Uncovering the Mystery of Guangalan Fineware

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Introduction

- Guangala
  - People of Southwest Ecuador
  - Not much is known
  - Known for ceramic fineware
Introduction

- Mystery of their Ceramics
  - Contains Pumice
  - How was it obtained?
- Significance
  - New info about Guangala
  - Develop archaeological methods
Terms to Know

- Properties of clay
- Interaction of temper
- Use of Pumaceous Ash
- Phenocrysts
Examples of Guangalan Pottery

Somberware

Bichrome

Polychrome

(Valdez and Veintimilla 1992)
Geology

- El Azucar Valley - Sedimentary
- Chongon-Colonche Hills - Igneous
The Andes
Andean volcanic belt supplies ash and pumice
Closest deposit 250 km from El Azucar
Comparative Cases

- Provenance study on ash in Lowland Classic Maya ceramics
- Temper: glass shards vs. pumaceous volcaniclastic materials
- Anabel Ford’s research
  - Ashfall hypothesis
  - Weaknesses

10x 2mm field of view     40x 0.2 mm field of view
Technology and Economy

- Agricultural-based with fishing, hunting
- Gradual increase in trade complexity
- Evidence of trade
  - Obsidian
  - Salt
Hypothesis

- Pumice was traded from highlands
- Use ceramic petrography to test our theory
  - Thin sections are taken of samples
  - Polarizing light microscope provides insight into mineralogical and material makeup
  - Allows pottery to be examined as a geological material
Materials and Methods

- Goal: determine source of pumice

Procedural Steps

- Created experimental ceramics with known pumice and pumice-like inclusions
  - Fired briquettes with 8 different materials
  - Sent to lab to be made into thin sections for analysis
Materials and Methods

- Selected 9 representative Guangala archaeological samples (3 sombreware, 3 bichrome, 3 polychrome)
- Analyzed thin sections of each under petrographic microscope
- Identified phenocrysts in pumice
Pumice

100X; 1.2 mm
Materials and Methods

- Documented appearance, shape, size, density, and phenocryst presence/absence
- Compositional analysis
- Compared to attributes of pumice inclusions in archaeological samples
  - Raw materials
  - Test tempers in experimental briquettes
  - Ashfall
Archaeological Samples

- Small and frequent
- Subangular and subrounded inclusions
- 100x; ppl; 1.2mm
Results

- Control - industrial clay
- No pumice inclusions
- 100x; ppl; 1.2mm
Results

Ashfall; 100X; ppl; 1.2 mm

Ashfall

C97-3; 100X; ppl; 1.2 mm

Pumice
Results

- Experimental Sample with Ashfall had no trace of pumice
- Other samples confirmed presence of pumice
Discussion

- Absence of pumice in experimental sample containing ashfall
- Consistent physical properties of archaeological sample pumice
- Cotopaxi National Park experimental sample a close match
Conclusion

- Ashfall hypothesis unsupported
- Likely that pumice was traded
- Further studies should improve on:
  - Migration of people
    - Assimilation of cultures: Guangalan pottery-making
    - Transportation of pumice and obsidian
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