

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



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Arqueológicas



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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.

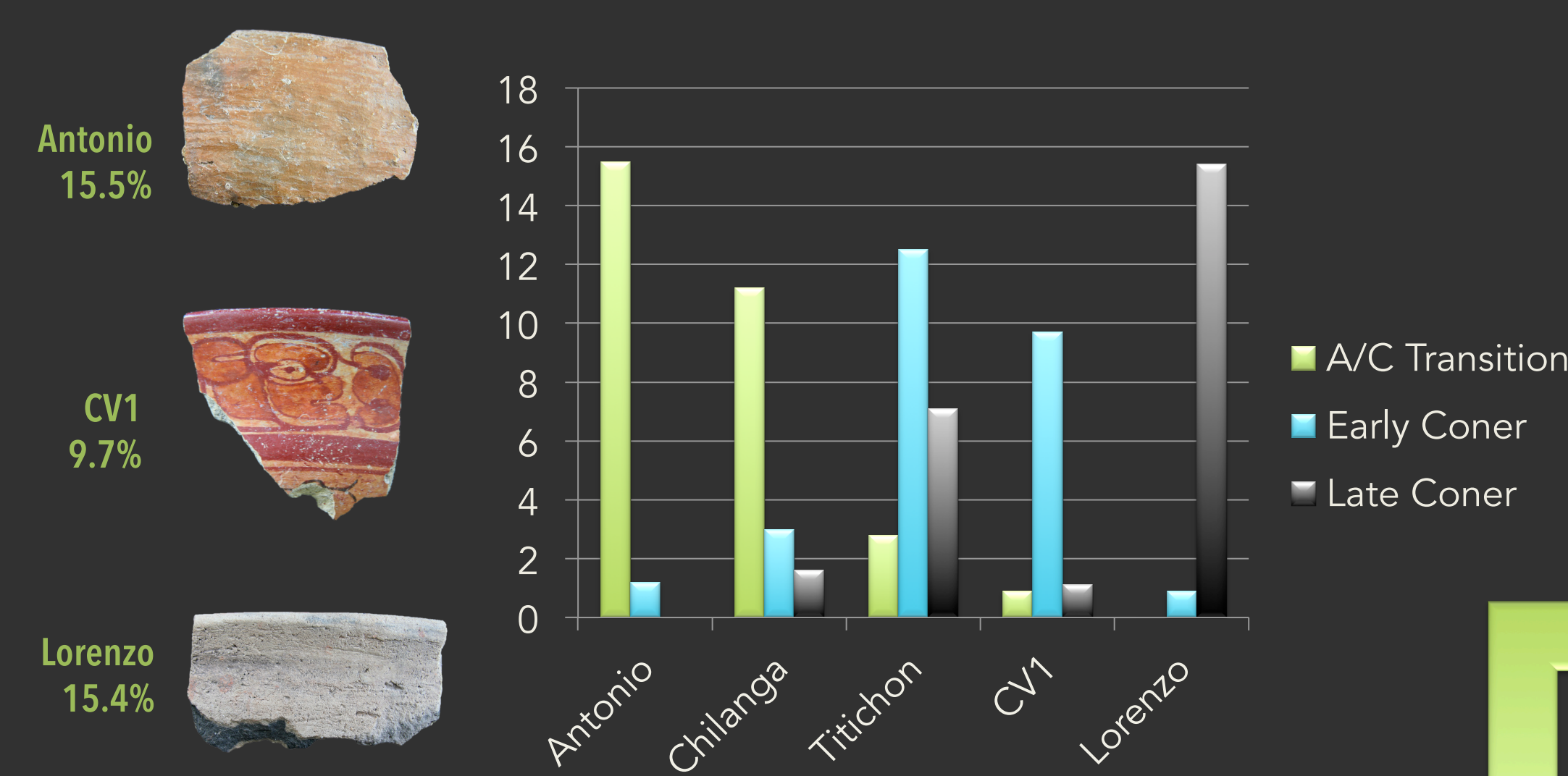


Above: Dr. Richards-Rissetto and Dr. Viel sift through a ceramic classification book.



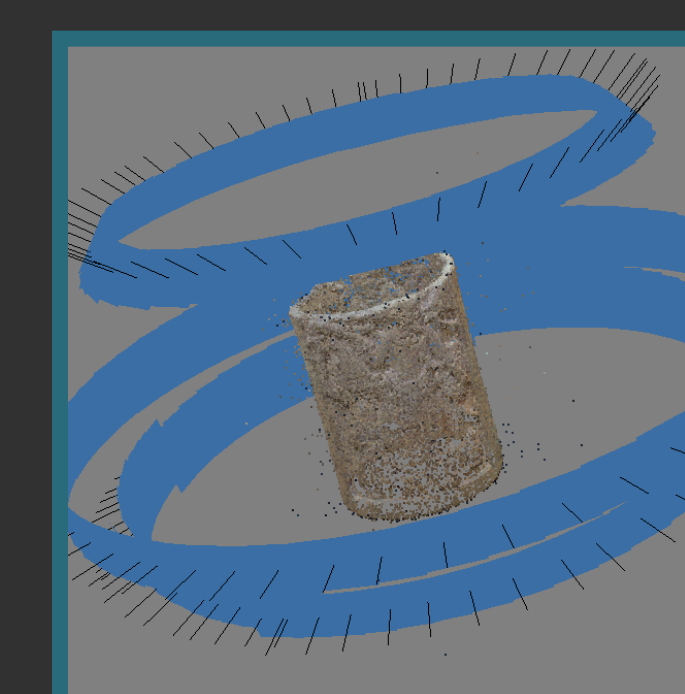
### Ceramic Analysis

- 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



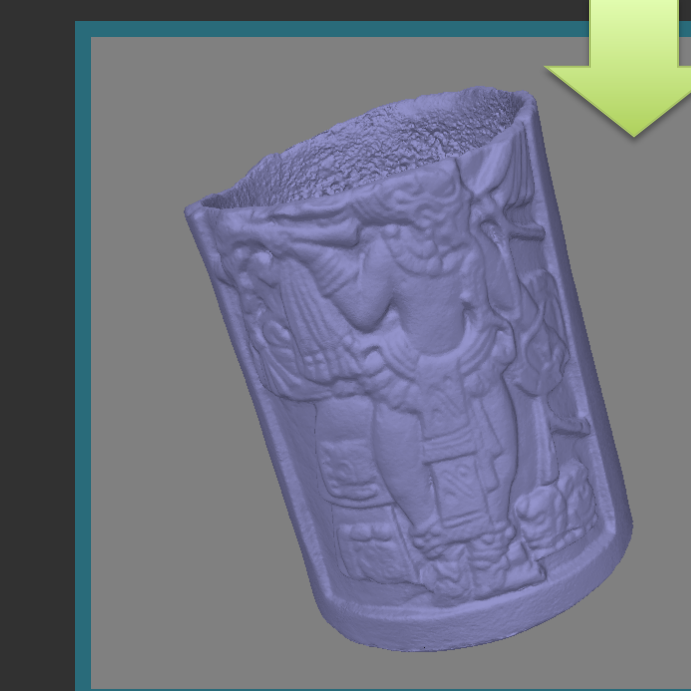
Align Photos



Build Dense Cloud



Add Texture

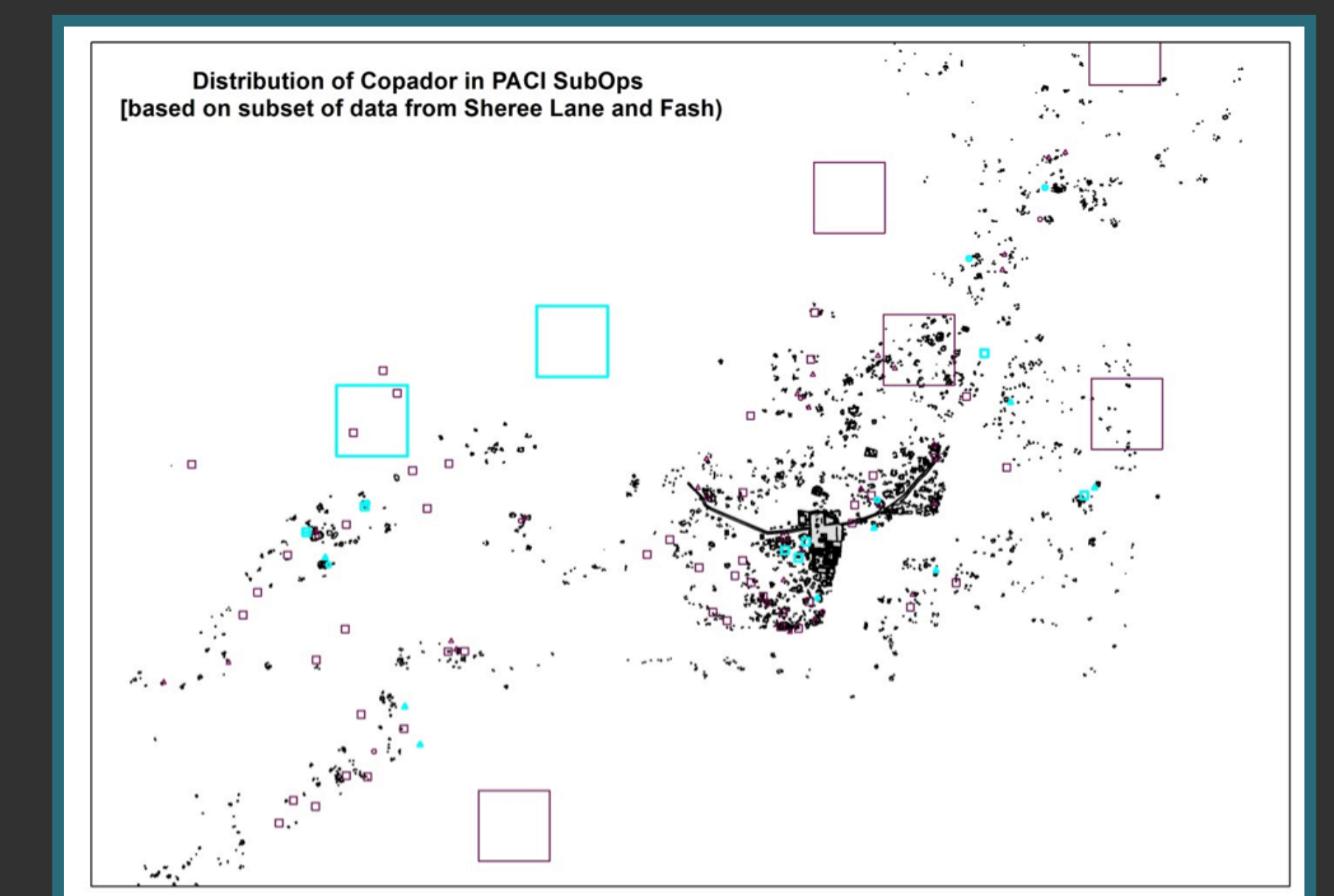


Create Mesh



### 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.

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## CONCLUSION

This pilot study established a solid foundation for future ceramic analysis and research at Copan. By combining 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



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



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