

TRANSFORMING SKELETAL DATA INTO VISUAL FORM: A DIGITAL FACIAL DEPICTION OF “ZUZU”, AN EARLY HOLOCENE INDIVIDUAL FROM BRAZIL

*Lumila Paula Menendez¹, Ana Solari^{2,3}, Jessica Liu⁴, Gabriela Martin²,
Anne-Marie Pessis² and Caroline M. Wilkinson⁴*

¹University of Bonn, Department Anthropology of the Americas, Bonn, Germany; ²Museum of the American Man, Piauí, Brazil; ³CONICET - National Scientific and Technical Research Council, National Institute of Anthropology and Latin American Thought, Buenos Aires, Argentina;

⁴Liverpool John Moores University, Face Lab, Liverpool, UK

Background: Digital technologies are changing how archaeologists and anthropologists work with and share data, making it possible to create detailed visualizations of people from the past. Among these, facial depiction based on skeletal remains are particularly powerful, but they also come with important challenges. Faces are easily read as “real” and can give a stronger sense of certainty than the underlying evidence actually supports.

Objective: This work presents a digital facial depiction of “Zuzu,” an early Holocene individual (~9,600 cal BP) from Toca dos Coqueiros, Serra da Capivara National Park, Brazil. Rather than reconstructing the individual's actual appearance, we use a transparent, documented workflow that demonstrates how skeletal data are translated into a visual facial model.

Materials and methods: The skull was digitized using structured-light scanning and processed through a series of steps that combine anatomical analysis, soft-tissue modelling based on comparative data, and carefully controlled visualization choices. Throughout the process, we rely on preserved craniofacial features wherever possible, while treating more uncertain aspects with restraint.

Results: The final image is presented in grayscale and avoids adding features such as skin tone, hair, or other individualized traits, making clear that it is a model rather than a portrait. By making each step of the process explicit, this study shows how facial depictions can serve as a way of communicating archaeological knowledge without overstating what we know. More broadly, it highlights the importance of transparency and caution when creating and sharing visual representations of past human lives.

Keywords: Facial depiction; Early Holocene; South America; Craniofacial morphology; 3D modelling.

Acknowledgement / Funding Source: This article is dedicated to the memory of Niede Guidon, whose pioneering work in Serra da Capivara profoundly transformed our understanding of early human occupation in South America and whose lifelong commitment to the protection of archaeological heritage and the creation of FUMDHAM made much of this research possible. We would like to thank Jim Chatters for generously sharing the images of Naia and Kennewick Man, André Strauss for providing the reconstruction of the Lapa do Santo individual, and the Museu Nacional of Brazil for granting access to the image of Luzia