Connectivity: Mapping Ritual Objects in the Prehispanic Southwest

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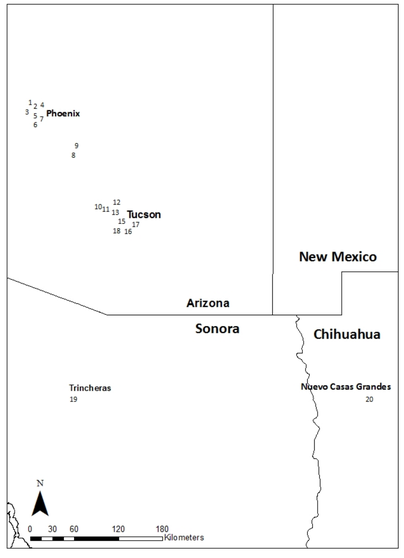
What is connectivity and how do archaeologists measure it?

Many scholars have noted a relationship between the Southwest and Mesoamerica[1,2,3]. This study explores the relationship between the Hohokam and cultural groups in North Mexico through connectivity. Connectivity is defined as a set of social processes and interactions, both direct and indirect, that link individuals and groups together. It involves multiple aspects of communication, observation, and exchange, all with varying costs. Archaeologists can investigate connectivity by studying changing social, economic, and geographic relationships of people and objects through time. Researchers can observe this relationship through the study of what Nelson[4] calls "interaction markers", artifacts and architectural styles that incorporate a Mesoamerican element (e.g., copper bells, macaws).



Sites
1)Grand Canal Ruins
2)Pueblo Grande
3)Las Canopas
4)Pueblo Blanco
5)Los Guanacos
6)Los Hornos
7)Los Muertos
8)Grewe
9)Escalante Ruin Group
10)Redtail
11)Silverbell-Coachline
12)Sleeping Snake
13)Honey Bee Village
14)Romero Ruin
15)Hodges Ruin
16)University Indian Ruin
17)Tanque Verde Wash
18)West Branch
19)Cerro de Trincheras
20)Casas Grandes

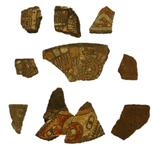
Figure 1. Sites included in the study.

Are the Phoenix and Tucson basins equally connected with Mesoamerica and do their respective connections change over time?

Nine interaction markers were examined in this study

Pyrite Mirror[5]

Copper Bell[6]



Pseudo-cloisonné decoration[7]

Blue-green Stone[8]

Shell Trumpet[9]

Palette[10]

Macaw[11]

Shell Bracelet[12]

Cacao[13]

Methodology

- Distance is used to measure connectivity in two ways, first by observing the theoretical cost of moving artifacts across geographical space, and second, by looking at the frequencies of deposited artifacts in each basin
- Eighteen sites were examined from the Tucson and Phoenix basins **(Figure 1)**
- Raw values were standardized by estimated room counts
- Phoenix and Tucson basins were divided into pre-Classic (700-1150 CE) and Classic (1150-1450 CE) periods
- A resistance raster was made for least-cost pathway and circuit analysis using the same watershed and topography data

Results

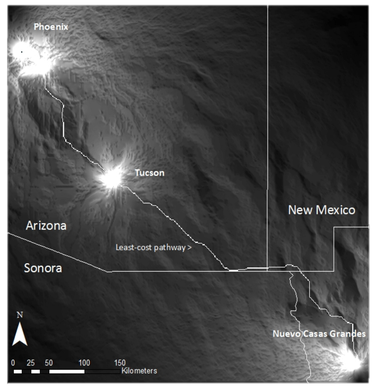


Figure 2. Least-cost pathway superimposed on circuit modeling from Casas Grandes to Phoenix Basin.

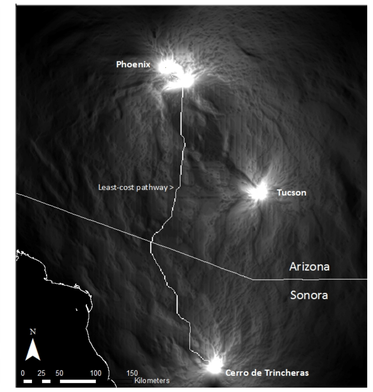


Figure 3. Least-cost pathway superimposed on circuit modeling analysis from Cerro de Trincheras to Phoenix Basin.

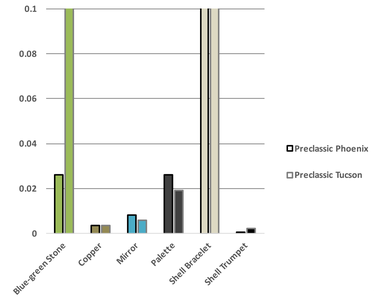


Figure 4. Preclassic frequencies of interaction markers standardized by estimated room counts in the Phoenix and Tucson basins.

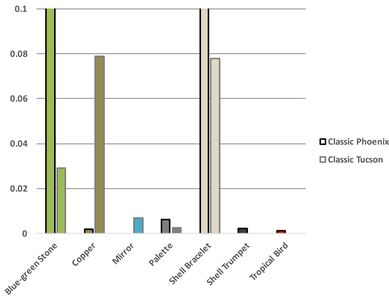


Figure 5. Classic frequencies of interaction markers standardized by estimated room counts in the Phoenix and Tucson basins.

Conclusion

- **Each basin appears to share a different connectivity with Mesoamerica.**
- Artifacts like blue-green stone and shell bracelets, are relatively abundant during the Preclassic and Classic in both basins. Other artifacts, such as mirrors, macaws, and shell trumpets, occur far less frequently.
- During the Preclassic period, Tucson had a much higher frequency of interaction markers than the Phoenix Basin.
- During the Classic period, the Phoenix Basin had a greater artifact richness (n = 6) than the Tucson Basin (n = 5), with macaws being present.
- Circuit analysis revealed different likely routes of travel than least-cost pathway and deserve further investigation

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Notes 1-13: Please see handout for sources of references and images.