Figures. 1.1, 3.1, 3.17, 4.1, 5.1). Actually, the most significant finding of the recent research is that the valley was irrigated much earlier than previously thought (Neely et al. 1995). Recent work on the famous travertine-encrusted canals resulted in the discovery that very fine mats of organic material remain trapped between various layers of travertine. These studies included the extraction of fragments of these mats and dating them using standard radiocarbon analyses. The earliest date, corrected and calibrated, was 777 B.C. (Winsborough et al. 1996:44, Table 1). Other dates confirmed what had long been thought—that the canal systems evolved over a very long period of time. They were expanded periodically, and resulted in canals being extended as well as being increased in size. Work is continuing on these systems, with the hope that some day a detailed map reflecting the full nature of these canals and
their sequence of development will be possible (Neely 2001). For now, and in terms of understanding canal technology and its sequence of change, what was listed in the first edition of this book as site 15 should now be changed to site 2a. Concomitantly, Figure 6.1 needs to be revised. Valley bottoms were irrigated nearly 600 years earlier than previously thought. Springs were used approximately 400 years earlier than previously thought. Sluice gates were used earlier as well, but by an undetermined number of decades or centuries.

Continuing the theme of discovering that canal irrigation was developed earlier than previously thought, recent findings demonstrate conclusively that early residents of Teotihuacan practiced irrigation. Fieldwork conducted in the very late 1980s resulted in some impressive findings (Nichols et al. 1991a, 1991b; Nichols and Frederick 1993:128–129). Archaeological excavations carried out in the Barrio Oaxaca, just west of Teotihuacan, uncovered a network of canals underneath some structures that were firmly dated to A.D. 200–300, thus providing an absolute terminal date of use (Nichols et al. 1991b:120). At the other end of the spectrum, associated ceramic evidence suggests that the canals came into use no earlier than year 1 (Nichols et al. 1991b:126). Accordingly, this site should be given the number 16a (Figure 1.1).

The canals found at this site number no fewer than 10, three being rather early and seven being somewhat later. Earlier canals were excavated into the tepetate, later ones in unconsolidated material. Individual canals proved difficult to distinguish from others as in some places the canals intersect, whereas in other places canals bifurcate, overlie each other, and were constructed within the fill of others. All of the canals were rather small, but the older canals seem to have a narrower range of variation than the younger canals. The old canals ranged in width between 20 and 30 centimeters, and in depth from 25 to 39 centimeters. The younger canals ranged in width from 12 to 34 centimeters, and in depth between 25 and 40 centimeters. All were U-shaped in cross-section. On the basis of their sizes, shapes, and location, these features were identified as secondary or branch canals. They seem to have carried water to fields after having been fed by a main canal that diverted ephemeral stream flow out of the northwestern flowing Barranca de Cerro Colorado (Nichols et al. 1991b). In terms of their contribution to technology and its sequence of development in Mexico, these findings add little other than to demonstrate that canal irrigation was more widespread in the Basin of Mexico than previously thought. Of course, they also confirm a major subsistence component on which the site of Teotihuacan was based.

The next oldest canal irrigation site discovered recently is far to the west of Teotihuacan, in the present-day state of Jalisco (Weigand 1993:244, Fig. 8, 255–256, 1994:254, 262, Fig. 4). A canal described as “large” was found in a small valley between the Eztatlán and Magdelenas basins. It collected water from two arroyos by means of feeder canals, and distributed it through an unspecified number of secondary canals. Specific canal dimensions were not reported, but the system is thought to have irrigated 50 hectares or more. It was used between A.D. 200–700, and, accordingly, is assigned site 17a (Figures 1.1, 3.17).

In many ways, there is nothing special about this canal site. In terms of irrigation technology, everything at the site was known earlier in other parts of Mexico. At best, therefore, this recently discovered site simply demonstrates that certain irrigation practices were much more widely distributed than previous evidence indicated.

In this same vein, the introduction of a recent overview of historic agriculture in the Bajío region contains a passage noting that “[l]as zonas de altas densidades poblacionales se encontraban donde el suelo era propicio a la agricultura intensiva y donde habia posibilidades de riego cuando el régimen de lluvias era insuficiente o de drenaje cuando era demasiado abundante” (Baroni Boissonas 1990:16). This passage clearly indicates that the author thinks canal irrigation was practiced in the Bajío prior to the sixteenth century, but how much earlier than the pre-European period remains unstated. Similarly, no firm evidence is presented to substantiate the claim that irrigation was practiced there. This passage, then, as was the case with most of the works on the Bajío cited in the first English edition of this book (Chapter 3, El Bajío, site 20, Figs. 1.1, 3.17, 4.1, 5.1), is little more than speculation and says nothing about prehistoric canal irrigation in Mexico or the sequence of its technological change.

Two recent studies conducted separately in different areas resulted in the discovery of prehistoric irrigation canals dating to the Postclassic period. In the far northern part of the Basin of Mexico, Charles D. Frederick found a canal on the former bed plain of Lake Xaltocan (Nichols and Frederick 1993:136–142). It was identified initially on aerial photographs and confirmed through on-the-ground reconnaissance. The canal was 5.0 kilometers long, varied in width from 50 to 100 meters, was 1.0 meter deep and had its origin at a spring. Given that it extended from the margins of the lakebed toward the middle of the plain, and that former chinampas were found near its terminus, Frederick concluded that the canal served to transport fresh water from the spring to the chinampa zone, which otherwise would have been characterized by water too brackish for agriculture. On the basis of various forms of evidence, Frederick concluded that the canal could have been built as early as A.D. 800 and it may have been the one reported by López de Gómara (1943:v.2, 14) in the early sixteenth century. Spring-fed canals were, of course, long in use by the time the Xaltocan canal was built. If there are any qualities about this canal that are important in terms of its technology and place in the sequence of technological change, they are its size and association with chinampas. This was easily the widest canal ever used in ancient Mexico. Accordingly, the claim made in the first English edition of this book that no large canals existed in central Mexico at the time that large canals were built at Casas Grandes, in the far north, is no longer true. This does not, however, mean that canal irrigation in the north was a result of diffusion from the south. The above-mentioned
new evidence from Arizona trumps any such interpretation. This canal also marks the first time that fresh water was transported to an area flooded with brackish water so that agriculture could be carried out on chinampas. Although an argument could be made that this is not true irrigation, as it did not compensate for a water deficit, the canal did transport water from a source to fields for the purposes of improving cultivation. The Xaltocan canal should be added to Figs. 1.1, 4.1, 5.1, and numbered site 23a.

The second Postclassic period canal discovered recently is in the northern part of Morelos, in the area stretching from Capilco and Cuexcomate in the south to Buenavista in the north (Price and Smith 1992). This area is characterized by an abundance of prehistoric contour terraces and cross-channel terraces, all of which demonstrate intensive agriculture. That a canal was discovered here should, therefore, come as no great surprise. Details of the canal are precious few. It runs along the eastern slope of Cerro Coatzin 60 to 70 meters above and west of Capilco. Dimensions have not been provided, but on the basis of a cross-sectional diagram (Price and Smith 1992:282, Fig. 10.14), it was approximately 2.25 meters wide at the top, 35 centimeters deep, and parabolic in cross-sectional shape. The canal flowed through the center of a Middle/Late Postclassic site and appears to have collected runoff that was then transported to fields below. In other words, this canal had dual functions, one being an urban storm sewer, the other an irrigation canal. Although there is a possibility it may have been built as early as the Epiclassic, A.D. 650–950, it was clearly used A.D. 1150–1520. This canal should be numbered site 30a and added to Figs. 1.1 and 5.1. It was probably of no consequence in the development of canal irrigation technology in ancient Mexico, but it does merit inclusion here.

The recently discovered canal just described is one of the very few prehistoric irrigation features substantiated by archaeological excavation in Morelos. As early as the mid-1950s and early 1960s, it was apparent that canal irrigation was widespread in central Mexico prior to the arrival of Europeans (see Chapter 7, especially Post-contact Renovations, and Palerm 1[954, 1961a]). In the same year that the first English edition of this book was published, Druzo Maldonado Jiménez (1990) published a monograph not unlike Palerm’s, but focusing exclusively on Viceregal-era documents pertaining only to Morelos. That work does not reveal a great deal about canal irrigation or its sequence of technological change, but it does demonstrate that the canal found near Capilco was one of many. Canal irrigation was more widespread in northern Morelos in the very late pre-Hispanic era than Fig. 7.1 indicates.

Summary

Research overlooked inadvertently in the writing of the first English edition of this book and research conducted since require that some revisions now be made. These revisions take two forms, one geographical, and the other technological.

Geographical Revisions

In addition to the places where canal irrigation was known to have been practiced prehistorically, work carried out since 1990 indicates that four other areas were underrepresented previously. The Soconusco has long been known as a region where canals were used to irrigate crops in very late pre-Hispanic times. We now know that it was also an area where canal irrigation was used as early as 300 B.C.

Teotihuacan has long been enigmatic, as this site is situated in a very arid area, was home to thousands of people, but yielded no positive proof of irrigation. This all changed with the recent discovery of canals dating to the earliest phases of the site’s existence, ca. A.D. 1–300.

Evidence of irrigation canals has similarly been found much further west than previously known; near Etzatlan, Jalisco, dating to A.D. 200–700. Finally, recent evidence, both in the form of material remains excavated archaeologically and an assessment of documentary sources, demonstrates that canal irrigation was widespread in northern Morelos A.D. 1150–1520, and possibly earlier.

Technological Revisions

As important as revisions in our understanding of the spatial distribution of prehistoric canal irrigation may be, they are not as important as revisions in our understanding of what technology was developed and when. Such revisions take two forms, material discoveries, and changes in dates and timing.

Three elements of technology are now known that were either not known or not reported in the English edition of this book. First, drop structures are now known to have been developed at Hierte el Agua. They seem not to have diffused from that site, but they were used there. Second, pipes were thought not to be an indigenous technology, but evidence from Cerro Tetzcotzingo refutes this notion. Accordingly, both pipes and drop structures need to be removed from Table 7.1. The third new discovery is that, contrary to what was argued in the earlier edition of this book, at least one very large canal was used in central Mexico prior to the arrival of Europeans. This finding does not change any interpretations today, but it certainly might in the future.

In addition to now recognizing that certain technological traits did exist, there are two other recent discoveries that warrant certain reconsiderations. First, the Aztecs were not as close to developing the arch as was argued in the first edition of this book. The Aztec-built Huexotla bridge was much different in design and construction than its historic counterpart, which was originally thought to be prehistoric.

Second, rock-rubble construction argued to be indigenous to Mexico is found in other parts of the world as well. Both of these findings beg further study into the transfer of water control technology from the Old World to the New World and how technologies from the two hemispheres were combined in the historic period.

Finally, recent research has resulted in the moving back of dates in which certain technologies were developed. Work in the Yautepec Valley clearly demonstrates that perennial
streams were used by 1050 B.C., 750 years earlier than indicated in Figure 6.1. New evidence from Tehuacan (listed incorrectly as the Llano de la Taza) indicates that: (1) valley floors were irrigated by means of canals by 777 B.C., 600 years earlier than shown in Figure 6.1; (2) springs were used for irrigation approximately 400 years earlier than thought; and, as a result, (3) sluice gates were used earlier as well.

In conclusion, as impressive as ancient Mexican canal irrigation technologies appeared from the perspective of 1990, they are even more impressive from the perspective of the twenty-first century.

Acknowledgments: Publication of the second edition and Spanish version of my book would not have been possible without the assistance and insistence of Dr. Luis Morett Alatorre, Director, Museo Nacional de Agricultura, Universidad Autónoma Chapingo, to whom I will be forever grateful. Without his motivation, enthusiasm, diligence, and hard work, this epilogue and bibliographic supplement would never have been completed.

Bibliographic Supplement

Angulo V., Jorge

Anonymous

Baroni Boissonas, Ariane
1990 La formación de la estructura agraria en el Bajío colonial, siglos XVI y XVII. Centro de Investigaciones y Estudios Superiores en Antropología Social, 175. México.

Beals, Ralph L.

Bergmann, John F.

Butzer, Karl W.

C. de Brasdefer, Fernando

Charlton, Thomas H.

Cordova, Carlos
1997 Landscape Transformation in Aztec and Spanish Colonial Texcoco, Mexico. Unpublished doctoral dissertation, Department of Geography, University of Texas at Austin.

Cordova F. de A., Carlos, F., Ana Lillian Martin del Pozzo, and Javier López Camacho

Cobean, Robert H., and Alba Guadalupe Mastache

Dahlin, Bruce H.

DiPeso, Charles C.

at the Annual Meeting of the Society for American Archaeology, Dallas, Texas.


Maldonado Jiménez, Druzo 1990 *Cuauhnáhuac y Huaxtepec (Tlahuicas y Xochimilcas en el Morelos Prehispánico)*. Centro Regional de Investigaciones Multidisciplinarias, Universidad Nacional Autónoma de México, Cuernavaca.


Nichols, Deborah L.  

Nichols, Deborah L., and Charles D. Frederick  

Nichols, Deborah L., and Charles D. Frederick  


Nuttall, Zelia  
1937 The Gardens of Mexico. Editorial Cultura, Mexico.

Palerm, Angel, and Eric R. Wolf  

Price, T. Jeffrey, and Michael E. Smith  

Scarborough, Vernon L.  

Siemens, Alfred H., and Dennis E. Puleston  

Spencer, Charles S.  

Spores, Ronald  

Sweeting, M. M.  

Vega Sosa, Constanza (editor)  

Webster, David L.  
1976 Defensive Earthwork of Becan, Campeche, Mexico: Implications for Maya Warfare. Publications 41. Middle American Research Institute, Tulane University, New Orleans.

Weigand, Phil C.  

West, Robert C., and John P. Augelli

Williams, Paul. W.

Winsborough, Barbara M., S. Christopher Caran, James A. Neely, and Salvatore Valastro, Jr.

Wolf, Eric R., and Angel Palerm
A series of excavations was carried out into Structures 26 and 27, designated Operation 2012, located on the western margin of the site’s ceremonial center. These structures are described as “a relatively high (4 m) mound situated on the eastern edge of a large, low platform (1 to 1.5 m). The mound and platform together form a larger structure which has a length of approximately 42 meters and a width of perhaps 30 meters.” (Potter 1980:173).

Description of the Colha Cache Vessels

At Operation 2012, a series of caches was uncovered within a single excavation unit, Suboperation 14, placed at the top of the pyramidal structure. A lip-to-lip ceramic cache, Strat 45, (Hester 1994) possessing crude, incised, glyph-like symbols on the interior surfaces, was among the recovered caches (Figure 1). The two cache vessels belong to the Sierra group and are of the Laguna Verde Incised type. The incising occurs post-slip and post-firing (Valdez 1987). Inside the cache was a single polished stone ear ornament (Buttles 2002).

Figure 1. Photos of the incised Colha cache vessels (photographs by David M. Hyde).
The first cache vessel has two incised symbols (Figure 2). The larger symbol consists of two concentric circles inside of which are three small circles arranged triangularly. This symbol is in the approximate center of the inside of the vessel. A second symbol on the inside is not as easily identifiable, although it rudimentarily resembles a rabbit in profile.

The second cache vessel has four symbols incised on its interior surface (Figure 3). Like the vessel described above, the central symbol has three small triangularly arranged circles, but with a single ring surrounding it. The significant difference between the two vessels, however, is that this design contains hatching through it. A second symbol is located inside the vessel and resembles the web of a spider: multiple concentric rings are interconnected by lines that extend unevenly from ring to ring. Additionally there are two small indeterminate incised images on the vessel’s interior surface.

Figure 2. Drawing of the interior of the first cache vessel (drawing by Mary Jane Acuña).
Discussion

In 1983 David Freidel examined the cache vessels and in a letter to Hester, Co-Director of the Colha Project, provided an interpretation of the symbols, relating it to ritual sacrifice. Freidel describes the central image as a precursor to the “flayed-face shield” iconography seen in a handful of monuments from Palenque and Copan, among others (letter to Thomas R. Hester, December 7, 1983, in Valdez 1987). The “flayed-face shield” appears as a circular shield with a face.

Figure 3. Drawing of the interior of the second cache vessel (drawing by Mary Jane Acuña).
in the center (Figure 4). According to Schele (1982), “flayed-face shield” is likely a statement of war and represents the cut away face of a sacrificed war captive that is subsequently stretched across a shield.

Recently the vessels were re-examined and have led to an alternative understanding of these symbols. Based on comparisons to Late Classic glyphs it appears that the central image inside each cache vessel may be precursors to variations of the ahau glyph. Thompson’s Glyph 541, labeled “hatched ahau,” is essentially identical to the symbol in one of the Colha cache vessels (Figure 5; see Thompson 1962:153). Additionally, Thompson’s Glyph 542, labeled “ahau semblant” is essentially identical the other Colha cache vessel (Figure 5; see Thompson 1962:154). Glyph 542 is a semblant because it is a simpler version of the ahau symbol, possessing fewer elaborations than other versions. It is this semblant, version however, that so closely resembles the Colha vessel. The derivation for this configuration of triangularly arranged circles may represent a similarly arranged group of stars—Alnitak, Saiph, and Rigel—thought to symbolize the three hearth stones of creation (Figure 6; see Friedel at al. 1993; Milbrith 1999; Tedlock 1996).

Figure 4. Examples the flayed-face shield iconography (drawings by Linda Schele, courtesy of FAMSI).

Figure 5. Example of Thompson’s Glyphs 541 and 542. (from Thompson [1962], courtesy of FAMSI).

Figure 6. Illustration of the stars that represent the “Three Hearthstones” (drawing by Linda Schele, courtesy of FAMSI).

Conclusion

Friedel has described the incised vessels symbols as precursors to the “flayed-face shield” symbol. Freidel’s suggestion that the cache vessel symbols are correlated to ritual sacrifice iconography is reasonable considering the context of recovery. A cache found in Strat 55 of the same unit contained a chert blade core and detached blade containing human blood residue along its edge (Potter 1994). However there are reasons to treat this conclusion with caution. Examples of the flayed-face shield iconography that occur in the Late Classic are notably different from the Late Preclassic incised symbols. The Late Classic examples exhibit significantly more personification with the presence of eyes, mouths, and in some cases eye brows, and the hatching, when present, appears only on the periphery of the symbol.

On the other hand there are examples of Late Classic ahau signs that are nearly identical to the incised symbols in the cache vessels. Later signs consisting of a round symbol with three small circles triangularly arranged both with and without hatching are identical to the Colha cache vessels. Many lip-to-lip caches contain objects that relate to the three worlds of Maya cosmology (Coe 1959). Therefore, one vessel might represent the heavens with its depiction of an ahau, and the other the underworld with its depiction of the hatched ahau. Due to the greater similarity to Thompson’s Glyphs 541 and 542 than to the “flayed-face shield” symbols, it is likely that the central images in both Colha caches vessels are precursors of the ahau glyph.

Author’s Note: Figures 4–6 are courtesy of the Foundation for the Advancement of Mesoamerican Studies, Inc. (FAMSI) and reprinted here for scholarly use. They are available on the internet at www.famsi.org.
References

Buttles, Palma J.  

Coe, William R.  

Friedel, David, Linda Schele, and Joy Parker  

Hammond, Norman (editor)  

Hester, Thomas R.  

Houston, Steven D.  

Marcus, Joyce  

Mathews, Peter  

Milgrath, Susan  
1999 *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars.* University of Texas Press, Austin.

Pohl, May, Kevin Pope, and Christopher von Nagy  

Potter, Daniel R.  


Shafer, Harry J., and Thomas R. Hester  

Tedlock, Dennis  

Valdez, Fred Jr.  
**Salvaging Say Kah**

Brett A. Houk  
SWCA Environmental Consultants

Rebecca E. Bria  
Vanderbilt University

Michael G. Lyndon  
U.S.F.S., Kaibab National Forest

---

**Introduction**

Say Kah is one of dozens of small-medium centers scattered throughout the jungles of the Three Rivers Region of Guatemala and Belize. In many ways, the site is perhaps no more or less remarkable than the other sites of its size in the region, including Kaxil Uinic, Las Abejas, Quam Hill, Wari Camp, El Pedernal, and Gallon Jug (Figure 1). However, Say Kah has a somewhat more colorful history of discovery in the archaeological annals of northwestern Belize than many of its peers, which, until recently, has prohibited its continuous investigation. Its proximity to La Milpa, the third largest site in Belize, makes it of particular interest for study, and, presumably, led to its discovery and subsequent pillaging by looters. Despite the near total destruction of several structures, the Say Kah Archaeological Project (SKAP) has gathered valuable information about the nature of the site in two short seasons of research. This article provides a synopsis of the results of the salvage investigations conducted in 2004 and 2005.

**Lost and Found**

The history of Say Kah can be summarized as: occupied, abandoned, looted, discovered, lost, searched for, accidentally rediscovered, and preliminarily investigated. Located approximately 4 km south/southeast of La Milpa within the forest-covered land owned by the Programme for Belize (PIB), Say Kah was first recorded in 1991 by the

---

Figure 1. Map of Three Rivers Region and location of Say Kah.
Rio Bravo Archaeological Project (Guderjan et al. 1991). Unfortunately, Guderjan’s investigations preceded the widespread availability of GPS technology by a few years, leaving future researchers a difficult task re-locating the site. Guderjan’s teams originally reached Say Kah by following an old logging road through the jungle for several kilometers before then turning on a foot trail to the south. The reported position of the site was “4 km west of the 10.5-mile marker of the Gallon Jug-Blue Creek road, approximately 4 km southwest of La Milpa” (Guderjan et al. 1991:73).

Shortly after Guderjan et al. (1991) reported it, the site was “lost”, and multiple attempts to locate it failed. Due to the thick forest terrain of northwestern Belize, losing archaeological features is not uncommon, particularly without sophisticated mapping tools. Three factors in particular contributed to confusion regarding Say Kah’s location. Although Guderjan et al. (1991:73) reported the site as being southwest of La Milpa, it is actually southeast of the large site. Second, the PB mile markers were changed after Guderjan’s investigations. Therefore, the reference to the “10.5-mile marker” became meaningless. Third, in the 2 years between the Rio Bravo Archaeological Project’s visit to the site and the Programme for Belize Archaeological Project’s (PBAP) first attempt to locate it in 1992, the jungle reclaimed the logging road, making it difficult to see from the main road.

In 1993, the PBAP and William Saturno, who planned to use the site for dissertation research, made a concerted effort to re-locate Say Kah. Several weeks of searching, however, proved fruitless. After that, finding the site became a low priority for the project, and the PBAP did not actively search for it.

Boston University’s La Milpa Archaeological Project, however, did make subsequent attempts to find the site. Tourtellot et al. (2003:98) report attempting to locate “the lost site of Say Ka.” A visit to Say Ka’s “alleged UTM coordinates...found nothing notable” (Tourtellot et al. 2003:98). After this failure to locate the site, the Boston University project did not make any further attempts to locate it.

Rediscovery would have to wait a few more years. In 1999, Jon Hageman (personal communication, 2005), who was cutting and surveying a transect between Dos Hombres and La Milpa for his dissertation fieldwork, discovered a large group of mounds approximately 3.7 km south/southeast of La Milpa. He returned to map the site in 2000. The site, which was west of Hageman’s survey transect, was explored and recorded, but it was not until 2002 that Hageman determined that his unnamed site was actually Say Kah. Hageman noted that the ruins had been severely looted, and documented the location and extent of looting in the Main Plaza.

SKAP launched its first season of research in 2004, documenting many of the looters’ trenches in the Main Plaza at the site during one week in June (Houk and Lyndon 2005). A second short season followed in 2005, targeting a specific mound at the site in an attempt to locate a stucco mask on a buried building (Houk et al. 2006). These two seasons of research, combined with Guderjan’s team’s (Guderjan et al. 1991) and Hageman’s 2000 mapping work, form the basis for the following description of the site. Unfortunately, the SKAP excavations have not yet recovered significant quantities of ceramics from sealed deposits. Therefore, the dating of the various construction phases remains problematic.

The Site

At the time of its discovery, Guderjan et al. (1991:73) speculated that perhaps “Say Ka was a major La Milpa outlier that functioned to supply water for agricultural and other uses to the larger La Milpa-Say Ka population.” Indeed, given its proximity to La Milpa, Say Kah appears to fall within what Tourtellot et al. (2003) have called the La Milpa suburban or residential area, a zone with a 5-km radius around La Milpa. The relationship between the two sites, however, is neither determined nor explained by mere proximity. Originally, the La Milpa Archaeological Project believed Say Kah was “a prime candidate for a secondary administrative center subject to La Milpa,” but its elusiveness prevented further elaboration of this hypothesis (Tourtellot et al. 2003:98).

Say Kah is composed of three clusters of architecture—Group A, which includes all the structures sharing a prominent ridge with the Main Plaza, and Groups B and C, two smaller courtyards situated on hilltops east of the Main Plaza. Little time was spent exploring these smaller groups in 2004 and 2005, and their relationship to the Main Plaza is not entirely clear.

The main assemblage of buildings in Group A comprises nine structures surrounding a north-south oriented plaza that measures approximately 52 m long by 25 m wide (Figure 2). The tallest mound is Structure A-2, which forms the southern edge of the plaza. At 6.5 m high, it is 1.25 m higher than Structure A-5 on the western side of the plaza and 1.5 m taller than Structure A-1 on the eastern side of the plaza.

The ridge upon which the Main Plaza is located runs to the south, and a couple of small, low mounds are located along the edges of the ridge. At the southern end of the ridge, approximately 270 m south of Structure A-2, is Structure A-12, the largest building at the site. Structure A-12 measures approximately 43 m long, 18 m wide, and 9.75 m tall.

Nearly all of the buildings at the site have been looted, some more severely than others. Many of the original looters’ trenches terminated in tunnels into the mounds, but most of these tunnels have collapsed, resulting in further destruction to the buildings. The most severely looted structures in the Main Plaza are Structure A-1, which has been nearly completely destroyed, and Structure A-2. Despite the degree of destruction, important data were recovered from three of the buildings—Structures A-1, A-2, and A-4/A-5—at the site during the short 2004 season (Houk and Lyndon 2005). That information led to the further investigation of Structure A-4/A-5 in 2005.
The Main Plaza

A 2005 plaza test pit and data from the trenches present a sketchy picture of the evolution of the Main Plaza (Houk et al. 2006). During the earliest phases of construction, the plaza was probably much smaller than it appears today, extending no farther north than Structure A-5. During this period of occupation, which was probably during the Late Preclassic or the Early Classic, the northern end of the plaza may have been open. The site underwent a major architectural renovation, and the original buildings were partially destroyed and then covered in fill to support new structures. During this construction phase, tremendous amounts of rubble were brought in and the plaza was extended to the north. The test pit documented only one plaza floor—now destroyed in the humic layer—and fill extending deeper than 315 cm below the modern ground surface in the northern portion of the plaza. Ceramics from within the fill suggest the expansion of the plaza took place during the Tepeu 2 phase (Late Classic).

Structure A-1

Structure A-1 forms the eastern edge of the Main Plaza. The 5-m high mound is approximately 28 m long and 12 m wide. The structure has been pierced by four trenches. Three of the trenches (A–C) begin on the western side of the building, and the fourth (D) is located on the eastern side. Trenches B and C were probably originally tunnels that went entirely through the mound, but they have collapsed, creating huge craters in the northern and central thirds of the structure. Trench A has suffered a similar fate, as it has partially collapsed inside the mound.

Given the degree of destruction to the mound, very little time was spent investigating Structure A-1. Despite this, a surprising amount of architectural information was recovered from the cleaning of Trench D on the eastern side of the building. This small trench penetrated the mound north of the centerline and likely tunneled into the structure. The tunnel has collapsed, but cleaning the upper portion of the trench revealed intact, exterior architectural elements that do much to clarify the nature of Structure A-1.

The structure comprised a basal platform supporting three individual buildings. Trench D partially exposed the back corners of the northern and central buildings and tunneled into the basal platform. The buildings both have battered aprons and subaprons (Figure 3). The aprons are slightly rounded, particularly on the central building. Although very little remains of the three buildings, it appears as though the basal platform supported three small pyramid-temples. The central pyramid-temple was probably the largest based on the architecture exposed in Trench D. Unfortunately, no ceramics were recovered from reliable contexts within any of the trenches.

Structure A-2

The southern edge of the Main Plaza is bordered by Structures A-2 and A-3, which are attached to one another. Structure A-2 is the tallest mound in the plaza at 6.25 m high. It measures approximately 22 m long by 15 m wide. Looters excavated six trenches into the mound: three on the northern face, two on the southern face, and one on the eastern end. All of the trenches terminate in tunnels within the mound, all of which have at least partially collapsed.

The building appears to be a tandem range structure with several vaulted rooms at its summit. A spine wall...
separating collapsed or infilled rooms on the northern and southern side of the mound is visible in Trenches C and D. The architecture has not been studied in detail, but several lenses of chert flakes are visible within the fill in Trenches A and E at the eastern end of the mound, below the floor level of the rooms. The chert lenses were exposed when the tunnels from the two trenches collapsed. The presence of these lenses strongly suggests that a tomb, possibly Early Classic in age, was or is present at the eastern end of the building. This is based on multiple examples from the region including Hall’s (1986) documentation of Tombs 5 and 19 at Rio Azul. Hall (1986) discovered three different layers of chert flakes, 5–10 cm thick, within the material filling the entry shaft to Tomb 5, which had been looted. He encountered similar deposits filling the entry shaft to Tomb 19, which was unlooted (Hall 1986).

**Structures A-4 and A-5**

Structures A-4 and A-5 form the western edge of the Main Plaza, directly across from Structure A-1. The two attached structures measure approximately 30 m in combined length. Neither mound is particularly large—Structure A-4 is 3.75 m high, and Structure A-5 is 5.25 m high. Three trenches pierce the eastern side of the mound, one in the approximate center of Structure A-4 (Trench A), one near the intersection of Structures A-4 and A-5 (Trench B), and one in the approximate center of Structure A-5 (Trench A).

The initial study of Trenches A and B in 2004 suggested that the structures on the western side of the Main Plaza at Say Kah have a complex construction history (Houk and Lyndon 2005). Excavations along Trench B in 2005 clarified some of the architectural questions raised in 2004 and provided enough data to present at least a partial reconstruction of the history of Structure A-5. Unfortunately, no ceramics were recovered from the earlier construction episodes, making it difficult to date the various buildings. Only the final construction phase can be dated based on recovered ceramics, but three distinct phases are clearly present.

**Structure A-5 Sub 2 (Carmelita)**

Although earlier phases may be present, the earliest documented phase of Structure A-5 is the building designated Carmelita, or Structure A-5 Sub 2 (Figure 4). Interpreting the form of this building is largely conjecture at this point because so little of the structure has been exposed; it is buried beneath later phases and only visible in the looters’ tunnel into the mound and in small portions of the 2005 excavation area. The most interesting feature of this phase of construction is a southern facing wall that extends nearly to the top of the mound, becoming obscured in the root mass of a large tree immediately west of the excavation units (see Figure 4). Near the top of the undamaged portion of the wall, the plaster bulges outward, and two intact modeled stucco elements are in situ, just barely visible in the profile of the excavation unit. Unfortunately, it was not possible to expose these decorative elements because of the tree directly above them.

With so little of the building exposed, its form and function remain unknown. Almost certainly, everything revealed thus far by either looters or SKAP excavations are exterior architectural features. The modeled stucco elements near the top of the mound were presumably architectural decorations on the exterior of the building, meant to be seen from viewers in the plaza or on nearby structures.

The characteristic features of Carmelita, architecturally, include dry-laid cobble fill composed of small chert and limestone cobbles. Small cut limestone blocks form the core shape of the architecture, which is then covered by a 1–2-cm thick layer of plaster. Traces of red are visible in many places on the face of Carmelita. Corners of benches are rounded, as are the interfaces between walls.

**Structure A-5 Sub 1 (Rosalita)**

Carmelita underwent significant renovations at some point. This subsequent phase is designated Rosalita. Using the same architectural style as Carmelita, the building was expanded and its form altered to include a staircase. The renovations to Carmelita began with a new plaster floor, approximately 24 cm higher than its predecessor. This could be another construction phase in its own right, but at this point no other architectural modifications associated with this floor are known. It is probable that this floor was built to raise the base surface for the subsequent construction of Rosalita.
After this floor had been built, major architectural modifications were made to the building, completely changing its appearance. Portions of the earlier building were incorporated into this new building, but much of Carmelita appears to have been completely covered by the new construction. Dry-laid cobble fill was placed over the portion of the building west of Carmelita’s eastern wall (designated Lot 7 during the 2005 excavations), and a staircase with five steps was constructed over it (Figure 5).

Deciphering the portion of Rosalita within the looter’s tunnel is difficult because it is only partially exposed and was clearly chopped by the Maya during the construction of the final phase of Structure A-5. West of the staircase is what looks to be a doorway, as two apparent doorjambs are visible in the looters’ tunnel. Each is approximately 50 cm wide, framing a 60-cm wide entrance. It is entirely possible, if not probable, that this feature is not a doorway; with the steps of Structure A-5 rising to the right of it, and Structure A-4 to the left, it would be an unusual place for a door. These doorjambs were chopped approximately 84 cm above the floor during the subsequent modifications to Structure A-5.

Rosalita shares many architectural traits with Carmelita. Both have rounded plaster exteriors with core faces comprising small cut limestone blocks. The exterior plaster, only 1–2 cm thick, is a faded red on both structures. The fill within the two phases is dry laid, composed of small limestone and chert cobbles.

Numerous fragments of modeled stucco were found in the construction fill covering Rosalita (Figure 6). These fragments, which retain red, orange, and black pigment, apparently came from a panel or mask that was totally destroyed by the later building. This decoration may have been fairly high up on the building, based on the intact fragments of the earlier façade on Carmelita.

---

Figure 4. Western profile of Suboperation A and Trench B (drawing by Rebecca E. Bria and Brett A. Houk).
Although the latest phase of construction was not the focus of the 2005 excavations, a great deal of information was collected about Structure A-5 during the course of the season. The final building was architecturally distinct from the earlier Carmelita and Rosalita phases. The earlier buildings were chopped to accommodate Structure A-5, which did not incorporate the previous architecture, but rather covered it entirely.

Only the southeastern corner of Structure A-5 was exposed. The building had at least two platform terraces, the lowest of which had a rounded southeastern corner (Figure 7). The looters originally exposed the southern wall of this terrace in Trench B, chasing it west into the mound. The second terrace was partially collapsed; only a portion of it was preserved in the excavation unit. Four courses of stones were present, extending from the northern edge of Subop A, 150 cm south into the unit. The southern end of the terrace was missing, but it is likely that the upper terrace did not extend as far south as the lower terrace, meaning the building would have had a stair-stepped appearance. Ceramics from fill within Structure A-5 date to the Tepeu 2 phase of the Late Classic, ca. A.D. 650–850 (Houk et al. 2006:27).

**Discussion**

Despite its being severely impacted by looting, Say Kah is a promising site for investigating issues of political organization, testing models of site function, and examining the Late Preclassic-Early Classic transition in the Three Rivers Region. The limited investigations at Say Kah in 2005 confirmed the 2004 conclusion that the buildings on the western side of the Main Plaza underwent significant modification. Dating the various construction phases, unfortunately, remains problematic given the limited recovery of diagnostic ceramic sherds from sealed contexts. Resolving the timing of the construction sequence will be an important element of future research at the site because the marked disparity in form between the final phase and the earlier Carmelita/Rosalita forms of the building suggests

---

**Figure 5.** Steps of Rosalita, photograph facing north.

**Structure A-5**

Although the latest phase of construction was not the focus of the 2005 excavations, a great deal of information was collected about Structure A-5 during the course of the season. The final building was architecturally distinct from the earlier Carmelita and Rosalita phases. The earlier buildings were chopped to accommodate Structure A-5, which did not incorporate the previous architecture, but rather covered it entirely.

Only the southeastern corner of Structure A-5 was exposed. The building had at least two platform terraces, the lowest of which had a rounded southeastern corner (Figure 7). The looters originally exposed the southern wall of this terrace in Trench B, chasing it west into the mound. The second terrace was partially collapsed; only a portion of it was preserved in the excavation unit. Four courses of stones were present, extending from the northern edge of Subop A, 150 cm south into the unit. The southern end of the terrace was missing, but it is likely that the upper terrace did not extend as far south as the lower terrace, meaning the building would have had a stair-stepped appearance. Ceramics from fill within Structure A-5 date to the Tepeu 2 phase of the Late Classic, ca. A.D. 650–850 (Houk et al. 2006:27).

**Discussion**

Despite its being severely impacted by looting, Say Kah is a promising site for investigating issues of political organization, testing models of site function, and examining the Late Preclassic-Early Classic transition in the Three Rivers Region. The limited investigations at Say Kah in 2005 confirmed the 2004 conclusion that the buildings on the western side of the Main Plaza underwent significant modification. Dating the various construction phases, unfortunately, remains problematic given the limited recovery of diagnostic ceramic sherds from sealed contexts. Resolving the timing of the construction sequence will be an important element of future research at the site because the marked disparity in form between the final phase and the earlier Carmelita/Rosalita forms of the building suggests

---

**Figure 6.** Modeled stucco fragments recovered in 2004 (drawings by Dee Turman).
significant socio-political change at the site. Based on architectural style, it is likely that the Carmelita and Rosalita phases of the building date to the Late Preclassic or Early Classic. The final phase apparently dates to the Tepeu 2 phase of the Late Classic.

The partial destruction and seeming rejection of the Rosalita structure may be related to a drastic remaking of Say Kah’s monumental center, which included the expansion of the plaza’s northern end. Given the site’s proximity to La Milpa, it is probable that this architectural change is a reflection of political and social reorganization at the site in the Late Classic, presumably because of influence from the expanding center of La Milpa.

Many important research questions remain at Say Kah, particularly since so little is known about the size of the site, the surrounding landscape modification features that other researchers have noted, and its relationship with La Milpa. The presence of modeled stucco elements at the site is also an important discovery. Of the few stucco decorations known from the region, all appear to date to the Early Classic or later. These include several from the Rio Azul area. There is a modeled stucco decoration, enhanced with polychrome paint, on the roof comb of a “very Early Classic” building at El Pedernal near Rio Azul. At Rio Azul itself, the roof comb of Structure A-2 has modeled stucco designs, including glyphs, while Structure A-2 Sub has a polychrome façade or roof comb, which is visible in a looters’ trench (Adams 1999). The only other reported decorations in the region are from Blue Creek, where Guderjan (1997) documented a set of Early Classic stucco panels adorning a staircase outset on Structure 9. To this meager list can be added Say Kah Structure A-5 Sub 2. The significance of the architectural elaboration may be tied to the site’s development and its socio-political relationship with La Milpa.

Future research should initially focus on defining the extent and chronology of Say Kah. This would include developing a more comprehensive map of the site, tying Groups A, B, and C together and relating them to the natural topography. Such a map would help address speculation regarding water management features and contribute important data related to the site’s function. Future excavations at Say Kah should attempt to gather additional architectural information related to each individual structure and target sealed deposits with chronological markers or dateable materials. These data are needed to refine the Say Kah chronology and, in turn, clarify the nature of the site’s developmental trajectory relative to that of La Milpa.

Acknowledgments: The authors would like to thank Fred Valdez, Jr. for the support and facilities supplied by the PJBAP during the 2004 and 2005 seasons of the SKAP. Of course, we would also like to thank the staff of the National Institute of Culture and History for permitting the work under Dr. Valdez’s excavation permit. In 2004, the SKAP professional staff was assisted by students and staff from the PJBAP, and their efforts are greatly appreciated. The Belizean
staff of the PfBAP field camp made life pleasant both seasons, enduring with us the extremely hot and smoky dry season in 2005. The field excavations during our second season, for the most part, were conducted by three Belizean staff: Oscar Marroquin, Rupert Mogaña, and Oswaldo Torres. Shelly Fischbeck deserves special thanks for her assistance in 2005. Volunteers Lisa Bingham and Tamas Polanyi also assisted on several days during the fieldwork. We would also like to thank Lauren Sullivan for analyzing the ceramics from the 2005 season and Dee Turman for her drawings of the stucco fragments.

References

Adams, Richard E. W.

Guderjan, Thomas H.

Guderjan, Thomas H., Michael Lindeman, Ellen Ruble, Froyla Salam, and Jason Yaeger

Hall, Grant D.

Houk, Brett A., and Michael G. Lyndon

Houk, Brett A., Rebecca E. Bria, and Shelly Fischbeck

Tourtellot, Gair, Gloria Everson, and Norman Hammond
Editing Policy

We are presently accepting manuscripts of research reports from five to 10 pages in length for publication in future volumes of the journal. Please follow the guidelines presented here regarding formatting and procedures. Documents requiring significant reformatting may be rejected or returned for revisions. Manuscripts may be submitted in English or Spanish. Hard copies of manuscripts and associated photographs and drawings will not be returned to authors. We are also accepting reviews of current books in Mesoamerican studies. Reviews are to be no more than three pages in length and can be submitted in English or Spanish. Please submit reviews in the same format as research reports.

Submitting a Manuscript

Manuscripts should be submitted in electronic form either via email to fredv@mail.utexas.edu or on CD-ROM by regular mail to the address below. The text must be in Microsoft Word format with minimal formatting. The document should be double-spaced, with no more than three heading levels, excluding the submission’s title. Manuscripts may be in either English or Spanish. Articles and research reports may include a short acknowledgments section (50 words or less). Manuscripts, unless approved in advance by the editors, should not contain more than three figures and one table. Each figure and table should be submitted as a separate electronic file (see guidelines below).

Figures and Tables

Figures should be submitted as TIFF files at 300 dpi resolution. All maps and artifacts illustrations should include a metric scale. Do not include captions or neat lines on figures. Captions should be included either at the end of the manuscript or as a separate Word file. Figures that are not legible or submitted at low resolution may be rejected or omitted from the article. Please do not imbed figures into the text document. Rather, submit them as separate electronic files. The appropriate figure number should be included in the electronic file’s name.

Tables should be submitted in Microsoft Excel format. When creating a table, please consider that it must fit within a 7-inch wide page. Tables wider than 7 inches may be rejected. Do not include a table heading with the table. Table headings should be included either at the end of the manuscript or as a separate Word file. The table’s number should be included in the electronic file’s name.

References

Mono y Conejo follows the Society for American Archaeology’s Style Guide as it relates to references. Please refer to that document, available online at www.saa.org, for formatting guidelines and rules for both in-text reference citations and references cited. One of the most common reasons manuscripts are rejected or returned for revisions is because either references are not used correctly or the references cited are formatted incorrectly.

Other Information

Mono y Conejo follows the Society for American Archaeology’s Style Guide as it relates to other formatting issues regarding textual elements (including radiocarbon ages, measurements, and abbreviations).

Address

The University of Texas at Austin
Editors, Mono y Conejo
MARL R7500
1 University Station
Austin, TX 78712-0714

Thanks for your continued interest and support!
From the Editors

Fred Valdez, Jr.  
*Introduction to Volume 4*

Brett A. Houk

Special Report

William E. Doolittle  
*An Epilogue and Bibliographic Supplement to Canal Irrigation in Prehistoric Mexico: The Sequence of Technological Change*

Research Reports

David M. Hyde  
*Two Late Preclassic Incised Cache Vessels from Colha, Belize*

Brett A. Houk

Rebecca E. Bria

Michael G. Lyndon  
*Salvaging Say Kah*