EAORC BULLETIN 899 – 6 September 2020

CONTENTS

NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.
If there is a journal you feel I should be tracking on a regular basis, do let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

EAORC NEWS – 1. Biennial Membership Check – Please Respond

2020 is a membership checking year, when I ask for confirmation that you wish to continue receiving the bulletins. So please let me know that you wish to continue by emailing me with **Bulletin Yes**, or something similar. If you do not wish to continue receiving the bulletin then you need do nothing. Anyone who has not indicated they wish to continue will be taken off the list at the end of October. This biennial membership check has been in operation since 2008, and GDPR has made it even more important that it is carried out regularly.
Slawomir and Esther, you have already responded; but feel free to respond again if you wish to be sure to be sure.

EAORC NEWS – 2. New Website – Outcome

The votes are in. By the widest of majorities (i.e. nobody voted against it), the new website has been accepted. It will go live later today.

EAORC NEWS – 3. PDF bulletins? Outcome

The votes are in. By the narrowest of majorities, the email option has been chosen. However, the pdf is always available at http://martinedwardes.me.uk/eaorc/eaorc_bulletins.html, should you wish to download it.

BREAKING SCIENCE – 15,000-Year-Old Abstract Art Found in Channel Islands

A team of archaeologists from the United Kingdom has uncovered 15,000-year-old stone plaquettes extensively engraved with abstract designs at the Magdalenian site of Les Varines, Jersey, Channel Islands. The finds provide new evidence for

technologies of abstract mark-making, and their significance within the lives of people on the edge of the Magdalenian world.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/GIISdFC8sb8/magdalenian-abstract-art-channel-islands-08806.html?utm_source=feedburner&utm_medium=email

---

SOCIETY FOR SCIENCE – Stonehenge enhanced sounds like voices or music when inside the monument

Scientists created a scale model one-twelfth the size of the ancient stone circle to study its acoustics.
http://click.societyforscience-email.com/?qs=b288ea7664ca3a4a010a0050b836d5f9450f61d844eeb08b0271c34638347d5e4d57605d19b3dce7c78ae286d5a98e84bdca6a722ae8eb12

SCIENCE DAILY – Scientists show how brain flexibility emerges in infants

Cognitive flexibility, which refers to the brain's ability to switch between mental processes in response to external stimuli and different task demands, seems to begin developing during the first two years of life, which is much earlier than previously thought. Researchers used magnetic resonance imaging techniques to show the emergence of a functional flexible brain during early infancy.
https://www.sciencedaily.com/releases/2020/08/200831165658.htm

---

SCIENCE DAILY – Differing diets of bonobo groups may offer insights into how culture is created

Besides humans, many other social animals are believed to exhibit forms of culture in various ways, too. According to primatologists, bonobos, one of our closest living relatives, could be the latest addition to the list.
https://www.sciencedaily.com/releases/2020/09/200901142727.htm

---

SCIENCE DAILY – Is consciousness continuous or discrete? Maybe it's both, argue researchers

Two major theories have fueled a now 1,500 year-long debate started by Saint Augustine: Is consciousness continuous, where we are conscious at each single point in time, or is it discrete, where we are conscious only at certain moments of time? Psychophysicists answer this centuries-old question with a new model, one that combines both continuous moments and discrete points of time.
https://www.sciencedaily.com/releases/2020/09/200903114214.htm

---

SCIENCE DAILY – Study reveals lactose tolerance happened quickly in Europe

A new study published in Current Biology reveals that the ability for humans to digest milk (lactase persistence) spread through Central Europe quickly in evolutionary terms.
https://www.sciencedaily.com/releases/2020/09/200903114212.htm

---

ACADEMIA.EDU – Alternative Approach to the Study of Modern Human Behaviour

Canadian Journal of Archaeology/Journal Canadien d'Archéologie 37:21–47 (2013)

CHRISTOPHER J. H. AMES, JULIEN RIEL-SALVATORE & BENJAMIN R. COLLINS – Why We Need an Alternative Approach to the Study of Modern Human Behaviour

In this paper we review recent developments in the debate over the emergence of modern human behaviour (MHB) to show that despite considerable diversity among competing models, the identification of given material traits still underpins almost all current perspectives. This approach, however, allows assumptions over the biological relationship between archaic and modern humans to permeate the definitions of MHB and, as a result, has effectively stultified archaeology's potential contribution to the issue. We suggest that the concept of MHB as currently defined is flawed. It must either be redefined in strictly behavioural terms before reincorporation into the debate over modern human origins or, more productively, discarded all together to avoid the harsh and unrealistic dichotomy it creates between a modern and non-modern archaeological record.
https://www.academia.edu/4342376/Why_We_Need_an_Alternative_Approach_to_the_Study_of_Modern_Human_Behaviour?email_work_card=view-paper

---

ACADEMIA.EDU – Complex Projectile Technology and Homo sapiens Dispersal into Western Eurasia

PaleoAnthropology 2010: 100–122.

JOHN J. SHEA & MATTHEW L. SISK – Complex Projectile Technology and Homo sapiens Dispersal into Western Eurasia

This paper proposes that complex projectile weaponry was a key strategic innovation driving Late Pleistocene human dispersal into western Eurasia after 50 Ka. It argues that complex projectile weapons of the kind used by ethnographic hunter-gatherers, such as the bow and arrow, and spearthrower and dart, enabled Homo sapiens to overcome obstacles that constrained previous human dispersal from Africa to temperate western Eurasia. In the East Mediterranean Levant, the only permanent land bridge between Africa and Eurasia, stone and bone projectile armatures like those used in the complex weapon systems of recent humans appear abruptly ca 45–35 Ka in early Upper Paleolithic contexts associated with Homo

sapiens fossils. Such artifacts are absent from Middle Paleolithic contexts associated with Homo sapiens and Neandertals. Hypotheses concerning the indigenous vs. exogenous origins of complex projectile weaponry in the Levant are reviewed. Current evidence favors the hypothesis that complex projectile technology developed as an aid to ecological niche broadening strategies among African populations between 50–100 Ka. It most likely spread to western Eurasia along with dispersing Homo sapiens populations. Neandertals did not routinely deploy projectile weapons as subsistence aids. This puzzling gap in their otherwise impressive record for survival in some of the harshest environments ever occupied by primates may reflect energetic constraints and time-budgeting factors associated with complex technology.
https://www.academia.edu/2619536/John_J_Shea_and_Matthew_L_Sisk_2010_Complex_Projectile_Technology_and_Homo_sapiens_Dispersal_from_Africa_to_Western_Eurasia_Paleoanthropology_2010_100_122?email_work_card=minimal-title

ACADEMIA.EDU – Transitions Great and Small

Archaeopress, Oxford, UK (2007).

JULIEN RIEL-SALVATORE & GEOFFREY CLARK – Transitions Great and Small: New Approaches to the Study of the Early Upper Paleolithic 'Transitional' Industries of Western Eurasia

This volume comprises nine original essays first presented in the symposium Upper Paleolithic 'Transitional' Industries: New Questions, New Methods on March 21,2002, at the 67th annual meetings of the Society for American Archaeology. The impetus behind both the symposium and the book is a resurgence of interest in the Middle-Upper Paleolithic transition (hereafter 'the Transition') fueled by recent discoveries and by recent reinterpretations of the nature of change over the Transition interval, generally taken to be the 10 millennia bracketing 40 kya. Although the basic analytical units(indeed, the Transition itself) are artifacts of the historical development of Paleolithic archaeology, their persistence into the 21st century can create serious difficulties in understanding a whole range of culture process questions focusing on changing human adaptation over the120 millennia of the Upper Pleistocene. Questions arising from these reevaluations have highlighted, among other things, the limited explanatory potential of traditional, culture-historical approaches in helping archaeologists to understand the nature and evolutionary implications of those industries (see discussion in Riel-Salvatore& Clark 2001, Clark & Riel-Salvatore 2006). Through the symposium, we sought to bring together an international panel of researchers involved in this debate to address specific questions related to Transition phenomena, and to identify, outline, and assess the credibility of recent discoveries and new methods developed to study them.
https://www.academia.edu/9871162/New_Approaches_to_the_Study_of_the_Early_Upper_Paleolithic_Transitional_Industries_of_Western_Eurasia?email_work_card=minimal-title

THE CONVERSATION – What archaeology tells us about the music and sounds made by Africa's ancestors

There is not much information on artefacts used by Stone Age humans to make sound and music – but the first comprehensive survey is a good start.
https://theconversationuk.cmail19.com/t/r-l-jkuyhuit-khhlilahh-a/

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

YUKI KINOSHITA et al – A comparison of axial trunk rotation during bipedal walking between humans and Japanese macaques

Human walking involves out-of-phase axial rotations of the thorax and pelvis. It has long been believed that this rotational capability is a distinctive feature of the genus Homo. However, Thompson et al. (2015) showed that chimpanzees also counter-rotate their thorax relative to the pelvis during bipedal walking, which raised questions regarding the origins and development of this characteristic. In this study, we measured the axial rotation of the trunk during bipedal walking in humans and macaques to investigate if intra-trunk axial rotations are observed in non-hominoid primate species.
Although trunk rotations in the global coordinate system were greater in macaques than in humans, the intra-trunk rotation and range of motion showed a similar pattern in the two species.
Thoracic rotation relative to the pelvis during bipedal walking is not unique to the hominid lineage but rather a characteristic generated by the mechanical requirements of bipedal walking. The fact that the range of motion of counter rotation is similar in these species infers that an optimal range of rotation exists for bipedal walking.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24136?campaign=wolearlyview

BRIAN J. ADDISON & DANIEL E. LIEBERMAN – Assessing patterns of variation in BV/TV in the calcaneus and C2 vertebra of Gorilla gorilla, Pan troglodytes, and populations of Homo sapiens from the Pleistocene and Holocene that differ in physical activity levels

Because trabecular bone volume fraction (BV/TV) is influenced by variations in physical activity, recent declines in BV/TV in humans are often attributed to modern sedentary lifestyles. This study tests the hypothesis that presumed variations in mechanical loading between groups can predict the observed BV/TV patterns in humans, chimpanzees and gorillas in two bones: the calcaneus which experiences high and well characterized impact forces, and the C2 vertebrae which experiences reduced locomotor forces. The results suggest that phenomena other than or in addition to variations in physical activity are

needed to explain BV/TV patterns observed in H. sapiens, and point to a systemic decline in H. sapiens BV/TV after the Pleistocene.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24064?campaign=woletoc

DEBRA R. BOLTER & NOEL CAMERON – Utilizing auxology to understand ontogeny of extinct hominins: A case study on Homo naledi

The methods used to study human growth and development (auxology) have not previously been applied within the setting of hominin maturation (ontogeny). Ontogeny is defined here as the pattern of biological change into an adult form, both at the individual and species level. The hominin fossil record has a lack of recovered immature materials, due to such factors as taphonomic processes that destroy pre-adults; the fragility of immature compared to adult bone; and the lower mortality rates of juveniles compared to adults. The recent discovery of pre-adult hominin skeletal material from a single, homogeneous Homo naledi species from the Rising Star cave system in South Africa provides the opportunity for a broader application of auxology methods and thus the need to understand their use in a modern context. Human auxology studies benefit from a robust database, across multiple populations, and with longitudinal studies in order to assess the patterns and variations in typical growth, development and life history stages. Here, we review the approach, vocabulary, and methods of these human studies, investigate commonalities in data with the fossil record, and then advance the reconstruction of ontogeny for the extinct hominin species H. naledi. To this end, we apply an auxology model into the paleontological context to broadly predict H. naledi birthweight of the offspring at 2.06 kg with a range (±1 SD) of 1.89 to 2.24 kg, with a length at birth 45.5 cm. We estimate a H. naledi juvenile partial skeleton DH7 to be a height of 111–125 cm at death.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24088?campaign=woletoc

Animal Behaviour

PAPERS

KATHERINE E. JOHNSON & CHRISTOPHER J. CLARK – Ontogeny of vocal learning in a hummingbird

Hummingbirds have evolved to learn song from conspecifics independently of other bird clades that show this behaviour, such as parrots and oscine passerines. Little is known about how vocal learning occurs in hummingbirds. To determine the conditions necessary and sufficient for learning, we raised young Costa's hummingbirds, Calypte costae, in isolation in two experiments. The first experiment tested whether three pairs of males, raised either in silence or with only acoustic exposure to song, would produce wild-type song. They did not: each pair instead produced 'isolate' songs dissimilar to wild-type song. Each pair produced a unique isolate song with subtle differences from other pairs. Thus, exposure to song alone is insufficient to trigger learning. The second experiment tested whether individually housed males would learn songs when exposed to a live male model plus playback of song (1 h/day, 3 days/week, for 3 months). Seven of eight birds that heard Costa's-like songs learned to sing their tutor song. Each individual produced song that matched idiosyncratic features of the individual songs played to them, demonstrating attention to, and learning of the exact acoustic stimuli received. Two control birds exposed to acoustically dissimilar Anna's hummingbird, Calypte anna, song developed isolate song. Thus, exposure to species-specific song with a conspecific male is sufficient to trigger learning. The sensory phase began after fledging, around 23 days posthatch, and the sensorimotor phase began around 50 days posthatch, when singing also began. Song crystallization occurred approximately 125 days posthatch. Costa's also appear to be statistical learners; they learn to sing the songs they hear most often. Hummingbird song ontogeny appears to be similar to song ontogeny in passerines, despite its convergent origin.
https://www.sciencedirect.com/science/article/abs/pii/S0003347220302050?dgcid=raven_sd_via_email

Current Anthropology

PAPERS

CHLOE NAHUM-CLAUDEL – Pyrotechnical Mastery and Humanization: Amazonian Cuisine, Care, and Craft in Evolutionary and Semiotic Perspective

In evolutionary biology, as in Amerindian origin myths, the mastery of fire makes us human. The Amazonian Enawenê-nawê are adept pyrotechnicians. Fire is the agent of transformation in their world. They master fire not only to cook food but also to bring health and balance to bodies and to fabricate key items of material culture like ornaments and containers. Demonstrating the analytical productivity of expanding our definition of cookery to encompass craft and care, this ethnographic analysis of fabrication processes suggests that pyrotechnical mastery is a privileged means by which humanity is established in an ongoing evolutionary dialectic between mind and world. This argument is developed through an original reading of Lévi-Strauss's structuralism that highlights commonalities with the semiotic theories of C. S. Peirce. In a broader sense, the article illustrates the potential of semiotic analyses to contribute to the study of evolved human capacities that set humans apart from other species.
https://www.journals.uchicago.edu/doi/abs/10.1086/710356

LAURA SIRAGUSA, CLINTON N. WESTMAN & SARAH C. MORITZ – Shared Breath: Human and Nonhuman Copresence through Ritualized Words and Beyond

We introduce and elaborate on the notion of "shared breath" as a way of understanding human and nonhuman copresence and offer descriptions and narratives about three Indigenous groups in Russia and Canada, namely, Veps, Western Woods Cree, and Interior Salish St'át'imc. These data illustrate vividly how the underused metaphor of shared breath sheds light on active participation in life by and respectful relations with nonhuman beings, thus surpassing other overly used spatial, physical, and spiritual metaphors. We move beyond the physical aspects of discrete spaces and materials in extending consideration to pertinent metaphorical and tangible aspects of the verbal, sonorous, and ritual performances undertaken by humans in order to negotiate and reinforce relations with other beings. Relationality is continuously accommodated and regenerated by human and nonhuman agencies through ritual acts that include blowing, chants, breathing, drumming, visualizing, and smoking. The shared breath through which these encounters take place emblematizes turning moments, when new directions may be taken and long-term relations of respect may be established, validated, and reinforced. Shared breath is both a medium and a modality of shamanic and animist relationality, offering a new way of looking at human-nonhuman contact and exchange in animist ritual contexts and beyond.
https://www.journals.uchicago.edu/doi/abs/10.1086/710139

Evolutionary Anthropology

PAPERS

METIN I. EREN, STEPHEN J. LYCETT & MASAKI TOMONAGA – Underestimating Kanzi? Exploring Kanzi-Oldowan comparisons in light of recent human stone tool replication

The knapping experiments with Kanzi, a bonobo, are among the most insightful experiments into Oldowan technology ever undertaken. Comparison of his artifacts against archeological material, however, indicated he did not produce Oldowan lithic attributes precisely, prompting suggestions that this indicated cognitive or biomechanical impediments. The literature describing the learning environment provided to Kanzi, we suggest, indicates alternative factors. Based on consideration of wild chimpanzee learning environments, and experiments with modern knappers that have looked at learning environment, we contend that Kanzi's performance was impeded by an impoverished learning environment compared to those experienced by novice Oldowan knappers. Such issues are precisely those that might be tested via a repeat study, but in this case, practical and ethical constraints likely impede this possibility. We propose experiments that may be relevant to drawing conclusions from Kanzi's experiments that may not need to use non-human primates, thus bypassing some of these issues.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21858?campaign=wolearlyview

RAYMOND CORBEY – Baldwin effects in early stone tools

A sizeable dataset comprising millions of lithic artifacts sampling over two million years of early paleolithic tool technology from Africa and Eurasia is now available. The widespread presupposition of an exclusively cultural, that is, socially learned, nature of early stone tools from at least Acheulean times onwards has been challenged by researchers who hypothesize that these tools, a crucial element of early hominin survival strategies, may partly have been under genetic control, next to the effects of various other determinants. The discussion this hypothesis has sparked off in the present journal is here explored somewhat further, focusing on the Baldwin effect.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21864?campaign=wolearlyview

---

Frontiers in Neuroscience

PAPERS

JEAN-MARIE GRAÏC et al – Asymmetry in the Cytoarchitecture of the Area 44 Homolog of the Brain of the Chimpanzee Pan troglodytes

The evolution of the brain in apes and man followed a joint pathway stemming from common ancestors 5–10 million years ago. However, although apparently sharing similar organization and neurochemical properties, association areas of the isocortex remain one of the cornerstones of what sets humans aside from other primates. Brodmann's area 44, the area of Broca, is known for its implication in speech, and thus indirectly is a key mark of human uniqueness. This latero-caudal part of the frontal lobe shows a marked functional asymmetry in humans, and takes part in other complex functions, including learning and imitation, tool use, music and contains the mirror neuron system (MNS). Since the main features in the cytoarchitecture of Broca's area remains relatively constant in hominids, including in our closest relative, the chimpanzee Pan troglodytes, investigations on the finer structure, cellular organization, connectivity and eventual asymmetry of area 44 have a direct bearing on the understanding of the neural mechanisms at the base of our language. The semi-automated image analysis technology that we employed in the current study showed that the structure of the cortical layers of the chimpanzee contains elements of asymmetry that are discussed in relation to the corresponding human areas and the putative resulting disparity of function.
https://www.frontiersin.org/articles/10.3389/fnana.2020.00055/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1417202_55_Neuros_20200901_arts_A

YI ZENG et al – A Brain-Inspired Model of Theory of Mind

Theory of mind (ToM) is the ability to attribute mental states to oneself and others, and to understand that others have beliefs that are different from one's own. Although functional neuroimaging techniques have been widely used to establish the neural correlates implicated in ToM, the specific mechanisms are still not clear. We make our efforts to integrate and adopt existing biological findings of ToM, bridging the gap through computational modeling, to build a brain-inspired computational model for ToM. We propose a Brain-inspired Model of Theory of Mind (Brain-ToM model), and the model is applied to a humanoid robot to challenge the false belief tasks, two classical tasks designed to understand the mechanisms of ToM from Cognitive Psychology. With this model, the robot can learn to understand object permanence and visual access from self-experience, then uses these learned experience to reason about other's belief. We computationally validated that the self-experience, maturation of correlate brain areas (e.g., calculation capability) and their connections (e.g., inhibitory control) are essential for ToM, and they have shown their influences on the performance of the participant robot in false-belief task. The theoretic modeling and experimental validations indicate that the model is biologically plausible, and computationally feasible as a foundation for robot theory of mind.
https://www.frontiersin.org/articles/10.3389/fnbot.2020.00060/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1417202_55_Neuros_20200901_arts_A

Journal of Language Evolution

PAPERS

SEÁN G ROBERTS et mul with CHRISTOPHER OPIE – CHIELD: the causal hypotheses in evolutionary linguistics database

Language is one of the most complex of human traits. There are many hypotheses about how it originated, what factors shaped its diversity, and what ongoing processes drive how it changes. We present the Causal Hypotheses in Evolutionary Linguistics Database (CHIELD, https://chield.excd.org/), a tool for expressing, exploring, and evaluating hypotheses. It allows researchers to integrate multiple theories into a coherent narrative, helping to design future research. We present design goals, a formal specification, and an implementation for this database. Source code is freely available for other fields to take advantage of this tool. Some initial results are presented, including identifying conflicts in theories about gossip and ritual, comparing hypotheses relating population size and morphological complexity, and an author relation network.
https://academic.oup.com/jole/article-abstract/5/2/101/5821004?redirectedFrom=fulltext

JORDAN ZLATEV, PRZEMYSŁAW ŻYWICZYŃSKI & SŁAWOMIR WACEWICZ – Pantomime as the original human-specific communicative system

We propose reframing one of the key questions in the field of language evolution as what was the original human-specific communicative system? With the help of cognitive semiotics, first we clarify the difference between signals, which characterize animal communication, and signs, which do not replace but complement signals in human communication. We claim that the evolution of bodily mimesis allowed for the use of signs, and the social-cognitive skills needed to support them to emerge in hominin evolution. Neither signs nor signals operate single-handedly, but as part of semiotic systems. Communicative systems can be either monosemiotic or polysemiotic—the former consisting of a single semiotic system and the latter, of several. Our proposal is that pantomime, as the original human-specific communicative system, should be characterized as polysemiotic: dominated by gesture but also including vocalization, facial expression, and possibly the rudiments of depiction. Given that pantomimic gestures must have been maximally similar to bodily actions, we characterize them as typically (1) dominated by iconicity, (2) of the primary kind, (3) involving the whole body, (4) performed from a first-person perspective, (5) concerning peripersonal space, and (6) using the Enacting mode of representation.
https://academic.oup.com/jole/article/5/2/156/5899988

MÁRTON SÓSKUTHY & TIMO B ROETTGER – When the tune shapes morphology: The origins of vocatives

Many languages use pitch to express pragmatic meaning (henceforth 'tune'). This requires segmental carriers with rich harmonic structure and high periodic energy, making vowels the optimal carriers of the tune. Tunes can be phonetically impoverished when there is a shortage of vowels, endangering the recovery of their function. This biases sound systems towards the optimisation of tune transmission by processes such as the insertion of vowels. Vocative constructions—used to attract and maintain the addressee's attention—are often characterised by specific tunes. Many languages additionally mark vocatives morphologically. In this article, we argue that one potential pathway for the emergence of vocative morphemes is the morphological re-analysis of tune-driven phonetic variation that helps to carry pitch patterns. Looking at a corpus of 101 languages, we compare vocatives to structural case markers in terms of their phonological make-up. We find that vocatives are often characterised by additional prosodic modulation (vowel lengthening, stress shift, tone change) and contain substantially fewer consonants, supporting our hypothesis that the acoustic properties of tunes interact with segmental features and can shape the emergence of morphological markers. This fits with the view that the efficient transmission of information is a driving force in the evolution of languages, but also highlights the importance of defining 'information' broadly to include pragmatic, social, and affectual components alongside propositional meaning.
https://academic.oup.com/jole/article-abstract/5/2/140/5899950?redirectedFrom=fulltext

GARETH ROBERTS & ROBIN CLARK – Dispersion, communication, and alignment: an experimental study of the emergence of structure in combinatorial phonology

Languages exhibit structure at a number of levels, including at the level of phonology, the system of meaningless combinatorial units from which words are constructed. Phonological systems typically exhibit greater dispersion than would be expected by chance. Several theoretical models have been proposed to account for this, and a common theme is that such organization emerges as a result of the competing forces acting on production and perception. Fundamentally, this implies a cultural evolutionary explanation, by which emergent organization is an adaptive response to the pressures of communicative interaction. This process is hard to investigate empirically using natural-language data. We therefore designed an experimental task in which pairs of participants play a communicative game using a novel medium in which varying the position of one's finger on a trackpad produced different colors. This task allowed us to manipulate the alignment of pressures acting on production and perception. Here we used it to investigate (1) whether above-chance levels of dispersion would emerge in the resulting systems, (2) whether dispersion would correlate with communicative success, and (3) how systems would differ if the pressures acting on perception were misaligned with pressures acting on production (and which would take precedence). We found that above-chance levels of dispersion emerged when pressures were aligned, but that the primary driver of communicative success was the alignment of production and perception pressures rather than dispersion itself. When they were misaligned, participants both found the task harder and (driven by perceptual demands) created systems with lower levels of dispersion.
https://academic.oup.com/jole/article-abstract/5/2/121/5837951?redirectedFrom=fulltext

COMMENTARIES

M A C (RINY) HUYBREGTS – Biting into evolution of language

Do changes in subsistence mode ('cultural evolution') induce changes in human biology that shape language? In a recent research article Blasi and colleagues (Blasi et al. 2019) deliver on Hockett's conjecture (Hockett 1985) that 'labiodentals […] are overwhelmingly absent in languages whose speakers live from hunting and gathering' (Blasi et al. 2019). They offer convincing arguments that 'post-Neolithic emergence of overbite and overjet persistence led to reduced effort when producing labiodentals' (Blasi et al. 2019). The change in bite itself is a consequence, in part, of a change in subsistence type from hunting–gathering to production of soft food that demands relatively less extensive tooth wear. The worldwide association between subsistence type and labiodentals, accounting for the relative absence of labiodentals in languages spoken by hunter–gatherers, and the relative increase of labiodentals during the history of Indo-European, matching the spread of agriculture in early Indo-European societies, thus fall into place. Their conclusion '… we can no longer take for granted that the diversity of speech has remained stable since the emergence of Homo sapiens' (Blasi et al. 2019) may be unsurprisingly correct and not far removed from truism. On this account language is shaped in part by culturally induced changes in human biology. They then continue 'As such, claims of language universals, deep linguistic history, and language evolution cannot rely on a uniformitarian assumption without considering the wider anthropological context of language' (Blasi et al. 2019). But this conclusion is surprisingly incorrect and far removed from any understanding of the basic property of language. The quote includes a reference to Newmeyer (2002), who discusses alternative positions, concluding that 'no firm conclusion is possible, given the speculative nature of the enterprise.' In fact, as will be discussed below, the one case that is relevant for non-uniformitarianism discussed there receives a superior interpretation favoring the contrary position.
https://academic.oup.com/jole/article/5/2/175/5866252

STEVEN MORAN & BALTHASAR BICKEL – Rejoinder to Huijbregts's: Biting into Evolution of Language

Huijbregts's commentary about our paper (Blasi et al. 2019) gives us the opportunity to highlight an ongoing problem in the investigation of language evolution that has hindered its research since the 19th century: the lack of engagement with empirical data. This problem stems partially from the issue of how language is defined, and consequently, how researchers engage in meaningful evolutionary investigations. First, we discuss this general issue and then we will assess Huijbregts's lack of engagement with empirical data and the state-of-the art with regard to his comments on phonetics and phonology.
https://academic.oup.com/jole/article-abstract/5/2/184/5890270?redirectedFrom=fulltext

---

Nature Communications

ARTICLES

DANIEL YON, CECILIA HEYES & CLARE PRESS – Beliefs and desires in the predictive brain

Bayesian brain theories suggest that perception, action and cognition arise as animals minimise the mismatch between their expectations and reality. This principle could unify cognitive science with the broader natural sciences, but leave key elements of cognition and behaviour unexplained.
https://www.nature.com/articles/s41467-020-18332-9

Nature Scientific Reports

PAPERS

MASOUD YOUSEFI et al – Species distribution models advance our knowledge of the Neanderthals' paleoecology on the Iranian Plateau

Neanderthals (Homo neanderthalensis) were distributed across a vast region from Europe to western and Central Asia. The Neanderthals' paleoecology and distribution has been extensively studied in Europe where the species originated. However, very little is known about their paleoecology in south-western Asia. Here, we employed species distribution modelling and 45 Middle Palaeolithic (c. 200,000–40,000 years BCE) sites location associated with fossil and/or lithic artefacts made by the Neanderthals to examine the expansion of the Neanderthals on the Iranian Plateau in south-western Asia. We estimated the niche overlap between Neanderthals and wild goat, wild sheep and Persian gazelle by modelling their past distribution using 200, 143 and 110 occurrence records respectively. The results show that Neanderthals had highest niche overlap with wild goat in the study area. This analysis revealed that the most suitable Neanderthals' habitats in south-western Asia were located in the Zagros Mountains stretches from north-western and western and some isolated patches in the central parts of the Iranian Plateau. The annual precipitation and maximum temperature of the warmest month were the most important predictor of the species' distribution. This finding shows that the southern edge of the Neanderthals distribution was limited by warm summer. Our results provide important information for future field investigations and excavations in the area.
https://www.nature.com/articles/s41598-020-71166-9

PeerJ

PAPERS

GLADEZ SHORLAND et al with & KLAUS ZUBERBÜHLER – Investigating self-recognition in bonobos: mirror exposure reduces looking time to self but not unfamiliar conspecifics

The question of whether animals have some sort of self-awareness is a topic of continued debate. A necessary precondition for self-awareness is the ability to visually discriminate the self from others, which has traditionally been investigated through mirror self-recognition experiments. Although great apes generally pass such experiments, interpretations of results have remained controversial. The aim of this study was to investigate how bonobos (Pan paniscus) respond to different types of images of themselves and others, both before and after prolonged mirror exposure. We first presented presumably mirror-naive subjects with representations of themselves in three different ways (mirror image, contingent and non-contingent video footage) as well as representations of others (video footage of known and unknown conspecifics). We found that subjects paid significantly less attention to contingent images of themselves (mirror image, video footage) than to non-contingent images of themselves and unfamiliar individuals, suggesting they perceived the non-contingent self-images as novel. We then provided subjects with three months of access to a large mirror centrally positioned in the enclosure. Following this manipulation, subjects showed significantly reduced interest in the non-contingent self-images, while interest in unknown individuals remained unchanged, suggesting that the mirror experience has led to a fuller understanding of their own self. We discuss implications of this preliminary investigation for the on-going debate on self-awareness in animals.
https://peerj.com/articles/9685/

JORDI CAMÍ, ALEX GOMEZ-MARIN & LUIS M. MARTÍNEZ – On the cognitive bases of illusionism

Cognitive scientists have paid very little attention to magic as a distinctly human activity capable of creating situations that are considered impossible because they violate expectations and conclude with the apparent transgression of well-established cognitive and natural laws. This illusory experience of the "impossible" entails a very particular cognitive dissonance that is followed by a subjective and complex "magical experience". Here, from a perspective inspired by visual neuroscience and ecological cognition, we propose a set of seven fundamental cognitive phenomena (from attention and perception to memory and decision-making) plus a previous pre-sensory stage that magicians interfere with during the presentation of their effects. By doing so, and using as an example the deconstruction of a classic trick, we show how magic offers novel and powerful insights to study human cognition. Furthermore, live magic performances afford to do so in tasks that are more ecological and context-dependent than those usually exploited in artificial laboratory settings. We thus believe that some of the mysteries of how the brain works may be trapped in the split realities present in every magic effect.
https://peerj.com/articles/9712/

PNAS

PAPERS

WEIYAN YIN et al – The emergence of a functionally flexible brain during early infancy

Adult brains are functionally flexible, a unique characteristic that is thought to contribute to cognitive flexibility. While tools to assess cognitive flexibility during early infancy are lacking, we aimed to assess the spatiotemporal developmental features of "neural flexibility" during the first 2 y of life. Fifty-two typically developing children 0 to 2 y old were longitudinally imaged up to seven times during natural sleep using resting-state functional MRI. Using a sliding window approach, MR-derived neural flexibility, a quantitative measure of the frequency at which brain regions change their allegiance from one functional module to another during a given time period, was used to evaluate the temporal emergence of neural flexibility during early infancy. Results showed that neural flexibility of whole brain, motor, and high-order brain functional networks/regions

increased significantly with age, while visual regions exhibited a temporally stable pattern, suggesting spatially and temporally nonuniform developmental features of neural flexibility. Additionally, the neural flexibility of the primary visual network at 3 mo of age was significantly and negatively associated with cognitive ability evaluated at 5/6 y of age. The "flexible club," comprising brain regions with neural flexibility significantly higher than whole-brain neural flexibility, were consistent with brain regions known to govern cognitive flexibility in adults and exhibited unique characteristics when compared to the functional hub and diverse club regions. Thus, MR-derived neural flexibility has the potential to reveal the underlying neural substrates for developing a cognitively flexible brain during early infancy.
https://www.pnas.org/content/early/2020/08/26/2002645117.abstract?etoc

ALEXANDER EHLERT et al – Human social preferences cluster and spread in the field
While it is undeniable that the ability of humans to cooperate in large-scale societies is unique in animal life, it remains open how such a degree of prosociality is possible despite the risks of exploitation. Recent evidence suggests that social networks play a crucial role in the development of prosociality and large-scale cooperation by allowing cooperators to cluster; however, it is not well understood if and how this also applies to real-world social networks in the field. We study intrinsic social preferences alongside emerging friendship patterns in 57 freshly formed school classes (n = 1,217), using incentivized measures. We demonstrate the existence of cooperative clusters in society, examine their emergence, and expand the evidence from controlled experiments to real-world social networks. Our results suggest that being embedded in cooperative environments substantially enhances the social preferences of individuals, thus contributing to the formation of cooperative clusters. Partner choice, in contrast, only marginally contributes to their emergence. We conclude that cooperative preferences are contagious; social and cultural learning plays an important role in the development and evolution of cooperation.
https://www.pnas.org/content/early/2020/08/31/2000824117.abstract?etoc

EDOUARD BARD et al – Extended dilation of the radiocarbon time scale between 40,000 and 48,000 y BP and the overlap between Neanderthals and Homo sapiens
The new radiocarbon calibration curve (IntCal20) allows us to calculate the gradient of the relationship between 14C age and calendar age over the past 55 millennia before the present (55 ka BP). The new gradient curve exhibits a prolonged and prominent maximum between 48 and 40 ka BP during which the radiocarbon clock runs almost twice as fast as it should. This radiocarbon time dilation is due to the increase in the atmospheric 14C/12C ratio caused by the 14C production rise linked to the transition into the Laschamp geomagnetic excursion centered around 41 ka BP. The major maximum in the gradient from 48 to 40 ka BP is a new feature of the IntCal20 calibration curve, with far-reaching impacts for scientific communities, such as prehistory and paleoclimatology, relying on accurate ages in this time range. To illustrate, we consider the duration of the overlap between Neanderthals and Homo sapiens in Eurasia.
https://www.pnas.org/content/117/35/21005.abstract?etoc

ARTICLES

BERNARD A. WOOD & DAVID B. PATTERSON – Paranthropus through the looking glass
Most research and public interest in human origins focuses on taxa that are likely to be our ancestors. There must have been genetic continuity between modern humans and the common ancestor we share with chimpanzees and bonobos, and we want to know what each link in this chain looked like and how it behaved. However, the clear evidence for taxic diversity in the human (aka hominin) clade means that we also have close relatives who are not our ancestors (1). Two papers in PNAS focus on the behavior and paleoenvironmental context of Paranthropus boisei, a distinctive and long-extinct nonancestral relative that lived alongside our early Homo ancestors in eastern Africa between just less than 3 Ma and just over 1 Ma. Both papers use stable isotopes to track diet during a largely unknown, but likely crucial, period in our evolutionary history.
https://www.pnas.org/content/early/2020/09/01/2016445117?etoc=

Science

ARTICLES

DELIA BALDASSARRI & MARIA ABASCAL – Diversity and prosocial behavior
Immigration and globalization have spurred interest in the effects of ethnic diversity in Western societies. Most scholars focus on whether diversity undermines trust, social capital, and collective goods provision. However, the type of prosociality that helps heterogeneous societies function is different from the in-group solidarity that glues homogeneous communities together. Social cohesion in multiethnic societies depends on whether prosocial behavior extends beyond close-knit networks and in-group boundaries. We identify two features of modern societies—social differentiation and economic interdependence—that can set the stage for constructive interactions with dissimilar others. Whether societal adaptations to diversity lead toward integration or division depends on the positions occupied by minorities and immigrants in the social structure and economic system, along with the institutional arrangements that determine their political inclusion.
https://science.sciencemag.org/content/369/6508/1183

Science Advances

PAPERS

CARRIN M. HALFFMAN et al – Ancient Beringian paleodiets revealed through multiproxy stable isotope analyses

The earliest Native Americans have often been portrayed as either megafaunal specialists or generalist foragers, but this debate cannot be resolved by studying the faunal record alone. Stable isotope analysis directly reveals the foods consumed by individuals. We present multi-tissue isotope analyses of two ancient Beringian infants from the upward sun river site (USR), Alaska (~11,500 years ago). Models of fetal bone turnover combined with seasonally-sensitive taxa show that the carbon and nitrogen isotope composition of USR infant bone collagen reflects maternal diets over the summer. Using comparative faunal isotope data, we demonstrate that although terrestrial sources dominated maternal diets, salmon was also important, supported by carbon isotope analysis of essential amino acids and bone bioapatite. Tooth enamel samples indicate increased salmon use between spring and summer. Our results do not support either strictly megafaunal specialists or generalized foragers but indicate that ancient Beringian diets were complex and seasonally structured.
https://advances.sciencemag.org/content/6/36/eabc1968?utm_campaign=toc_advances_2020-09-04&et_rid=17774313&et_cid=3471286

To subscribe to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact martin.edwardes@btopenworld.com.

To unsubscribe from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

Produced by and for the EAORC email group

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.

EAORC website information is at http://martinedwardes.me.uk/eaorc/

If you have received this bulletin, and are unhappy about receiving it, please contact martin.edwardes@btopenworld.com.