FAMSI © 2002: Geoffrey E. Braswell

Northern Yucatán Obsidian Finds - Mérida and Chichén Itzá

Presented at the X Symposium of the Guatemalan Archaeology, National Museum of Archaeology and Ethnology, Guatemala, July 25, 1996

Research Year: 1996
Culture: Maya
Chronology: Terminal Classic
Location: Quintana Roo, México
Sites: Mérida and Chichén Itzá

Table of Contents

Introduction
Research in México
Neutron Activation Analysis of Samples
Preliminary Conclusions and Continuing Research
Sources Cited

Introduction

This report describes research funded by the Foundation for the Advancement of Mesoamerican Studies, Inc. (FAMSI). The project, entitled Northern Yucatán Obsidian Finds - Mérida and Chichén Itzá, was conducted in México between 15 October and 16 December 1995. A second phase, consisting of the analysis of 292 obsidian artifacts by neutron activation, should be completed by 31 October 1996.

Obsidian found in the northern Maya lowlands was imported from a limited number of sources in the Guatemalan and Mexican highlands. The presence of obsidian artifacts at lowland Maya sites therefore implies participation in interregional and long-distance trade networks. Although the northern lowlands have long been an important focus of obsidian-exchange studies (e.g., Hammond, 1972; Nelson, 1985), the construction and testing of diachronic trade models has been hampered by two factors.

First, the sample size of sourced artifacts from the northern lowlands has been small: only 80 pieces from contexts dating to later than A.D. 600 (Nelson, 1985: Tables 11-14). As of 1994, only six pieces of obsidian from Chichén Itzá had been attributed to geological sources through chemical analysis. These were all of unknown temporal provenience and were dredged from the Sacred Cenote, a functional context so special that it cannot be interpreted as representative of the site as a whole.

Second, attempts to stratify geological source data by period have generally been unsuccessful because of long-standing errors in the correlation of regional ceramic sequences. The enduring but erroneous belief that the Cehpech ceramic sphere preceded the Sotuta sphere (e.g., Brainerd, 1958) often led to the false assumption that obsidian artifacts from Cobá and the Puuc sites dated to either the Late or Terminal Classic periods (A.D. 700-1000) and materials from Chichén Itzá to the Early Postclassic (A.D. 1000-1200) (e.g., Nelson, 1985; 1995). It is now accepted by most scholars that there was a great deal of temporal overlap between these two ceramic spheres (e.g., Ball, 1979; Canché Manzanero, 1992; Cobos Palma, 1995; Lincoln, 1986; 1990; Peraza Lope, 1993; Robles Castellanos, 1990; Sharer, 1994).

The organization of obsidian-exchange networks, particularly during the Terminal Classic period (A.D. 800-1000), was the primary focus of this investigation. Major goals of the project were: (1) to increase by 20-fold the number of source assignments for artifacts from the northern Maya lowlands, (2) to use these data to formulate and test a new exchange model, and (3) to examine the organization of lithic production at Chichén Itzá and other important regional centers.

Submitted 09/01/1996 by:
Geoffrey E. Braswell
braswell@acsu.buffalo.edu

Research in México

Typological, attribute, and source analyses of obsidian artifacts recovered by the Proyecto Fondo Nacional Chichén Itzá, directed by Dr. Peter Schmidt, were carried out at the Chichén Itzá laboratory from 15 October to 3 November, and 12 to 15 December. In all, the total analyzed sample consists of 1,560 artifacts. A reference collection of 163 pieces sourced by neutron activation analysis was used to aid visual sourcing. Results for collections from Chichén Itzá and all other sites studied during this investigation are presented in Table 1. It was determined that artifacts from the source areas of Ucareo, Michoacán, and Zaragoza, Puebla, are often difficult to distinguish visually. For this reason, a random sample of 116 pieces drawn from artifacts attributed to either of these two sources was set aside for NAA.

From 6 to 8 November, obsidian artifacts recovered from excavated and surface contexts by the Proyecto Yaxuná, directed by Dr. David Freidel, were studied at the Yaxuná laboratory in Mérida. Dr. Freidel was kind enough to offer use of the living quarters, and I remained there throughout my stay in Mérida. Savings in projected lodging expenses will be used to analyze a larger obsidian sample by NAA. The Yaxuná collection was much smaller than originally thought (N=180), and analysis was completed in less time than expected. A sample of 33 pieces (or 18.3% of the collection) has been set aside for NAA. In this case, all pieces that were tentatively

identified as Mexican in origin were chosen for analysis (with the exception of green obsidian from Pachuca, Hidalgo), along with a random sample of the presumed Guatemalan material. It is interesting to note that all the Mexican obsidian was associated with two structures: the dance platform and a "ritually terminated" building containing Sotuta ceramics (Ardren *et al.*, 1995).

During the remainder of November, a large collection (N=888) of obsidian artifacts excavated by the Proyecto Dzibilchaltún, directed by Arqlgo. Rúben Maldonado Cárdenas, was analyzed at the Universidad Autónoma de Yucatán. This collection, from the site center and two habitation zones located north and south of Sacbe 1, was particularly interesting because of the time-depth represented (a few artifacts were associated with a Late Preclassic substructure beneath Str. 41) and elite-nonelite contextual distinctions. A small dump of biface-reduction debitage was also identified, but the scale of production and context of disposal (within a houselot) does not demonstrate the existence of a workshop industry. A sample of 36 artifacts thought to be of Mexican origin was chosen for NAA. I have previously demonstrated high accuracy rates (~97%) for the identification of the Guatemalan sources, justifying this sampling strategy (e.g., Braswell *et al.*, 1994; Braswell, 1995). A possible tektite was also found in the Dzibilchaltún assemblage, and will be analyzed by full-irradiation NAA.

During the second half of November, I also worked with Arqlga. Betty Quintal, director of the Lithic Laboratory at CRY-INAH, Mérida. I had hoped to study several large collections in storage there, but the material had been moved from its original location and was in disarray. Nevertheless, we were able to locate most (N=471) of the obsidian recovered by the Proyecto Arqueológico Cozumel, directed by Arqlgo. Fernando Robles Castellanos, during excavations at San Gervasio. All non-green Mexican obsidian and a random sample of Guatemalan material was chosen for NAA (N=50, or 10.6% of the assemblage). A portion (N=78) of the obsidian collection from the Proyecto Xelhá, also directed by Robles Castellanos, was also located. Descriptions of these excavations and results of ceramic analyses have been published in meticulous detail (e.g., Canché Manzanero, 1992; Peraza Lope, 1993; Robles Castellanos, 1980; 1981; Sierra Sosa, 1994; Toscano Hernandez, 1994), allowing considerable contextual analysis.

Arqlgo. Agustín Peña Castillo, director of the Museo Palacio Cantón, graciously invited me to study obsidian artifacts stored in the museum during the first week of December. The largest and best documented of these was recovered by the Proyecto Misión Española, directed by Dr. Miguel Rivera Dorado, at the important Puuc site of Oxkintok. The same typological, attribute, and visual source analyses were conducted on the Oxkintok assemblage (N=540) as on all other collections. In deference to Rivera Dorado, who had not been previously notified, artifacts were not set aside for NAA.

In the second week of December, I returned to CRY-INAH and examined three additional collections. The first was from Xkipché (N=182), a third-ranked Puuc site excavated by Dr. Hanns Prem. Another small collection, consisting of 104 obsidian artifacts from recent consolidation excavations conducted by Arqlga. Leticia Vargas de la Peña at Ek Balam, was also studied. Thirty artifacts from Xkipché and 25 pieces from

Ek Balam were chosen for NAA following the same sampling strategy described above for the Yaxuná and San Gervasio assemblages.

Finally, 126 artifacts from excavations conducted by Arqlgo. Ramón Carrasco at Calakmul were also typed, measured, and sourced according to visual criteria. Although this collection comes from a site south of the region of study, its importance as one of the largest Maya sites of the Formative and Classic periods made it worthy of study. Only one obsidian artifact, from either the Ucareo or Zaragoza source, was chosen for NAA.

Research was concluded on 15 December, and I left México two days later.

Neutron Activation Analysis of Samples

Permission to export 292 obsidian artifacts for NAA at the Missouri University Research Reactor (MURR) was granted by the Consejo Nacional of INAH in early 1996, several months after I left México. I have not been able to return to Mérida, where the artifacts are currently stored, in the intervening months. Arrangements have been made for an INAH investigator to carry the sample to the U.S.A. in September 1996. These will be sent to MURR at that time. Funds granted by FAMSI for NAA have been set aside to pay for this analysis. An additional report will be submitted when results are available and the analysis bill has been paid.

Preliminary Conclusions and Continuing Research

In July 1996, a paper was given at the X Simposio de Investigaciones Arqueológicas in Guatemala presenting preliminary conclusions about Terminal Classic trade drawn from the northern Maya lowland obsidian data set. To view the paper "El Intercambio Prehispanico en Yucatán, México" click here.

Contextual analysis, based on data presented in various reports, theses, and publications, is continuing. It is hoped that this archival research will allow finer temporal stratification of the obsidian data, and also permit functional distinctions (e.g., ritual, household, elite, and nonelite) to be made between individual contexts.

Sources Cited

Andrews, A. P.
1996 Ponencia presentada al 61st Annual Meetings of the Society for American Archaeology. New Orleans.

Andrews, A. P., F. Asaro, H. V. Michel, F. H. Stross and P. Cervera R.
1989 The Obsidian Trade at Isla Cerritos, Yucatán, México. *Journal of Field Archaeology* 16:355-363.

Ardren, T., C. Suhler and D. Freidel
1995 Termination Rituals at Cerros, Belize and Yaxuná, Yucatán, México. Ponencia presentada al International Symposium of Maya Archaeology, San Ignacio Cayo, Belize.

Brainerd, G. W.
1958 *The Archaeological Ceramics of Yucatán*. University of California Anthropological Records Vol. 19, University of California Press, Berkeley.

Braswell, G. E.
1994 The Obsidian Artifacts of Chichén Itzá and Dzibilchaltún, Yucatán. Manuscrito, CRY-INAH, Mérida.

Canché M., E.
1992 La Secuencia Cerámica de Xelhá, Q. Roo. Tesis de licenciatura, Facultad de Ciencias Antropologicas, Universidad Autónoma de Yucatán.

Cobos P., R.
1996 Ponencia presentada al 61st Annual Meetings of the Society for American Archaeology. New Orleans.

Freidel, D. A.
1986 Yaxuná Archaeological Survey: A Report of the 1986 Field Season. Manuscrito, National Geographic Society, Washington, D.C.

Healan, D. M. (ed.)
1989 *Tula of the Toltecs: Excavations and Survey*. University of Iowa Press, Iowa City.

1993 Local versus Non-Local Obsidian Exchange at Tula and Its Implications for Post-Formative Mesoamerica. *World Archaeology* 24:449-464.

Heller, L.
1990 Classic and Postclassic Obsidian Tool Production and Consumption Patterns: A Regional Perspective from La Mixtequilla, Veracruz. Ponencia presentada al 55th Annual Meetings of the Society for American Archaeology. Las Vegas.

1994 Chipped Stone Analysis. Manuscrito, Departamento de Antropología, Arizona State University, Tempe.

Hester, T. R., R. N. Jack and A. Benfer
1973 Trace Element Analyses of Obsidian from Michoacán, México: Preliminary Results. *Contributions of the University of California Archaeological Research Facility* 18:167-176.

Hester, T. R., R. N. Jack and R. F. Heizer
1972 Trace Element Analysis of Obsidian Artifacts from the Site of Cholula, México. *Contributions of the University of California Archaeological Research Facility* 16:105-110.

Jack, R. N., T. R. Hester and R. F. Heizer
1972 Geologic Sources of Archaeological Obsidian from Sites in Northern and Central Veracruz, México. *Contributions of the University of California Archaeological Research Facility* 16:177-122.

McKillop, H. I., L. J. Jackson, H. V. Michel, F. H. Stross and F. Asaro
1988 Chemical Source Analysis of Maya Obsidian: New Perspectives from Wild Cane Cay, Belize. In *Archaeometry '88: Proceedings of the 1988 International Archaeometry Symposium*, edited by R. M. Farquhar, R. G. V. Hancock and L.A. Pavlish, pp. 239-244. University of Toronto, Toronto.

Peraza L., C.
1993 Estudio y Secuencia del Material Cerámico de San Gervasio, Cozumel. Tesis de licenciatura, Facultad de Ciencias Antropologicas, Universidad Autónoma de Yucatán.

Robles C., F.
1987 La secuencia cerámica preliminar de Isla Cerritos, costa centro-norte de Yucatán. In *Maya Ceramics*, edited by P. Rice and R. M. Sharer, Parte 1, pp. 99-109. BAR International Series 345, British Archaeological Reports, Oxford.

1988 Ceramic Units from Isla Cerritos, North Coast of Yucatán (Preliminary Results). *Cerámica de Cultura Maya* 15:65-71.

1990 *La Secuencia Cerámica de la Región de Cobá, Quintana Roo*. Colección Científica No. 184. INAH-SEP, México.

Robles C. and A. P. Andrews

1986 A Review and Synthesis of Recent Postclassic Archaeology in Northern Yucatán. In *Late Lowland Maya Civilization: Classic to Postclassic*, edited by J. A. Sabloff and E. W. Andrews V, pp. 53-98. University of New México Press, Albuquerque.

Thompson, J. E. S., H. E. D. Pollock and J. Chariot

1932 A Preliminary Study of the Ruins of Cobá, Quintana Roo, México. *Carnegie Institute of Washington Publication No. 424*. Carnegie Institute of Washington, Washington, D.C.

Villa R., A.

1934 The Yaxuná-Cobá Causeway. *Contributions to American Archaeology No. 9*, Carnegie Institute of Washington, Washington, D.C.

TABLE 1
Results of visual sourcing of obsidian artifacts (N=4,240).
All values are expressed as percents.

	GROUP A		TRANSITIONAL	GROUP B						GROUP C	
	(Sotuta Ceramic Complex)		(Western Cehpech)	(Western Cehpech Ceramic Complex)						(Eastern Cehpech)	
	Chichén Itzá[1] (N=1560)	Isla Cerritos[2] (N=109)	Oxkintok[3] (N=540)	Yaxuná[4] (N=180)	Calakmul[5] (N=126)	Dzibilchaltún[6] (N=889)	Xkipché[7] (N=182)	Ek Balam[8] (N=104)	Acanche[9] (N=1)	Xelhá[10] (N=78)	San Gervasio[11] (N=471)
GUATEMALA											
El Chayal	9.2	1.9	39.8	81.1	81.7	87.9	88.5	93.3	100.0	24.4	4.9
Ixtepeque	15.3	4.2	4.3	2.2	7.1	1.5	3.3	2.9	0.0	71.8	89.8
S. Martín Jilotepeque	3.7	0.0	3.5	5.0	3.2	5.3	1.1	1.0	0.0	0.0	0.4
MÉXICO											
Otumba	1.5	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pachuca	1.1	28.4	31.5	1.1	2.4	0.8	1.6	1.9	0.0	0.0	1.3
Paredón	10.3	2.1	0.7	0.6	0.0	0.2	0.0	0.0	0.0	0.0	0.2
Pico de Orizaba	6.2	2.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Zacualtipan	0.6	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
Ucareo or Zaragoza	34.9	44.2	19.7	8.9	5.6	3.8	4.9	1.0	0.0	3.8	2.6
Unknown	0.1	0.0	0.0	0.6	0.0	0.4	0.5	0.0	0.0	0.0	0.2

[1]All Terminal Classic (A.D. 800-1000)

[2]Mostly Terminal Classic-Early Postclassic (c. A.D. 800-1200); corrected version of Andrews et al. (1989:Table 4).

[3]Many of the buildings are Early-Late Classic (c. A.D. 400-800), but most artifacts were collected from floor contexts and may date to later reoccupations. I suspect that most of the Mexican obsidian is Terminal-Early Postclassic in date.

[4]Mexican obsidian found in Sotuta contexts; most material dates to before A.D. 1000.

[5]Most pieces from fall and slump contexts on various structures. Temporal assignments currently unknown.
[6]Predominantly from Terminal Classic (A.D. 800-1000) contexts, but a few pieces are earlier or later.
[7]Late Classic-Terminal Classic (A.D. 700-1000).
[8]From consolidation excavations on Str. 17; most are probably Late-Terminal Classic (A.D. 700-1000).
[9]From a Late Classic-Early Postclassic (A.D. 700-1200) context.
[10]Late Classic-Early Postclassic (A.D. 700-1200) contexts.
[11]Late Classic-Early Postclassic (A.D. 700-1200) contexts.