

New Media, Old Stories: Democratizing Archaeology with Open Source Methods in Virtual Heritage Management at Northern Rio Grande Pueblos



Chester R. Liwosz¹ and Arthur Cruz²

1. Mesa Prieta Petroglyph Project, and New Mexico Highlands University
2. Historian and former War Chief, Ohkay Owingeh (San Juan Pueblo)

Proposal & Purpose

Virtual Heritage Management includes the storage and representation of archaeological data and narratives in any of the array of digital media available today. The proliferation of new forms of digital media has enabled many archaeologists and organizations to communicate in new and novel ways, especially since the Covid-19 pandemic. These new media can be used as tools to democratize archaeological discourse, opening new and equitable ways to engage in storytelling and collaboration. The Virtual Migrations Project is an early demonstration of collaborative to demonstrate the utility and accessibility of VHM media in developing narratives relevant to the descendants of communities being represented. As such, this project focuses on the simplest tools with the easiest learning curve to accomplish the task of creating interactive, digital narratives. This project has made (and continues to make) learning opportunities for Pueblo youths, who contribute to this and other virtual reality tours in our curriculum.

Why Migration Stories?

With the multitude of an estimated 100,000 petroglyph elements in a roughly 50 square mile area, Mesa Prieta offers a breadth of iconography capable of telling countless stories. This project from the outset sought to tell stories of relevance to the Pueblo communities whose visual culture is displayed on the boulders. With this in mind, MP3 engaged in consultation with elders and representatives of several Tewa Pueblos (incl. Ohkay Owingeh and Hopi Tewa) to script appropriate narratives. The following criteria offered guidance through all stages of the project:

- Narratives should represent many families/communities
- Stories should be appropriate & informative for youth
- No privileged info (kiva knowledge) should be shared
- Narratives should not favor any clan, lineage, etc.

Three leading stories were deemed appropriate to use. First, Alfonso Ortiz's account of the migration from the Upper San Juan. Second, Tessie Naranjo's story of migration from the Galisteo Basin to Santa Clara Pueblo. Third, Art Cruz's oral history of the migration from Phioge Pueblo to First Mesa at Hopi (Hopi Tewa).

Precedence & Project Development

The Virtual Migrations Project has many antecedents, however the most direct was the collection NEH-funded virtual reality tours MP3 offered during the Covid-19 pandemic. Using these as a technical test bed, the Virtual Migrations Project launched shortly after in order to promote the production and sharing of narratives relevant to indigenous communities, particularly targeting technologies familiar to youths of Pueblo communities. From fall 2021 through summer 2022, this project moved from the planning stages to developing initial demonstrations. These first demonstrations of the Virtual Migrations Project were presented in July 2022 at the World Archaeology Congress in Prague, Czech Republic. Since then, the project has continued to evolve, including the addition of new game content regarding the story of Phioge. Behind the new game content is an extensive oral histories project, spearheaded by Arthur Cruz (Ohkay Owingeh). Cruz's oral histories work is focused on preserving these narratives in the form of video, audio, and transcripts. Meanwhile, Liwosz provides the scripting needed to add Cruz's story to the virtual tours alongside the widely published migration stories shared by Alfonso Ortiz (Ohkay Owingeh) and Tessie Naranjo (Santa Clara).



Platform Selection

A few platforms were considered:

- Unity (game engine) for mobile
- Blender GIS (for animation)
- Pannellum (for web platform)

And the following criteria were used:

- platform stability (incl. updates)
- developer ease-of-use (at least some programming by high school students)
- widest possible compatibility
- minimize specialized hardware

Ultimately, Pannellum was chosen.

Other Media



example 3D models (see Sketchfab)



Sketchfab



VR Tours

Equipment Used



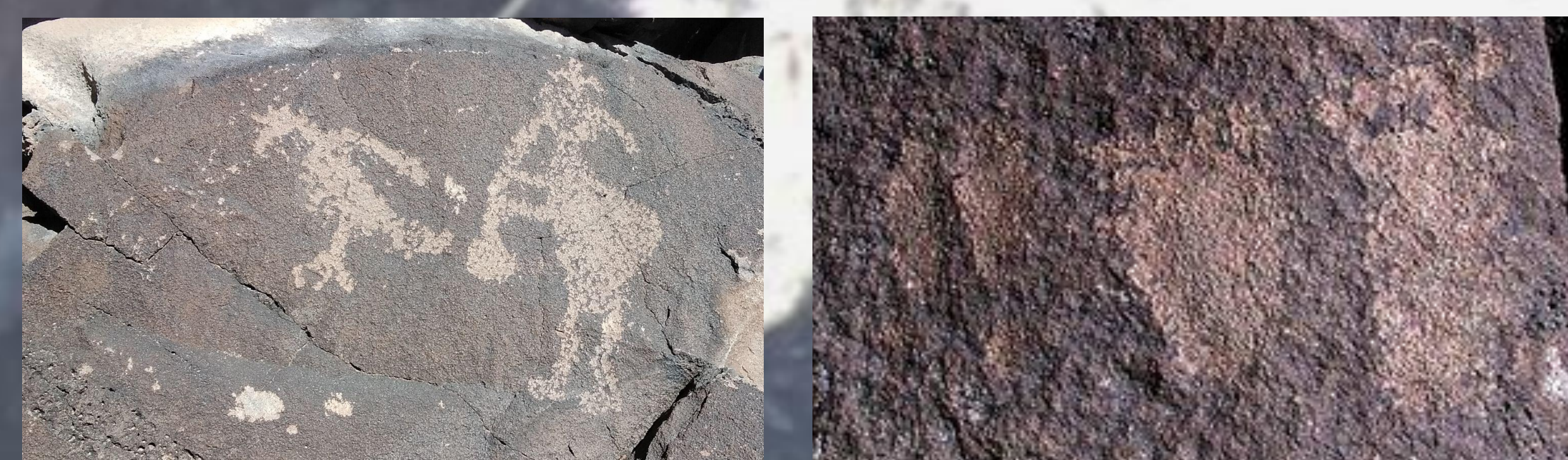
Land Recognition Statement

Locations presented here included colonized lands within the traditional territory of Tewa-speaking pueblos. Specifically, the colonial toponyms "Mesa Prieta" and "Black Mesa" refer to a place and landform traditionally called *Tsjikwayè*. As an effort to recognize and address the impacts of colonization on indigenous communities, this study integrates information from consultation and indigenous-authored primary accounts. I and MPPP recognize the vitality of living indigenous cultures including Tewa, Tiwa, Comanche, and Jicarilla Apache whose cultural heritage we study. This collaborative project is expressly an effort to promote multivocality and to provide a platform for indigenous histories, oral, written, and henceforth in digital media as well.



Acknowledgements

First and foremost, credit should be given to contributing author Arthur Cruz for decades of work learning and piecing the oral histories of the migration from Phioge to First Mesa. Cruz's effort has been supported by Scott Ortman. In developing the virtual tours web app on which the Virtual Migrations Project is based, Alec Kercso proofed and corrected API code to make it functional. Summer Youth Interns also contributed to this project with their fieldwork and data processing, making the spherical scenes, 3D models, and even writing short sections of code used in making this interactive experience.



Select References

- Cruz, Arther. 2022. Phioge Owingeh: A Tewa Story. oral history. https://youtu.be/_sD6Dfucyik
- Dozier, Edward P. 1956. The Role of Hopi-Tewa Migration Legend in Reinforcing Cultural Patterns and Prescribing Social Behaviors. *Journal of American Folklore*, 69(272): pp. 176-180
- Jeffrey, Stuart. 2015. Challenging Heritage Visualization: Beauty, Aura, and Democratization. *Open Archaeology*, 1: pp. 144-152
- Naranjo, Tessie. 2017. "Stories of Place and Intergenerational Learning." In *Indigenous Innovations in Higher Education: Local Knowledge and Critical Research*, edited by Elizabeth Sumida Huaman and Bryan McKinley Jones Brayboy. Boston: Sense Publishers
- Ortiz, Alfonso. 1969. *The Tewa World: Space, Time, Being, and Becoming in a Pueblo Society*. University of Chicago Press.

Alfonso Ortiz:
Tewa Migration from
the Upper San Juan
(beta available below)

Tessie Naranjo:
Migration from Galisteo
and Coming Together
at Santa Clara
(in progress)

Arthur Cruz:
The Story of Phioge
Owingeh and First Mesa
(use QR to see video)



Virtual Migrations Web App:
An interactive, multiscursal learning experience

scan me!



<https://www.mesaprietaetroglyphs.org/virtualmigrations.html>

```

"scenes": {
  "tourstop01": {
    "label": "Display name for location",
    "pitch": 90,
    "roll": 0,
    "yaw": 0,
    "type": "equiangular",
    "parameters": "https://i.imgur.com/[xyz].jpg",
    "hotSpots": [
      {
        "pitch": -5,
        "roll": 0,
        "yaw": 0,
        "type": "scene",
        "label": "Emerge and Explore",
        "sceneid": "tourstop02"
      }
    ]
  },
  "tourstop02": {
    "pitch": -25,
    "roll": 0,
    "yaw": 0,
    "type": "info",
    "text": "This info box displays interp text"
  }
}

```

Sample Code from a Simple API

