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References

Aktuell

Eitam 2020

David Eitam, *Do It Right! We May Reconstruct the Natufian Socioeconomic Milieu through Stone Tools Study, A Reply to Rosenberg and Nadel*. Current Anthropology **61** (2020), 648–650.

Rosenberg and Nadel's claims in their reply to my commentary (Eitam 2020) range between misleading and false without providing a direct rebuttal to my assertions, which necessitates a response.

Haeusler 2020

Martin Haeusler, Nicole M. Webb, Viktoria A. Krenn & Cinzia Fornai, *Locomotor and taxonomic diversity of Sterkfontein hominins not supported by current trabecular evidence of the femoral head*. PNAS **117** (2020), 28568–28569.

Moreover, the classification proposed by Georgiou et al. (1) would be at odds with inferences for a more open paleoenvironment during the time of Member 5 as well as the more modern body proportions of early Homo.

Collectively, although we do not dismiss the possibility of taxonomic heterogeneity within Sterkfontein, we feel the current data provided by Georgiou et al. are insufficient to confirm locomotor diversity at this locality.

Skinner 2020

Matthew M. Skinner, Leoni Georgiou, Dominic Stratford, Christopher J. Dunmore, Ameline Bardo, Laura T. Buck, Jean-Jacques H, *Internal structure of the femur provides robust evidence for locomotor and taxonomic diversity at Sterkfontein, Reply to Haeusler et al.* PNAS **117** (2020), 28570–28571.

Coupled with evidence for differing internal bone structure in the femoral heads of StW311 and StW522, we maintain there is strong evidence for both taxonomic and locomotor diversity at Sterkfontein.

Matthew M. Skinner, Leoni Georgiou, Dominic Stratford, Christopher J. Dunmore, Ameline Bardo, Laura T. Buck, Jean-Jacques Hublin, Dieter H. Pahr, Alexander Synek & Tracy L. Kivell

Bibel

Aharoni 1972

Yohanan Aharoni, *The Stratification of Israelite Megiddo*. Journal of Near Eastern Studies **31** (1972), 302–311.

Keel 1972

Othmar Keel, *Die Welt der altorientalischen Bildsymbolik und das Alte Testament, Am Beispiel der Psalmen*. (Zürich ^{3}1980).

Stern 1990

Ephraim Stern, *Hazor, Dor and Megiddo in the Time of Ahab and under Assyrian Rule*. Israel Exploration Journal **40** (1990), 12–30.

Megiddo thus remains the only site which is a constant object of dispute as to its building phases in the period of the Monarchy. Unlike Hazor and Gezer, at Megiddo it was impossible to carry out new excavations in the area of the gates. Yadin, who was fully aware of the fact that the most effective way to re-examine the results of an old excavation is to conduct new excavations, did what was possible under the circumstances. Instead of re-interpreting the results of the original excavators, as others had done before him, he performed what he called a 'post-mortem' on the mound of Megiddo. Indeed, the conclusions of this excavation [...] are well-known to all those interested in the subject.

Ussishkin 2020

David Ussishkin, *The 'Solomonic', Six-chambered Gate 2156 at Megiddo Once Again*. Tel Aviv: Archaeology **47** (2020), 246–255.

The stratigraphy and chronology of the Iron Age gates at Megiddo, particularly the so-called 'Solomonic', six-chambered Gate 2156, have been the subject of a long scholarly debate. In a recent issue of Tel Aviv, Finkelstein et al. (2019) described the results of their recent soundings in the area of these gates and suggested a new interpretation of their history. The present paper argues that—contrary to the conclusions of Finkelstein et al.—the stratigraphy and history of this gate-house should be understood as suggested at the time by the University of Chicago excavators.

Keywords: Megiddo | Iron Age | Megiddo gates | Solomonic gate

Klima

Czymzik 2020

Markus Czymzik, Norbert R. Nowaczyk, Olaf Dellwig, Antje Wegwerth, Raimund Muscheler, Marcus Christl & Helge W. Arz, *Lagged atmospheric circulation response in the Black Sea region to Greenland Interstadial 10*. PNAS **117** (2020), 28649–28654.

pnas117-28649-Supplement.pdf

Northern Hemispheric high-latitude climate variations during the last glacial are expected to propagate globally in a complex way. Investigating the evolution of these variations requires a precise synchronization of the considered environmental archives. Aligning the globally common production rate variations of the cosmogenic radionuclide 10Be in different archives provides a tool for such synchronizations. Here, we present a 10Be record at <40-y resolution along with subdecadal proxy records from one Black Sea sediment core around Greenland Interstadial 10 (GI-10) ≈41 ka BP and the Laschamp geomagnetic excursion. We synchronized our 10Be record to that from Greenland ice cores based on its globally common production rate variations. The synchronized environmental proxy records reveal a bipartite climate response in the Black Sea region at the onset of GI-10. First, in phase with Greenland warming, reduced sedimentary coastal ice rafted detritus contents indicate less severe winters. Second, and with a lag of 190 (± 44) y, an increase in the detrital K/Ti ratio and authigenic Ca precipitation point to enhanced regional precipitation and warmer lake surface temperatures. We explain the lagged climatic response by a shift in the dominant mode of atmospheric circulation, likely connected with a time-transgressive adjustment of the regional thermal ocean interior to interstadial conditions.

Keywords: cosmogenic radionuclides | archive synchronization | Black Sea sediments | climate | phase relationship

Significance: Abrupt climate shifts in the Northern Hemisphere high latitudes during the last glacial propagate globally in a complex manner. Our understanding of this propagation is poor mainly due to cross-dating uncertainties between individual paleoclimate archives. We apply a record of the globally common 10Be production rate variations to synchronize the Black Sea sediment record to central Greenland ice cores and investigate the hemispheric propagation of Greenland Interstadial 10, with minimized uncertainties in the relative timing. Our results suggest a bipartite climate response in the Black Sea region to the onset of the Greenland Interstadial, characterized by an inphase decrease in winter severity and lagged shift in atmospheric circulation, explained by a time-transgressive thermal adjustment of the regional ocean interior.

Meltzer 2020

David J. Meltzer, *Overkill, glacial history, and the extinction of North America's Ice Age megafauna*. PNAS **117** (2020), 28555–28563.

The end of the Pleistocene in North America saw the extinction of 38 genera of mostly large mammals. As their disappearance seemingly coincided with the arrival of people in the Americas, their extinction is often attributed to human overkill, notwithstanding a dearth of archaeological evidence of human predation. Moreover, this period saw the extinction of other species, along with significant changes in many surviving taxa, suggesting a broader cause, notably, the ecological upheaval that occurred as Earth shifted from a glacial to an interglacial climate. But, overkill advocates ask, if extinctions were due to climate changes, why did these large mammals survive previous glacialinterglacial transitions, only to vanish at the one when human hunters were present? This question rests on two assumptions: that previous glacialinterglacial transitions were similar to the end of the Pleistocene, and that the large mammal genera survived unchanged over multiple such cycles. Neither is demonstrably correct. Resolving the cause of large mammal extinctions requires greater knowledge of individual species' histories and their adaptive tolerances, a fuller understanding of how past climatic and ecological changes impacted those animals and their biotic communities, and what changes occurred at the PleistoceneHolocene boundary that might have led to those genera going extinct at that time. Then we will be able to ascertain whether the sole ecologically significant difference between previous glacialinterglacial transitions and the very last one was a human presence.

Keywords: Pleistocene extinctions | human overkill | glacialinterglacial climate change | megafauna | North America

Kultur

Basri 2020

Pertev Basri & Dan Lawrence, *Wealth Inequality in the Ancient Near East, A Preliminary Assessment Using Gini Coefficients and Household Size*. Cambridge Archaeological Journal **30** (2020), 689–704.

Investigating how different forms of inequality arose and were sustained through time is key to understanding the emergence of complex social systems. Due to its long-term perspective, archaeology has much to contribute to this discussion. However, comparing inequality in different societies through time, especially in prehistory, is difficult because comparable metrics of value are not available. Here

we use a recently developed technique which assumes a correlation between household size and household wealth to investigate inequality in the ancient Near East. If this assumption is correct, our results show that inequality increased from the Neolithic to the Iron Age, and we link this increase to changing forms of social and political organization. We see a step change in levels of inequality around the time of the emergence of urban sites at the beginning of the Bronze Age. However, urban and rural sites were similarly unequal, suggesting that outside the elite, the inhabitants of each encompassed a similar range of wealth levels. The situation changes during the Iron Age, when inequality in urban environments increases and rural sites become more equal.

Metallzeiten

Pernicka 2020

Ernst Pernicka et al., *Why the Nebra Sky Disc Dates to the Early Bronze Age, An Overview of the Interdisciplinary Results.* Archaeologia Austriaca **104** (2020), 89–122.

It is not unusual that archaeological finds come under renewed scrutiny. This is actually an important part in the progress of scientific research. All the more so when important and ground-breaking discoveries are involved, like the Nebra Sky Disc, which is listed among the UNESCO "Memory of the World". However, in most cases a new assessment is based on new data or insights. None of this is presented in a recently published article by Gebhard and Krause (2020). Instead, their argument is based on early published and unpublished material, which is used and cited selectively and ignores a substantial number of subsequent publications. Since the Nebra Sky Disc is a unique find that was not recovered during a controlled excavation, it can neither be dated by traditional typological methods nor prima facie by its appearance. Moreover, there is no scientific method yet available to date copper alloys exactly, so that the date suggested in the original publication was established by reconstructing the find context and by analysing the accompanying finds that are typologically and radiocarbon dated to around 1600 BC. The find location on the Mittelberg was excavated in great detail and a number of scientific analyses confirmed the testimony of the looters in a court trial that the Sky Disc had been buried there together with the accompanying finds. These analyses also disproved an earlier claim that the Sky Disc was a modern fake. This allegation is not repeated by Gebhard and Krause (2020) but they do use similar arguments for their claim that the Sky Disc was not found together with the hoard and may not even have been on the Mittelberg near Nebra. By contrast, they assert that the Sky Disc should be typologically dated to the Iron Age. It can be shown that their arguments are based on a distortion of the evidence derived both in the court trial and by scientific analyses. They combine their proposal with a superficial typological discussion of the image displayed on the Sky Disc. As this overview demonstrates, through interdisciplinary studies it is possible to determine the origin and composition of the Nebra hoard with the greatest possible certainty. This determination was based on results from sediment attachments, the chemical concentrations of gold and copper in the geological subsoil of the findspot, astronomical references, as well as an analysis of the traces left by the looters, police investigations, and a comprehensive confession by the offenders, which has confirmed the independently obtained archaeological and scientific observations.

Keywords: Nebra Sky Disc | find context | Early Bronze Age | authenticity | archaeology | archaeometry | soil pedology/geology.

Ernst Pernicka, Jörg Adam, Gregor Borg, Gerhard Brügmann, Jan-Heinrich Bunnefeld, Wolfgang Kainz, Mechthild Klamm, Thomas Koiki, Harald Meller, Ralf Schwarz, Thomas Stöllner, Christian-Heinrich Wunderlich, Alfred Reichenberger

Mittelpaläolithikum

Nava 2020

Alessia Nava et al., *Early life of Neanderthals*. PNAS **117** (2020), 28719–28726.

pnas117-28719-Supplement.pdf

The early onset of weaning in modern humans has been linked to the high nutritional demand of brain development that is intimately connected with infant physiology and growth rate. In Neanderthals, ontogenetic patterns in early life are still debated, with some studies suggesting an accelerated development and others indicating only subtle differences vs. modern humans. Here we report the onset of weaning and rates of enamel growth using an unprecedented sample set of three late (≈70 to 50 ka) Neanderthals and one Upper Paleolithic modern human from northeastern Italy via spatially resolved chemical/isotopic analyses and histomorphometry of deciduous teeth. Our results reveal that the modern human nursing strategy, with onset of weaning at 5 to 6 mo, was present among these Neanderthals. This evidence, combined with dental development akin to modern humans, Highlights their similar metabolic constraints during early life and excludes late weaning as a factor contributing to Neanderthals' demise.

Keywords: Neanderthal ontogeny | nursing strategy | dental histology | spatially resolved chemical analyses | life histories

Alessia Nava, Federico Lugli, Matteo Romandini, Federica Badino, David Evans, Angela H. Helbling, Gregorio Oxilia, Simona Arrighi, Eugenio Bortolini, Davide Delpiano, Rossella Duches, Carla Figus, Alessandra Livraghi, Giulia Marciani, Sara Silvestrini, Anna Cipriani, Tommaso Giovanardi, Roberta Pini, Claudio Tuniz, Federico Bernardini, Irene Dori, Alfredo Coppa, Emanuela Cristiani, Christopher Dean, Luca Bondioli, Marco Peresani, Wolfgang Müller & Stefano Benazzi

Significance: The extent to which Neanderthals differ from us is the focus of many studies in human evolution. There is debate about their pace of growth and early-life metabolic constraints, both of which are still poorly understood. Here we use chemical and isotopic patterns in tandem with enamel growth rates of three Neanderthal milk teeth from northeastern Italy to explore the early life of these individuals. Our study shows that these Neanderthals started to wean children at 5 to 6 months, akin to modern humans, implying similar energy demands during early infancy. Dental growth rates confirm this and follow trajectories comparable with modern humans. Contrary to previous evidence, we suggest that differences in weaning age did not contribute to Neanderthals' demise.

Religion

Peoples 2016

Hervey C. Peoples, Pavel Duda & Frank W. Marlowe, *Hunter-Gatherers and the Origins of Religion*. Human Nature **27** (2016), 261–282.

HumNat27-261-Supplement.pdf

Recent studies of the evolution of religion have revealed the cognitive underpinnings of belief in supernatural agents, the role of ritual in promoting cooperation, and the contribution of morally punishing high gods to the growth and stabilization of human society. The universality of religion across human society points

to a deep evolutionary past. However, specific traits of nascent religiosity, and the sequence in which they emerged, have remained unknown. Here we reconstruct the evolution of religious beliefs and behaviors in early modern humans using a global sample of hunter-gatherers and seven traits describing hunter-gatherer religiosity: animism, belief in an afterlife, shamanism, ancestor worship, high gods, and worship of ancestors or high gods who are active in human affairs. We reconstruct ancestral character states using a time-calibrated supertree based on published phylogenetic trees and linguistic classification and then test for correlated evolution between the characters and for the direction of cultural change. Results indicate that the oldest trait of religion, present in the most recent common ancestor of present-day hunter-gatherers, was animism, in agreement with long-standing beliefs about the fundamental role of this trait. Belief in an afterlife emerged, followed by shamanism and ancestor worship. Ancestor spirits or high gods who are active in human affairs were absent in early humans, suggesting a deep history for the egalitarian nature of hunter-gatherer societies. There is a significant positive relationship between most characters investigated, but the trait "high gods" stands apart, suggesting that belief in a single creator deity can emerge in a society regardless of other aspects of its religion.

Keywords: Religion | Evolution | Hunter-gatherers | Animism | High gods | Cultural phylogenetics

Robinson 2020

Nick T. M. Robinson et al., *Targeted Activation of Hippocampal Place Cells Drives Memory-Guided Spatial Behavior*. Cell (2020), preprint, 1–14. DOI:10.1016/j.cell.2020.09.061.

In Brief: Selective stimulation of a small number of hippocampal place cells in mice provides causal evidence that hippocampal place cells actively support spatial navigation and memory.

Highlights:

- Two-photon optogenetics in VR enables targeted manipulation of place cell ensembles
- Activating specific place cell ensembles drives their spatially associated behavior
- Place cell stimulation inhibits endogenous place code expression and triggers remapping
- Direct evidence for a causal role of place cells in spatial navigation

The hippocampus is crucial for spatial navigation and episodic memory formation. Hippocampal place cells exhibit spatially selective activity within an environment and have been proposed to form the neural basis of a cognitive map of space that supports these mnemonic functions. However, the direct influence of place cell activity on spatial navigation behavior has not yet been demonstrated. Using an 'all-optical' combination of simultaneous two-photon calciumimaging and two-photon optogenetics, we identified and selectively activated place cells that encoded behaviorally relevant locations in a virtual reality environment. Targeted stimulation of a small number of place cells was sufficient to bias the behavior of animals during a spatial memory task, providing causal evidence that hippocampal place cells actively support spatial navigation and memory.

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