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Identifying Ancient Maya Economic and Political Networks in the Belize Valley through Ceramic Sourcing

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Final report on *UGP 2017: Identifying Ancient Maya Economic and Political Networks in the Belize Valley through Ceramic Sourcing*

By John Douglas, Professor, Department of Anthropology

Introduction

Ancient Classic Lowland Maya potters made vessels to serve various needs, which were sometimes exchanged or otherwise moved across the landscape. Potters also emulated types made elsewhere with local materials. The immediate objective of this study was to see if black slip “recipes”—the chemical composition—applied to the surface of ceramics could be used to identify production groups for a type of Terminal Classic pottery called Mount Maloney Black (MMB) from two different ruins. Through chemical analysis, this study sought to discover if the same people with the same materials were making these vessels, or if there were from different sources.

The larger context of this specific question rests with work that the University of Montana (UM) conducted in conjunction with the research organization Belize Valley Archaeological Reconnaissance (BVAR). This archaeological research revolves around the relationship between two ceremonial-administrative centers in the Upper Belize Valley: Xunantunich, where Mount Maloney Black is a common and distinct regional marker, perhaps even tied to social identity (LeCount 2010), and Cahal Pech, where it is infrequent, although the two sites are only 10 km apart. Specifically, we are interested in why MMB pottery surges in proportion to other ceramics at a very late deposit in Plaza H. Discovered by UM student excavators, this “termination” deposit is likely tied to the abandonment of Cahal Pech (Douglas et al. 2015). Does this change in the ceramic assemblage reflect a takeover by Xunantunich sometime after A.D. 800, in the final years before the Cahal Pech center was abandoned? Xunantunich survived as a centralized kingdom for at least decades longer than Cahal Pech.

Returning to the chemical study of MMB ceramics, the work reported here is more extensive than that presented in the Small Grant proposal for two reasons: first, the project received a second small grant from the Humanities Institute in the College of Humanities and Sciences; and second, the initial results were interesting enough that the research laboratory, the Archaeometry Laboratory at the University of Missouri Research Reactor (MURR), along with the Research Professor for the project, Dr. Brandi MacDonald, invested unfunded additional efforts. It would be difficult and pointless to untangle the results from these different sources; the total work provided by MURR and their implications are described here. The sherds analyzed for this study were lawfully exported from Belize under the auspices of the Institute for Archaeology, the Belizean agency that oversees archaeological resources. In the end, 89 samples were examined from four areas: the Xunantunich core; the Plaza H termination deposit at Cahal Pech; and two outlying localities in the Cahal Pech area, one residential and one ritual.

Methods and Analysis

The main technique used to determine slip composition was LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry), a sophisticated system to determine the elemental composition of a precisely targeted sample. The application of the technique to these samples was challenging: MMB is not a fine, elite ware, as employed in the textbook examples of slip sourcing. Rather, it is “fugitive,” thin and flaky, making it difficult to analyze. Nonetheless, the lab overcame technical difficulties to identify differences in the slips (MacDonald 2018). In a first, smaller study, the slips seemed to segregate by site strongly: Xunantunich showing more use of a manganese mineral paint, Cahal Pech showing more use of carbon to achieve the black color. Trends are present after a larger sample was run, but the variability in slip recipes overwhelms any simple correlation of clusters found by multivariate analysis and the four localities where the sherds were found. There is work still to

be done in scrutinizing these data for patterns, and no attempt has been made to correlate slip and the paste variability discussed below. This is pioneering work whose potential is still being explored.

MURR further included these sherds in a study of paste variability using NAA (Neutron Activation Analysis), the preeminent technique for identifying elemental variability in ceramic bodies or pastes (available at only two labs in the US). Compositional groups based on the ceramic bodies were tighter and better identified than slip recipes (MacDonald 2018). Some, but not all, paste groups were found in Plaza H at Cahal Pech and the Xunantunich samples, but the proportions were very different. A chi-square calculation for a contingency table of the five paste groups comprising all the grouped sherds found in the two localities shows differences significant at the .001 level ($\chi^2 = 20.5$, $N = 60$, $df = 4$). The results do not rule out shared pottery sources, but they do indicate different suppliers for the two sites. This answering the original question: Cahal Pech ceramics were not imported as a group from the Xunantunich ceremonial center. The other two samples, from within the Cahal Pech polity but very different contexts than Plaza H, also suggest local manufacture and specific frameworks for the movement of pottery: the outlying residential group has most sherds from a single paste group, a group that is rare at other locations, suggesting a third pattern of acquisition; the ritual deposit with many smashed vessels appears highly diverse (both in pastes and slip groups), indicating ritual participants brought pots from diverse localities.

Impacts and future directions

This study answers an important question about the final abandonment of Cahal Pech, a well-known and publically interpreted Classic Maya site. The results outlined here will be presented in a broader technical report to the Institute of Archaeology, spring 2019, which will be available on the Web. Wider dissemination and future studies are planned in two prongs. The first is oriented around the ongoing fieldwork at Plaza H and building site history interpretations for scientific and public purposes. A final season of fieldwork in Plaza H will be conducted summer 2019, which is anticipated to lead to new on-site stabilization of Terminal Classic architecture, interpretive talking points for tour guides, and a chapter in a planned peer-reviewed volume on Terminal Classic studies at Cahal Pech. All these interpretations will be guided by and reference this MMB ceramic study.

Equally exciting are insights about the structure of pottery production during a period widely maligned as chaotic and in decline. The NAA data identify many of the ceramic groups previously found in Preclassic pottery, indicating a remarkable, 1500-year, stability in pottery production. Further, it is powerful to have both the slip and paste analyses. A journal article will be written that presents these results and implications; a current graduate student will be added as a coauthor, further strengthening the study with her thesis research on the physical properties of the MMB ceramic pastes. I then plan to seek funding for further study of the chemical characteristics of Terminal Classic everyday ceramics from well-understood contexts at a suite of Upper Belize Valley sites. Funding will be sought from sources such as the Wenner-Gren Foundation. The ultimate aim of future studies will be to provide insight into the economic and political processes between AD 700-900 from the perspective of ceramic production.

References

- Douglas, J. E., L. J. Brown and J. J. Awe, 2015, The Final Occupation: The Terminal Classic Evidence from Plaza H, Cahal Pech, Belize. *Research Reports in Belizean Archaeology* 12: 217-225.
- LeCount, L. J., 2010 Mount Maloney People? Domestic Pots, Everyday Practice, and the Social Formation of the Xunantunich Polity. In *Classic Maya Provincial Politics: Xunantunich and Its Hinterlands*, edited by Lisa J. LeCount and Jason Yaeger, pp. 209-230. University of Arizona Press, Tucson.
- MacDonald, B. L., 2018, "Multi-Method Characterization of Pigments and Pastes of Black Painted Pottery from Cayo District, Belize: Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry, Neutron Activation Analysis, X-Ray Diffraction, and Scanning Electron Microscopy", Archaeometry Laboratory, MURR.