42 The Interpretative Role of Uncertainty in 3D Hypothetical Reconstructions of Prehistoric Sites

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Over recent decades, digital technologies have transformed how archaeological and architectural heritage is studied, interpreted, preserved, and communicated. Three-dimensional hypothetical reconstructions have become a key methodological and visual tool in digital heritage studies, allowing researchers to present past environments beyond the fragmentary archaeological record.

This proposal treats uncertainty as a central component of hypothetical reconstructions and as a tool to support multiple interpretations. Existing uncertainty scales often separate material evidence and written sources —treated as more “certain”— from archaeological assumptions and interpretations —treated as more “uncertain”—. Instead, this proposal addresses complex interpretative dimensions in reconstructing past contexts, focusing on the uncertainty inherent in archaeological data and methodologies, while questioning the link between materiality and objectivity in prehistoric reconstructions.

The proposal is based on a flexible framework for understanding uncertainty in prehistoric reconstructions, where fragmented evidence requires interlacing archaeological data, comparative evidence, theoretical assumptions, and subjective inferences. Rather than producing singular, authoritative visualisations, this framework views hypothetical reconstructions as dynamic, self-reflexive processes accommodating multiple possibilities. It shows how uncertainty serves as a methodological necessity and an interpretative, communicative tool, especially in the field of prehistoric archaeology.

Finally, the proposal suggests that objects and characters are integral interpretative components requiring the same critical reflection as architecture or material culture. Reconstructions should become dynamic platforms for discussing and experimenting with alternative hypotheses, while embracing uncertainty as an essential condition of reconstructing prehistory and of revealing the interpretative nature of the archaeological process.