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Past Meets Future: Combining GIS, 3D Technologies, and Legacy Data to Reanalyze Ceramics at Copan, Honduras

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INTRODUCTION

The archaeological site of Copán—today a UNESCO World Heritage Site in Honduras—was a primary center for cultural and economic exchange in the Maya world from the 5th to 9th centuries. Recently the city's cosmopolitan and multi-ethnic composition is being brought to light, which is dramatically altering our interpretations of the ancient city and the nature of its "collapse" in the early ninth century.

OBJECTIVES

- Identify diagnostic potsherd types to help confirm site function and status at Copan.
- Refine chronological dates across the city.
- Experiment with incorporating progressive technologies into the research process

QUESTIONS

- Was there a shift in political power in Copán between the reigns of the 13th and 16th rulers?
- If so, what was the nature of the accompanying ideological and sociopolitical changes?
- To what extent did these changes play a role in the collapse of the dynasty in AD 820?

METHODS

Access Legacy Data

Analyze, compare, and digitize archival data from CRIA to identify a subset of diagnostic ceramic types from outside the main ceremonial complex. Primary sources integral to our research were from the following scholars:

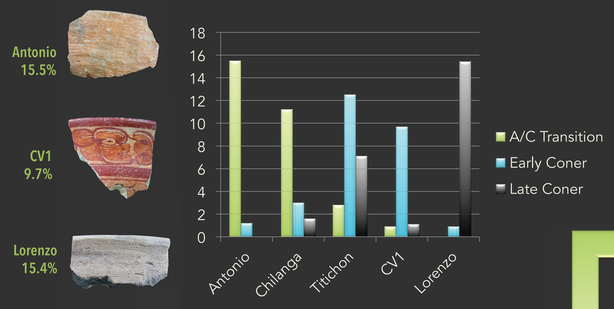
Dr. Cassandra Bill
Dr. William L. Fash, Jr.
Sheree Lane
Dr. René Viel

Left: Walking up to the entrance of CRIA. Bottom: Rows of diagnostic potsherds in the ceramoteca.

Above: Dr. Richards-Rissetto and Dr. Viel sift through a ceramic classification book.

Ceramic Analysis

- Locate sherds and vessels in CRIA warehouse
- Examine condition
- Compare sherds from the Ceramoteca to samples from the CRIA warehouse to select diagnostic types that best distinguish the difference between early and late Coner
- Identify damaged ceramic storage bags and containers with intention to replace for better preservation/catalog location in warehouse

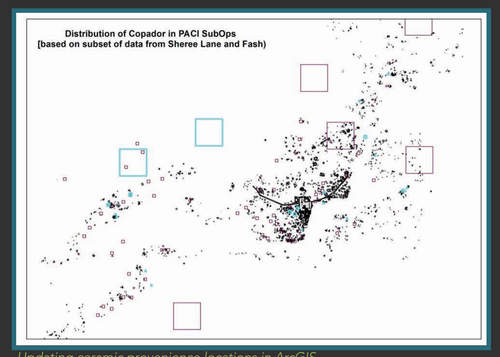


Documentation and Photogrammetry

- Take still photos of 30 sherds and six whole vessels
- Create 3D models of the sample using photogrammetry
- Test use of Augmented Reality applications

Geographic Information Systems

- Link sherds to provenience in ArcMap
- Create maps showing ceramic type distribution throughout the valley
- Update any existing maps that require it



Updating ceramic provenience locations in ArcGIS.

MAYACITYBUILDER.ORG

AUGMENT

1. Download Augment on your mobile device.
2. Click "Scan."
3. Aim the viewfinder at one of the images to the left.
4. At the bottom, click "3D View" (you may have to scroll horizontally).

CONCLUSION

This pilot study established a solid foundation for future ceramic analysis and research at Copan. By combing legacy data, 3D technologies and geographic information systems, we attempted to create a thorough compilation of information that will be useful to scholars in the future. This more inclusive data will be integral to creating a more accurate timeline of Copán and its collapse. By utilizing 3-D laser scanning and photogrammetry technology in the field, we can also take a closer look into the components of the individual sherds and bring back that information in place of transporting physical pieces.

FUTURE RESEARCH

- Optically stimulated luminescence (OSL) Dating
- Conduct photogrammetry on more sherds and reshoot original sherds and vessels that were only documented on one side
- Organization and analysis of Terminal Coner diagnostic sherds
- Examine more SubOp bags from bodega
- Identify lot cards from Sheree Lane
- Input both legacy and current data into ArcGIS
- Finish 3D models

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