

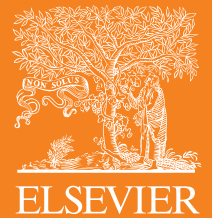
6th Annual Meeting of the

European Society for the study of Human Evolution

14-17 September 2016
MADRID / SPAIN



Journal of Human Evolution



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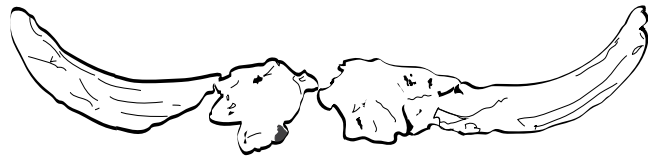
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ESHE
6th Annual Meeting
Madrid, Spain 14 -17 September, 2016



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Welcome Letter

Dear Participants of the 6th Annual meeting of the *European Society for the study of Human Evolution*,

¡Bienvenido a Madrid!

We are delighted to welcome you to the historical city of Alcalá de Henares in the Community of Madrid. Spain has made a tremendous contribution to European palaeoanthropology, beginning with precursors such as Casiano de Prado in the 1860's. It is also the place where palaeolithic rock art was first recognised in 1879, when the nine year old daughter of Marcelino Sanz de Sautuloa cried out “*¡Mira papá, bueyes!*” (“*look papa, bulls!*”) in the Altamira Cave. This discovery was followed by intense debate within the entire European archaeological community, ending only with the memorable *mea culpa* by Émile Cartailhac in 1902. Since then, Spain has continued to be the focus of attention for many prehistorians, most notably including early famous figures, such as Henri Breuil and Hugo Obermaier. In recent decades, Spanish palaeoanthropology has witnessed spectacular development, boosted by the extraordinary discoveries in the Atapuerca area and the pioneering work of Emiliano Aguirre. This has given birth to a new generation of young, prolific researchers.

As we open the 6th Annual ESHE meeting, we celebrate the ongoing success of the society, which I am honoured to have been a part of since its conception. This year, we accepted more abstracts than ever before, and as of August, have over 525 members. The success of the society means that each year we are able to present to you even more exciting and ground-breaking research, which shapes our knowledge of our remote past to help us better understand our present and prepare for the future. Thanks to the kind support of the Museo Arqueológico Regional, we have not only been able to host our conference in a stunning location, but also host special guest Fernando Colmenares as our keynote speaker, as well as visit the rich and historical site of Pinilla del Valle.

As in previous years, we are able to encourage and support our student members to attend and participate in the conferences by providing travel grants to those presenting at this year's meeting. In addition to our yearly student poster prize, we are also able to introduce a Pecha Kucha Prize this year for students thanks to the kind donation by the Journal of Human Evolution, who will also host a workshop over the weekend to help young researchers get their work published.

This meeting would not be possible without the hard work of our local organisers in Madrid. I would firstly like to thank Juan Luis Arsuaga and Enrique Baquedano, director of the Museo Arqueológico, for scouting and providing us with this amazing venue. I would also like to give special thanks to their teams, Belén Marquez Mora and Bárbara Rodríguez Álvarez for taking care of local organisation and making this entire conference possible.

The 6th Annual ESHE meeting is sponsored by the Museo Arqueológico Regional, the Journal of Human Evolution, Aicon 3D Systems and Nature Ecology and Evolution.

The organisation of this meeting and the preparation of the abstract volume was diligently undertaken by the tireless work of Mikaela Lui and our ESHE Board Members, in particular Phillip Gunz, Shannon McPherron, Marie Soressi and Thomas Terberger.

We thank you for taking part in making this year's ESHE meeting a success, and we look forward to seeing you all at the 7th Annual meeting in Leiden in the Netherlands in 2017.

With best wishes,

Jean-Jacques Hublin
President, European Society for the study of Human Evolution.

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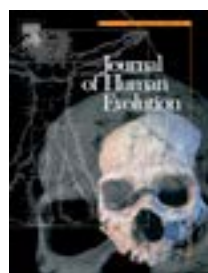
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Poster Presentation Number 68, Th (18:00-20:00)

Morphoarchitectural variation in the extant human endocast

Amélie Beaudet¹, Jean Dumoncel^{2,3}, Frikkie De Beer⁴, Stanley Durrleman⁵, Emmanuel Gillissen⁶, Jakobus Hoffman⁴, Anna Oettlé¹, Gérard Subsol⁷, John Francis Thackeray⁸, José Braga^{2,8}

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One of the major issues in paleoneurology concerns the timing and patterning of human brain evolution, notably when and how a derived human-like endocranial morphology emerged within the hominin lineage [1]. Since morphological variation within and between paleodemes constitutes the substrate upon which natural selection acts, assessment of the cerebral variation patterns is critical for the understanding of the tempo and mode of cortical changes that occurred through hominin evolution. In the absence of any direct evidence of past neural conditions, endocasts constitute a valuable proxy for the reconstruction of brain morphology in extinct taxa. Paleoneurology has recently enlarged its traditional investigative toolkit by integrating methods of high-resolution imaging and 3D modelling as well as statistical analyses, to facilitate a higher degree of reliability of the quantitative and qualitative estimates. In this context, our study aims at establishing an extensive reference database on virtual endocranial structural variation in extant humans to be used as a comparative platform for the calibrated analysis and interpretation of the fossil record and the estimation of paleobiodiversity.

The extant human braincases investigated so far ($N > 90$) are from the 'Pretoria Bone Collection' stored at the University of Pretoria and were detailed by X-ray microtomography at a spatial resolution ranging from 94 to 123 μm at the MIXRAD facility located at the South African Nuclear Corporation (Necsa), Pelindaba. Virtual endocasts were automatically extracted via the Endex software [2]. Based on a landmark-free registration method [3], we generated a global mean shape and a set of deformation from the reference shape to individuals that were subsequently used to perform a principal component analysis (PCA). Topological mapping of shape variation was computed along PCA axes by representing the magnitude and orientation of displacements from the global mean shape to one standard deviation as signed distances [4].

Variations recorded along the first component alter the overall endocranial aspect from a laterally broad shape, with respect to the rostro-caudal axis, to a laterally narrow and rostro-caudally elongated morphology. Interestingly, our results based on endocranial bony morphology are consistent with the variation pattern directly observed on the human brain [5], confirming that endocasts represent suitable proxies for the assessment of the time-related changes in brain morphoarchitectural variation. Accordingly, the application of our experimental analytical protocol to the fossil record should offer a unique opportunity to explore paleoneurological diversity and to comparatively model the evolving patterns of shape variation with respect to the extant human condition.

Supported by AESOP+ program. We thank the DST-NRF for sponsoring the Micro-XCT facility at Necsa. We are grateful for access to the HPC resources of CALMIP supercomputing center (2016-P1440); we are also indebted to G. Krüger, curator of the 'Pretoria Bone Collection' at the University of Pretoria.

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