EAORC BULLETIN 870 – 16 February 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.

SCIENCE NEWS – World's largest linguistics database is getting too expensive for some researchers

It was 2015 when Gary Simons knew that something had to change. That was the year spare funds started to dry up at the Summer Institute of Linguistics (SIL), a Bible translation group that helped revolutionize the documentation of endangered languages in the mid–20th century. SIL's budget had long supported Simons's passion project: Ethnologue—or "the Ethnologue" as many researchers call it—a massive online database considered by many to be the definitive source for information on the world's languages.
https://www.sciencemag.org/news/2020/02/world-s-largest-linguistics-database-getting-too-expensive-some-researchers?utm_campaign=news_daily_2020-02-10&et_rid=17774313&et_cid=3201795

SCIENCE NEWS – Is an Aboriginal tale of an ancient volcano the oldest story ever told?

Long ago, four giant beings arrived in southeast Australia. Three strode out to other parts of the continent, but one crouched in place. His body transformed into a volcano called Budj Bim, and his teeth became the lava the volcano spat out. Now, scientists say this tale—told by the Aboriginal Gunditjmara people of the area—may have some basis in fact. About 37,000 years ago, Budj Bim and another nearby volcano formed through a rapid series of eruptions, new evidence reveals, suggesting the legend may be the oldest story still being told today.
https://www.sciencemag.org/news/2020/02/aboriginal-tale-ancient-volcano-oldest-story-ever-told?utm_campaign=news_daily_2020-02-11

SCIENCE NEWS – Maps of a now-submerged land help reconstruct the lives of ancient Europeans

A region beneath the rough waters of the North Sea, known as Doggerland, holds archaeological clues to the past. Watch how researchers are using advances in mapping and leads from dredging sites to piece together the history of this vanished landscape.
https://www.sciencemag.org/news/2020/02/maps-now-submerged-land-help-reconstruct-lives-ancient-europeans?utm_campaign=news_daily_2020-02-13&et_rid=17774313&et_cid=3206775

SCIENCE NEWS – Researchers study how birds retweet news

Every social network has its fake news. And in animal communication networks, even birds discern the trustworthiness of their neighbors, a new study suggests.
"We kind of wish people behaved like nuthatches," Greene said.
https://www.sciencedaily.com/releases/2020/02/200214134745.htm

SCIENCE NEWS – Our memory prefers essence over form

What clues does our memory use to connect a current situation to a situation from the past? The researchers have demonstrated that similarities in structure and essence guide our recollections rather than surface similarities. It is only when

individuals lack sufficient knowledge that they turn to the surface clues to recollect a situation. These results are relevant in the field of education. They underline the need to focus on the conceptual aspects of situations.
https://www.sciencedaily.com/releases/2020/02/200214111506.htm

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SOCIETY FOR SCIENCE – Ancient skeleton from an underwater cave sheds light on early Americans

A nearly 10,000-year-old skeleton discovered in a submerged Mexican cave provides more clues to how and when people settled the Americas.
http://click.societyforscience-email.com/?qs=e550db808f26f5c865d442720ae5efb8ee0f3745d4f1524500d608d472fc62c7f9908e036f42063a874f5a235b7a9882e8f1582eede5452d

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SOCIETY FOR SCIENCE – Some West Africans may have genes from an ancient 'ghost' hominid

A humanlike population undiscovered in fossils may have passed helpful DNA on to human ancestors in West Africa starting around 24,000 years ago.
http://click.societyforscience-email.com/?qs=9063d6bc79c93a00469917155ceeeffb9e63d5b66438de02bc5da07916175d5fec1e6511d2b41e68444bf780e0d6d8b047606d50353f04d9

SCIAM NEWS – Why Do We Laugh?

We laugh even before we can speak, but why? Science has some answers to the mystery of human laughter, and some of them might surprise you.
https://www.scientificamerican.com/article/why-do-we-laugh/

BREAKING SCIENCE – Female Burrunan Dolphins Form Social Clusters: Study

Like giraffes, lions, hyenas and grey kangaroos, female Burrunan dolphins (Tursiops australis), a species of bottlenose dolphin endemic to southern Australian coastal waters, form social bonds with kin and other females in similar reproductive condition, while maintaining moderate and loose social bonds with some same-sex individuals, according to new research from Flinders University.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/QDHNfrzSOnE/female-burrunan-dolphins-social-clusters-08111.html?utm_source=feedburner&utm_medium=email

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BREAKING SCIENCE – West Africans Carry DNA from Mysterious Archaic Hominin

Four West African populations — Yoruba, Esan, Mende, and Gambian — derive 2 to 19% of their genetic ancestry from a yet-undiscovered species of archaic hominin that diverged before the split of modern humans and the ancestors of Neanderthals and Denisovans, according to new research from the University of California, Los Angeles.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/VQ8ZgwISfZI/west-africans-dna-archaic-hominin-08123.html?utm_source=feedburner&utm_medium=email

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SCIENCE DAILY – Linguistics: The pronunciation paradox

Learners of foreign languages can hear the errors in pronunciation that fellow learners tend to make, but continue to fall foul of them themselves despite years of practice. A new study shows that everyone believes their own pronunciation to be best.
https://www.sciencedaily.com/releases/2020/02/200207141658.htm

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SCIENCE DAILY – Stimulation of areas vital to consciousness in monkeys' brains wakes them up

One of the central questions in neuroscience is clarifying where in the brain consciousness, which is the ability to experience internal and external sensations, arises. Researchers report that a specific area in the brain, the central lateral thalamus, appears to play a key role. In monkeys under anesthesia, stimulating this area was enough to wake the animals and elicit normal waking behaviors.
https://www.sciencedaily.com/releases/2020/02/200212111440.htm

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SCIENCE DAILY – Babies mimic songs, study finds

Researchers -- and parents -- have long known that babies learn to speak by mimicking the words they hear. But a new study shows that babies also might try to imitate the singing they hear in songs.
https://www.sciencedaily.com/releases/2020/02/200213090726.htm

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ACADEMIA.EDU – Pigments from the Middle Palaeolithic levels of Es-Skhul

Journal of Archaeological Science 37 (2010) 3099e3110

FRANCESCO D'ERRICO et al with CHRIS STRINGER – Pigments from the Middle Palaeolithic levels of Es-Skhul (Mount Carmel, Israel)

Discovery of pigments at Middle Palaeolithic sites is of interest in the context of the ongoing debate about the tempo and mode of the emergence of modern human behaviour. Here we analyse four previously undescribed fragments of pigmental material from Es-Skhul shelter, layer B, Israel, McCown excavations, identi!ed at the Department of Palaeontology, Natural History Museum, London. One of them is still partially embedded in the hard breccia characteristic of this layer. Inspection of breccia fragments from layer B has led to the identi!cation of small pieces of red and orange pigmental material still enclosed in large clasts, further corroborating the attribution of the larger pieces analysed in this study to layer B. The four objects are studied using optical microscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Energy Dispersive X-ray (EDX), X-ray micro-diffraction (m-XRD), Particle-Induced X-Ray Emission Spectrometry (PIXE), and Proton-Induced Gamma-ray Emission (PIGE). The specimens display various hues of yellow, orange, red, and one of them presents a gradual variation of shade from yellow to dark orange. SEM/EDX analysis identi!es two specimens (Skhul 1 and 2) as being composed of iron-rich calcium phosphate, the third (Skhul 3) of potassium-rich clay with titanium-rich iron oxide inclusions, and the fourth (Skhul 4) of pure iron oxide crystals. TEM/EDX and m-XRD analysis demonstrate that three pieces (Skhul 1, 2 and 4) were heated to at least 300 !C, a process that has partially or completely dehydrated goethite into haematite and changed their pristine yellow colour into orange or red. Skhul 3 shows no sign of heating, suggesting that its haematite content has a geological origin. The different mineral composition of the pieces suggests that they must come from a variety of sources. This implies that the associated collection strategies included the selection of materials that differed not only with respect to colour but also with respect to other physical and chemical properties. Although no formal proof exists that these lumps of pigmental material were deliberately heated, results obtained are consistent with this explanation.
https://www.academia.edu/4994452/Pigments_from_the_Middle_Palaeolithic_levels_of_Es-Skhul_Mount_Carmel_Israel_?email_work_card=title

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ACADEMIA.EDU – Processing ochre in the Middle Stone Age

Journal of Anthropological Archaeology 31 (2012) 174–195

RIAAN F. RIFKIN – Processing ochre in the Middle Stone Age: Testing the inference of prehistoric behaviours from actualistically derived experimental data

The increase in the presence of 'ochre' in African Middle Stone Age contexts has been employed, together with changes in human biology and behaviour, to support the hypothesis that 'modern' cognitive abilities arose in Africa. The consistent exploitation of ochre is interpreted as evidence for colour symbolism, a proxy for the origin of language and a defining aspect of 'modern' human behaviour. That humans attached considerable symbolic value to red ochres in particular is illustrated by ethnographic examples. Research has shown that wear patterns indicative of abrasive processing methods prevail, but many archaeological specimens also exhibit wear traces not derived from grinding or scraping alone. Building on former research, I present here the results of an experimental study devised to infer the methods employed to extract powder from ochre during the African Middle Stone Age. The prospect of ascertaining at least some of the likely uses to which ochre may have been put, is also explored. I conclude that functional data derived from actualistic experiments can be used to enhance our understanding of some aspects of prehistoric behaviour.
https://www.academia.edu/11793292/Processing_ochre_in_the_Middle_Stone_Age_Testing_the_inference_of_prehistoric_behaviours_from_actualistically_derived_experimental_data?email_work_card=view-paper

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SAPIENS – The Life and Meaning of Margaret Mead

The famous anthropologist argued that non-Western cultures offered alternative, often better, ways to be human. Why was she so vilified for it?
https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=d46e049b8d&e=dc0eff6180

THE CONVERSATION – Early humans in Africa may have interbred with a mysterious, extinct species

Early humans in Africa may have interbred with a ghost population that likely split from the ancestors of humans and Neanderthals between 360,000 and 1.02 million years ago.
https://theconversationuk.cmail20.com/t/r-l-jhjhthik-khhlilahh-c/

GUARDIAN SCIENCE – Scientists find evidence of 'ghost population' of ancient humans

Traces of unknown ancestor emerged when researchers analysed genomes from west African populations.
https://www.theguardian.com/science/2020/feb/12/scientists-find-evidence-of-ghost-population-of-ancient-humans

PUBLICATIONS

Biology Letters

PAPERS

AHMED EDDINE et al – Demographic expansion of an African opportunistic carnivore during the Neolithic revolution
The diffusion of Neolithic technology together with the Holocene Climatic Optimum fostered the spread of human settlements and pastoral activities in North Africa, resulting in profound and enduring consequences for the dynamics of species, communities and landscapes. Here, we investigate the demographic history of the African wolf (Canis lupaster), a recently recognized canid species, to understand if demographic trends of this generalist and opportunistic carnivore reflect the increase in food availability that emerged after the arrival of the Neolithic economy in North Africa. We screened nuclear and mitochondrial DNA in samples collected throughout Algeria and Tunisia, and implemented coalescent approaches to estimate the variation of effective population sizes from present to ancestral time. We have found consistent evidence supporting the hypothesis that the African wolf population experienced a meaningful expansion concurring with a period of rapid population expansion of domesticates linked to the advent of agricultural practices.
https://royalsocietypublishing.org/doi/full/10.1098/rsbl.2019.0560

AMMIE K. KALAN et al – Chimpanzees use tree species with a resonant timbre for accumulative stone throwing
Animals use tools for communication relatively rarely compared to tool use for extractive foraging. We investigated the tool-use behaviour accumulative stone throwing (AST) in wild chimpanzees, who regularly throw rocks at trees, producing impact sounds and resulting in the aggregations of rocks. The function of AST remains unknown but appears to be communication-related. We conducted field experiments to test whether impact sounds produced by throwing rocks at trees varied according to the tree's properties. Specifically, we compared impact sounds of AST and non-AST tree species. We measured three acoustic descriptors related to intrinsic timbre quality, and found that AST tree species produced impact sounds that were less damped, with spectral energy concentrated at lower frequencies compared to non-AST tree species. Buttress roots in particular produced timbres with low-frequency energy (low spectral centroid) and slower signal onset (longer attack time). In summary, chimpanzees use tree species capable of producing more resonant sounds for AST compared to other tree species available.
https://royalsocietypublishing.org/doi/full/10.1098/rsbl.2019.0747

HOLLY ROOT-GUTTERIDGE et al – Dogs perceive and spontaneously normalize formant-related speaker and vowel differences in human speech sounds
Domesticated animals have been shown to recognize basic phonemic information from human speech sounds and to recognize familiar speakers from their voices. However, whether animals can spontaneously identify words across unfamiliar speakers (speaker normalization) or spontaneously discriminate between unfamiliar speakers across words remains to be investigated. Here, we assessed these abilities in domestic dogs using the habituation–dishabituation paradigm. We found that while dogs habituated to the presentation of a series of different short words from the same unfamiliar speaker, they significantly dishabituated to the presentation of a novel word from a new speaker of the same gender. This suggests that dogs spontaneously categorized the initial speaker across different words. Conversely, dogs who habituated to the same short word produced by different speakers of the same gender significantly dishabituated to a novel word, suggesting that they had spontaneously categorized the word across different speakers. Our results indicate that the ability to spontaneously recognize both the same phonemes across different speakers, and cues to identity across speech utterances from unfamiliar speakers, is present in domestic dogs and thus not a uniquely human trait.
https://royalsocietypublishing.org/doi/full/10.1098/rsbl.2019.0555

STEPHAN P. KAUFHOLD & EDWIN J. C. VAN LEEUWEN – Why intergroup variation matters for understanding behaviour
Intergroup variation (IGV) refers to variation between different groups of the same species. While its existence in the behavioural realm has been expected and evidenced, the potential effects of IGV are rarely considered in studies that aim to shed light on the evolutionary origins of human socio-cognition, especially in our closest living relatives—the great apes. Here, by taking chimpanzees as a point of reference, we argue that (i) IGV could plausibly explain inconsistent research findings across numerous topics of inquiry (experimental/behavioural studies on chimpanzees), (ii) understanding the evolutionary origins of behaviour requires an accurate assessment of species' modes of behaving across different socio-ecological contexts, which necessitates a reliable estimation of variation across intraspecific groups, and (iii) IGV in the behavioural realm is increasingly likely to be expected owing to the progressive identification of non-human animal cultures. With these points, and by extrapolating from chimpanzees to generic guidelines, we aim to encourage researchers to explicitly consider IGV as an explanatory variable in future studies attempting to understand the socio-cognitive and evolutionary determinants of behaviour in group-living animals.
https://royalsocietypublishing.org/doi/full/10.1098/rsbl.2019.0695

ÇAĞLAR AKÇAY & MICHAEL D. BEECHER – Multi-modal communication: song sparrows increase signal redundancy in noise

Although the effects of anthropogenic noise on animal communication have been studied widely, most research on the effect of noise in communication has focused on signals in a single modality. Consequently, how multi-modal communication is affected by anthropogenic noise is relatively poorly understood. Here, we ask whether song sparrows (Melospiza melodia) show evidence of plasticity in response to noise in two aggressive signals in acoustic and visual modalities. We test two hypotheses: (i) that song sparrows will shift signalling effort to the visual modality (the multi-modal shift hypothesis) and (ii) that they will increase redundancy of their multi-modal signalling (the back-up signal hypothesis). We presented male song sparrows with song playback and a taxidermic mount with or without a low-frequency acoustic noise from a nearby speaker. We found that males did not switch their signalling effort to visual modality (i.e. wing waves) in response to the noise. However, the correlation between warbled soft songs and wing waves increased in the noise treatment, i.e. signals became more redundant. These results suggest that when faced with anthropogenic noise, song sparrows can increase the redundancy of their multi-modal signals, which may aid in the robustness of the communication system.
https://royalsocietypublishing.org/doi/full/10.1098/rsbl.2019.0513

Evolutionary Human Sciences

PAPERS

DANIEL SMITH – Cultural group selection and human cooperation: a conceptual and empirical review

Cultural group selection has been proposed as an explanation for humans' highly cooperative nature. This theory argues that social learning mechanisms, combined with rewards and punishment, can stabilise any group behaviour, cooperative or not. Equilibrium selection can then operate, resulting in cooperative groups outcompeting less-cooperative groups. This process may explain the widespread cooperation between non-kin observed in humans, which is sometimes claimed to be altruistic. This review explores the assumptions of cultural group selection to assess whether it provides a convincing explanation for human cooperation. Although competition between cultural groups certainly occurs, it is unclear whether this process depends on specific social learning mechanisms (e.g. conformism) or a norm psychology (to indiscriminately punish norm-violators) to stabilise groups at different equilibria as proposed by existing cultural group selection models. Rather than unquestioningly adopt group norms and institutions, individuals and groups appear to evaluate, design and shape them for self-interested reasons (where possible). As individual fitness is frequently tied to group fitness, this often coincides with constructing group-beneficial norms and institutions, especially when groups are in conflict. While culture is a vital component underlying our species' success, the extent to which current conceptions of cultural group selection reflect human cooperative evolution remains unclear.
https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/cultural-group-selection-and-human-cooperation-a-conceptual-and-empirical-review/3BEEC0756C9D4DFA7D97A320D9D54AB3

Frontiers in Neuroscience

PAPERS

MAGDALENA WOJTASIK et al – Cytoarchitectonic Characterization and Functional Decoding of Four New Areas in the Human Lateral Orbitofrontal Cortex

A comprehensive concept of the biological basis of reward, social and emotional behavior, and language requires a deeper understanding of the microstructure and connectivity of the underlying brain regions. Such understanding could provide deeper insights into their role in functional networks, and form the anatomical basis of the functional segregation of this region as shown in recent in vivo imaging studies. Here, we investigated the cytoarchitecture of the lateral orbitofrontal cortex (lateral OFC) in serial histological sections of 10 human postmortem brains by image analysis and a statistically reproducible approach to detect borders between cortical areas. Profiles of the volume fraction of cell bodies were therefore extracted from digitized histological images, describing laminar changes from the layer I/layer II boundary to the white matter. As a result, four new areas, Fo4–7, were identified. Area Fo4 was mainly found in the anterior orbital gyrus (AOG), Fo5 anteriorly in the inferior frontal gyrus (IFG), Fo6 in the lateral orbital gyrus (LOG), and Fo7 in the lateral orbital sulcus. Areas differed in cortical thickness, abundance and size of pyramidal cells in layer III and degree of granularity in layer IV. A hierarchical cluster analysis was used to quantify cytoarchitectonic differences between them. The 3D-reconstructed areas were transformed into the single-subject template of the Montreal Neurological Institute (MNI), where probabilistic maps and a maximum probability map (MPM) were calculated as part of the JuBrain Cytoarchitectonic Atlas. These maps served as reference data to study the functional properties of the areas using the BrainMap database. The type of behavioral tasks that activated them was analyzed to get first insights of co-activation patterns of the lateral OFC and its contribution to cognitive networks. Meta-analytic connectivity modeling (MACM) showed that functional decoding revealed activation in gustatory perception in Fo4; reward and somesthetic perception in Fo5; semantic processing and pain perception in Fo6; and emotional processing and covert reading in Fo7. Together with existing maps of the JuBrain Cytoarchitectonic Atlas, the new maps can now be used as an open-source reference for neuroimaging studies, allowing to further decode brain function.
https://www.frontiersin.org/articles/10.3389/fnana.2020.00002/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1245141_55_Neuros_20200213_arts_A

Nature Scientific Reports

PAPERS

LOGAN S. JAMES et al – Statistical learning for vocal sequence acquisition in a songbird

Birdsong is a learned communicative behavior that consists of discrete acoustic elements ("syllables") that are sequenced in a controlled manner. While the learning of the acoustic structure of syllables has been extensively studied, relatively little is known about sequence learning in songbirds. Statistical learning could contribute to the acquisition of vocal sequences, and we investigated the nature and extent of sequence learning at various levels of song organization in the Bengalese finch, Lonchura striata var. domestica. We found that, under semi-natural conditions, pupils (sons) significantly reproduced the sequence statistics of their tutor's (father's) songs at multiple levels of organization (e.g., syllable repertoire, prevalence, and transitions). For example, the probability of syllable transitions at "branch points" (relatively complex sequences that are followed by multiple types of transitions) were significantly correlated between the songs of tutors and pupils. We confirmed the contribution of learning to sequence similarities between fathers and sons by experimentally tutoring juvenile Bengalese finches with the songs of unrelated tutors. We also discovered that the extent and fidelity of sequence similarities between tutors and pupils were significantly predicted by the prevalence of sequences in the tutor's song and that distinct types of sequence modifications (e.g., syllable additions or deletions) followed distinct patterns. Taken together, these data provide compelling support for the role of statistical learning in vocal production learning and identify factors that could modulate the extent of vocal sequence learning.
https://www.nature.com/articles/s41598-020-58983-8

LAURA CLARK et al – The importance of first impression judgements in interspecies interactions

Close human-wildlife interactions are rapidly growing, particularly due to wildlife tourism popularity. Using both laboratory and ecological observation studies we explored potential interspecies communication signalling mechanisms underpinning human-animal approach behaviour, which to date have been unclear. First impression ratings (n = 227) of Barbary macaques' social and health traits were related to the macaques' facial morphology and their observed behaviour supporting a shared facial signalling system in primates. These ratings significantly predicted intended approach to the macaques during hypothetical interactions. Finally, real-world interspecies proximity was observed and found to be best predicted by the interaction between human first impression perception and animal behaviour. Specifically, perceived macaque health in interaction with actual macaque dominance drives close interactions despite human proclivity to avoid dominant animals, raising safety concerns in interspecies interactions.
https://www.nature.com/articles/s41598-020-58867-x

New Scientist

NEWS

Great ape brains have a feature that we thought was unique to humans

Our brains could have more in common with our ape cousins than previously thought, which might require us to rethink ideas on the evolution of brain specialism in our early human ancestors.
https://www.newscientist.com/article/2233798-great-ape-brains-have-a-feature-that-we-thought-was-unique-to-humans/#ixzz6E2BSyjCb

ARTICLES

JESSICA HAMZELOU – Teen born without half her brain has above average reading skills

A teenager who was born without the entire left hemisphere of her brain has above-average reading skills – despite missing the part of the brain that is typically specialised for language – New Scientist can exclusively reveal.
https://www.newscientist.com/article/mg24532693-800-teen-born-without-half-her-brain-has-above-average-reading-skills/

EMMA YOUNG – When a smile is not a smile – what our facial expressions really mean

Smiling and other facial expressions aren't displays of feelings that transcend cultures but turn out to be full of hidden meaning
https://www.newscientist.com/article/mg24532690-900-when-a-smile-is-not-a-smile-what-our-facial-expressions-really-mean/

PNAS

ARTICLES

AUGUSTE M. P. VON BAYERN, IVO JACOBS & MATHIAS OSVATH – Tool-using puffins prickle the puzzle of cognitive evolution

In PNAS, Fayet et al. report on two cases of tool use in a seabird. In two distant populations they recorded Arctic puffins (Fratercula arctica) using sticks to scratch themselves. The documentation of tool use in this species expands the ever-growing list of tool-using birds through rare observations under natural conditions. Although it is neither the first observation of tool use in wild seabirds, nor the first of stick-tool use outside of a foraging context in wild birds, these findings contribute to the debate on the evolutionary and cognitive origins of tool use.

https://www.pnas.org/content/117/6/2737?etoc=

PAPERS

KSENIYA A. KOLOBOVA et al with MIKE W. MORLEY – Archaeological evidence for two separate dispersals of Neanderthals into southern Siberia

Neanderthals were once widespread across Europe and western Asia. They also penetrated into the Altai Mountains of southern Siberia, but the geographical origin of these populations and the timing of their dispersal have remained elusive. Here we describe an archaeological assemblage from Chagyrskaya Cave, situated in the Altai foothills, where around 90,000 Middle Paleolithic artifacts and 74 Neanderthal remains have been recovered from deposits dating to between 59 and 49 thousand years ago (age range at 95.4% probability). Environmental reconstructions suggest that the Chagyrskaya hominins were adapted to the dry steppe and hunted bison. Their distinctive toolkit closely resembles Micoquian assemblages from central and eastern Europe, including the northern Caucasus, more than 3,000 kilometers to the west of Chagyrskaya Cave. At other Altai sites, evidence of earlier Neanderthal populations lacking associated Micoquian-like artifacts implies two or more Neanderthal incursions into this region. We identify eastern Europe as the most probable ancestral source region for the Chagyrskaya toolmakers, supported by DNA results linking the Neanderthal remains with populations in northern Croatia and the northern Caucasus, and providing a rare example of a long-distance, intercontinental population movement associated with a distinctive Paleolithic toolkit.
https://www.pnas.org/content/117/6/2879.abstract?etoc

SARA E. MILLER et al – Evolutionary dynamics of recent selection on cognitive abilities

Cognitive abilities can vary dramatically among species. The relative importance of social and ecological challenges in shaping cognitive evolution has been the subject of a long-running and recently renewed debate, but little work has sought to understand the selective dynamics underlying the evolution of cognitive abilities. Here, we investigate recent selection related to cognition in the paper wasp Polistes fuscatus—a wasp that has uniquely evolved visual individual recognition abilities. We generate high quality de novo genome assemblies and population genomic resources for multiple species of paper wasps and use a population genomic framework to interrogate the probable mode and tempo of cognitive evolution. Recent, strong, hard selective sweeps in P. fuscatus contain loci annotated with functions in long-term memory formation, mushroom body development, and visual processing, traits which have recently evolved in association with individual recognition. The homologous pathways are not under selection in closely related wasps that lack individual recognition. Indeed, the prevalence of candidate cognition loci within the strongest selective sweeps suggests that the evolution of cognitive abilities has been among the strongest selection pressures in P. fuscatus' recent evolutionary history. Detailed analyses of selective sweeps containing candidate cognition loci reveal multiple cases of hard selective sweeps within the last few thousand years on de novo mutations, mainly in noncoding regions. These data provide unprecedented insight into some of the processes by which cognition evolves.
https://www.pnas.org/content/117/6/3045.abstract?etoc

Quarterly Review of Biology

REVIEWS

ALISON K. MCCONWELL – Turning Points

Review of 'Turning Points: How Critical Events Have Driven Human Evolution, Life, and Development' by Kostas Kampourakis.
https://www.journals.uchicago.edu/doi/abs/10.1086/707883

PAUL TIBBETTS – The Deep History of Ourselves

Review of 'The Deep History of Ourselves: The Four-Billion-Year Story of How We Got Conscious Brains' by Joseph LeDoux, illustrated by Caio da Silva Sorrentino.
https://www.journals.uchicago.edu/doi/abs/10.1086/707895

OSBJORN M. PEARSON – Ancestral DNA, Human Origins, and Migrations

Review of 'Ancestral DNA, Human Origins, and Migrations' by Rene J. Herrera and Ralph Garcia-Bertrand.
https://www.journals.uchicago.edu/doi/abs/10.1086/707904

Science Advances

PAPERS

ARUN DURVASULA & SRIRAM SANKARARAMAN – Recovering signals of ghost archaic introgression in African populations

While introgression from Neanderthals and Denisovans has been documented in modern humans outside Africa, the contribution of archaic hominins to the genetic variation of present-day Africans remains poorly understood. We provide complementary lines of evidence for archaic introgression into four west African populations. Our analyses of site frequency spectra indicate that these populations derive 2 to 19% of their genetic ancestry from an archaic population that diverged before the split of Neanderthals and modern humans. Using a method that can identify segments of archaic ancestry without

the need for reference archaic genomes, we built genome-wide maps of archaic ancestry in the Yoruba and the Mende populations. Analyses of these maps reveal segments of archaic ancestry at high frequency in these populations that represent potential targets of adaptive introgression. Our results reveal the substantial contribution of archaic ancestry in shaping the gene pool of present-day west African populations.
https://advances.sciencemag.org/content/6/7/eaax5097?utm_campaign=toc_advances_2020-02-14&et_rid=17774313&et_cid=3207927

SIMON NEUBAUER et al with JEAN-JACQUES HUBLIN – Evolution of brain lateralization: a shared hominid pattern of endocranial asymmetry is much more variable in humans than in great apes
Brain lateralization is commonly interpreted as crucial for human brain function and cognition. However, as comparative studies among primates are rare, it is not known which aspects of lateralization are really uniquely human. Here, we quantify both pattern and magnitude of brain shape asymmetry based on endocranial imprints of the braincase in humans, chimpanzees, gorillas, and orangutans. Like previous studies, we found that humans were more asymmetric than chimpanzees; however, so were gorillas and orangutans, highlighting the need to broaden the comparative framework for interpretation. We found that the average spatial asymmetry pattern, previously considered to be uniquely human, was shared among humans and apes. In humans, however, it was less directed, and different local asymmetries were less correlated. We, thus, found human asymmetry to be much more variable compared with that of apes. These findings likely reflect increased functional and developmental modularization of the human brain.
https://advances.sciencemag.org/content/6/7/eaax9935?utm_campaign=toc_advances_2020-02-14&et_rid=17774313&et_cid=3207927

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