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Ambergris Maya Pottery Petrography Project

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Introduction

Ceramic petrography is the study of the compositional and structural nature of archaeological pottery, primarily through the use of thin section. This is a technique widely embraced by the archaeological community and it has been used to study a range of pottery as diverse as Late Woodland ceramics in Missouri and transport amphorae from ancient Greece (O'Malley, 1981; Whitbread, 1995). This study uses ceramic petrography to investigate the utilitarian pottery type, Coconut Walk Plain (CWP) excavated at Late Terminal Classic Maya archaeological sites on Ambergris Caye, Belize (Fig. 1).



Figure 1. Map of Belize with Ambergris Caye highlighted in the red box.



Figure 2. Aerial view of Ambergris Caye

Geology of Ambergris Caye

The caye is a reef-rimmed carbonate platform that was maintained through most of the Holocene by alternating periods of barrier-reef growth and karstification (Fig. 2) (Mazzullo, 2006). Lithology on and around the caye is entirely carbonate in nature without the presence of siliciclastic sediments (Mazzullo, 2006).

The Ancient Maya and Ambergris Caye

The CWP samples from this study came from three Maya archaeological sites on Ambergris Caye. The samples date to the Late Terminal Classic period, at the end of the Late Classic (600-900 AD). Although the Maya experienced a widespread crisis that is often called a collapse around 900 AD, they were still living in sophisticated stratified societies when the Spanish made sustained contact in the 1540's. The Late Classic and especially the Postclassic (ca. 900-1540) periods, witnessed an increasing importance in canoe trade to the Maya, demonstrating connections as far away as northern Mexico and El Salvador.



Figure 3. CWP Pottery

Background on CWP pottery

CWP is amongst the least appealing of the pottery that the Maya ever produced (Fig. 3). Vessels are irregularly shaped with unsmoothed, sandpapery surfaces and thin, fragile walls. Archaeologists who have studied CWP in the past have suggested the following:

- CWP appears to have been made in large quantities.
- CWP was produced very close to where it was used and found.
- The wide-mouthed shapes suggest CWP was used for ordinary activities like soaking or boiling rather than storage.

This research was designed to investigate the assumptions we make about the least spectacular pottery of the ancient Maya.

Methods

- 16 pottery sherds were selected for petrographic analysis from SUNY Geneseo's collection of pottery from Ambergris Caye.
- Sherds were selected to be a representative sampling of CWP and similar pottery types.
- Petrographic thin sections were made of each sample.
- The samples described using a set of criteria based on the work of Whitbread (1995).

Understanding the Thin Section of a Pottery Sherd

Concentration/depletion features (C):

Any feature where there is a localized accumulation (or loss) of a material. These can be textural (accumulation/depletion of clay, silt or sand), amorphous (accumulation/depletion of a certain element), or crystalline (accumulation/depletion of crystals).

Inclusions (I):

Any coarse material incorporated into the clay matrix. It can consist of mineral grains that either occur naturally in the clay body, or as a temper that has been added to enhance the workability of the clay. It could also be grog (broken pieces of other pottery), bone or shell fragments, or organic material.

Voids (V):

Air spaces within the pottery body. The morphology of voids can provide insight into the way a piece of pottery was produced.

Groundmass (G):

Clay and other fine grained material that makes up the pottery body. Ceramic petrography focuses on the presence and strength of fabric in the groundmass. This is an important feature because it remains consistent in all samples made from the same clay body.

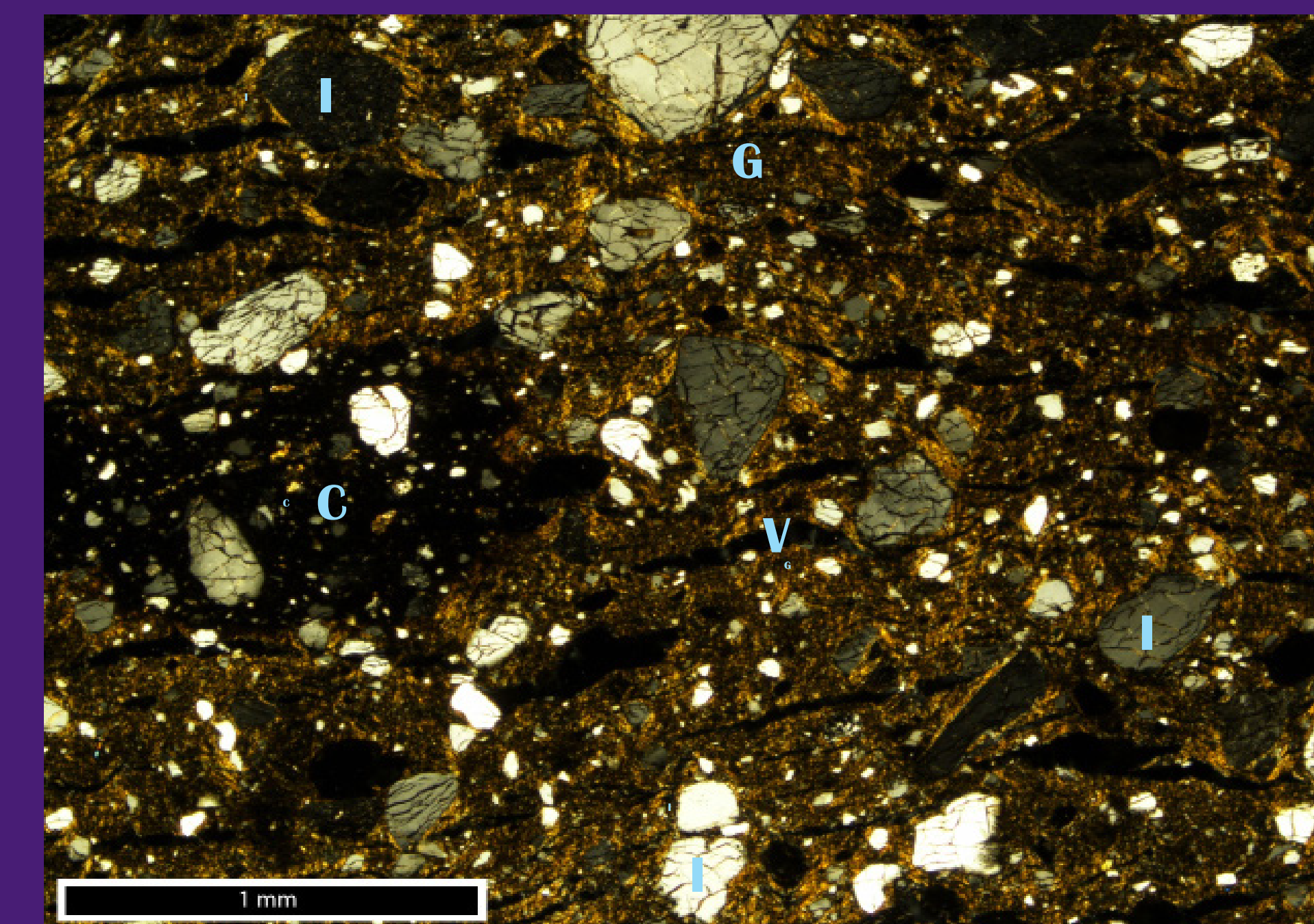


Figure 4. Thin section of CWU sample ELTS-02 in cross polarized light.

Findings

- Most samples contain primarily quartz inclusions with average grain sizes ranging from 0.05 mm to 1 mm in diameter (Fig. 4, 5, 7). Only one sample does not contain quartz inclusions. Instead, it contains angular inclusions with a high birefringence (Fig. 6).
- Voids are generally thinly elongated and aligned (Fig. 4,5,7).
- Groundmass is highly variable, ranging from weak fabric (Fig. 5) to a strongly visible fabric, striated in appearance (Fig. 4).
- Concentration/depletion features are common, appearing either as a textural concentration of micrite rimming quartz inclusions and coating the inside of void space or as dark brown amorphous masses within the groundmass.

Fifteen out of the sixteen samples studied were not made locally. This contradicts previous assumptions about CWP.

-Since local geology lacks siliciclastic sediment, the samples with predominant quartz grains could not have been made with clay found on Ambergris Caye. Therefore these pottery samples must have been made somewhere with a supply of siliciclastic sediments and transported to the sites on Ambergris Caye.

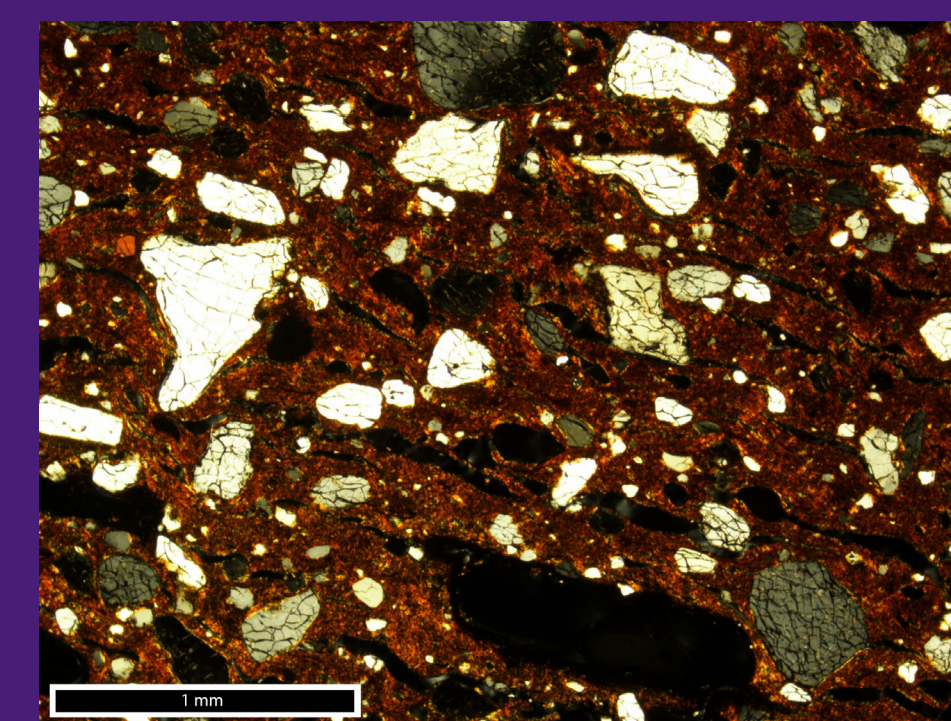


Figure 5. SITS-15 in XPL

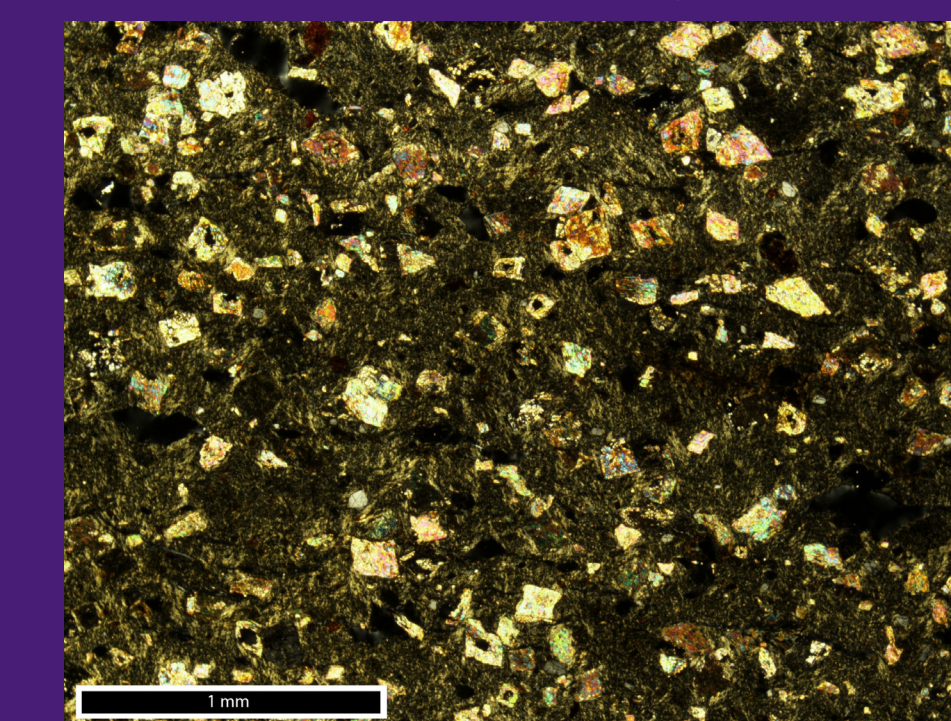


Figure 6. SITS-09 in XPL

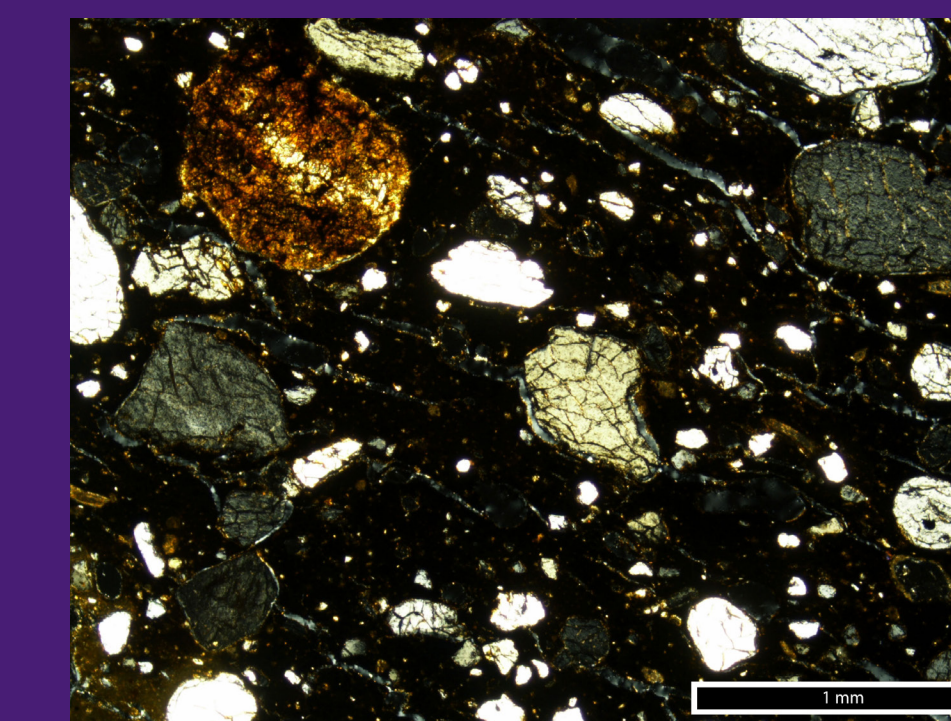


Figure 7. SITS-10 in XPL

Future Research

- Continue to study the thin sections of individual samples.
- Investigate similarities and differences between the samples with the intent to group samples into distinctive categories.
- Obtain chemical analysis on sherds as well as on individual inclusions to look for trends and similarities.

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