Methodological Note

Ancient Architecture Astroarchaeological Alignment Explorer

Working v1 draft prepared for the initial Three.js build. This note should be expanded after field testing, source review, and structure-specific calibration.

1. Purpose

This visualizer is a hypothesis-generating research and teaching instrument. It reconstructs selected monumental structures as measured or parameterized bodies on an XYZ plane, then overlays cardinal, solar, lunar, Venus, stellar, landscape, processional, civic-axis, and cosmological-spatial interpretive layers. The tool does not treat an overlay as proof of ancient intention.

2. Geometry before interpretation

Each structure record separates body geometry from alignment claims. The measured model stores base dimensions, height, platform count, stairs, temple blocks where appropriate, orientation, coordinates, and epoch reference. Overlays are generated from explicit azimuths, calculated horizon lines, or labelled interpretive fields.

3. Temporal reference

The interface distinguishes ancient-epoch and modern-reference views. Solar and lunar horizon lines are approximate geometric calculations based on latitude and obliquity. Stellar and Venus layers are represented only where the structure record contains a literature-supported claim. A future ephemeris module can replace these seed layers with full time-dependent calculations.

4. Ashmore spatial-cosmology layer

For Mesoamerican structures, the Ashmore-inspired mode models directionality, center, vertical world levels, and civic or processional order. This layer is grounded in archaeological site-planning theory: ancient architecture may materialize cosmological and political order, but the clarity of original spatial expression can be blurred by rebuilding, later use, erosion, excavation history, and modern reconstruction.

5. Claim-status badges

Fun facts and alignment claims are marked as Verified, Plausible, Interpretive, Disputed, or Popular Claim / Needs Stronger Evidence. This is essential because the explorer intentionally includes both strong academic evidence and popular claims for critical comparison.

6. Required sources

A public structure record should contain at least one peer-reviewed or scholarly paper, one primary excavation, museum, government, or heritage source, DOI where available, and notes identifying whether each source supports geometry, chronology, orientation, cosmology, or interpretive context.

7. Limits and cross-validation

The model is not a substitute for field survey, total-station measurement, horizon altitude correction, atmospheric refraction modeling, or archaeological interpretation. Stronger claims require repeated measurement, source triangulation, cultural plausibility, chronology control, and comparison against non-aligned alternatives.

8. Future development

Next steps include local Three.js dependencies, horizon-profile import, DEM terrain masks, ephemeris-backed Venus and stellar calculations, source confidence scoring, user-saved scenarios, report screenshots, and per-structure methodological appendices.

Selected v1 references

Reference	Use in model
Ashmore 1991	Site-planning principles and directionality among the ancient Maya. DOI: 10.2307/972169
Ashmore and Sabloff 2002	Spatial orders in Maya civic plans. DOI: 10.2307/971914
Garcia-Salgado 2010	The sunlight effect of the Kukulcan Pyramid. DOI: 10.1007/s00004-010-0019-3
Sprajc 2000	Astronomical alignments at Teotihuacan, Mexico. DOI: 10.2307/972004
Nell and Ruggles 2014	The orientations of the Giza pyramids. DOI: 10.1177/0021828614533065
Nadali and Polcaro 2016	The sky from the high terrace. DOI: 10.5281/zenodo.220907

Prepared as a working draft. Replace this PDF after the build is reviewed and calibrated against final structure data.