EAORC BULLETIN 1,009 – 16 October 2022

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, 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, let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

EAORC LETTERS – From Mark Jordan – Any Reading Recommendations?

It's been a while but I have been following the weekly emails and using the site.
From the book list I read 'Origins Reconsidered'. Even though it is 30+ years old, Leakey's insights are valuable and have more perspective than a lot of the recent theorists. It's actually interesting that he was right about a lot of things before many recent discoveries have shown them to be true.

For you :

"The Beak of the Finch" by Jonathan Weiner. The absolutely best book on evolution I have read. It covers the work of Peter and Rosemary Grant (Princeton) and their studies of Galapagos Island finches using inordinate amounts of measurements and data to track changes in gene pools.
I was always skeptical of the idea of modification by mutation (whatever that means, seems to vary). These studies show precisely how species modify. It can happen quickly and it happens due to environmental changes, not some gamma ray accidental DNA change that happens to work out over millions of years.
Very much worth the read. Won a Pulitzer Prize as well.

Another, but different, thing of interest:

On the Andrew Huberman Lab podcast, there is an episode with Dr. Erich Jarvis regarding brain anatomy and language.
It starts with a discussion of the difference between speech and language (I didn't even understand the question but the discussion was enlightening). Later there is much discussion of the intersection and relationship between speech, gesture, dance/movement/music. There is a lot of underlying brain structure that supports the relationships. I'm sure you've come across the theory of gesture preceding language. Jarvis has much enlightening knowledge to support and explain it. Long but well worth the listen.

Recommendations?
Do you have any recommendations for my further reading? I can't read every book on your list - I have a finite lifetime :). I hope your expertise can help me cherry pick the best.
Mark Jordan

Mark,
Many thanks for the kind words, It's always nice to know that the Bulletin is of use to people! I hope you don't mind me sharing your email with the group, but I thought it may spark some responses. Anyone who has reading recommendations, email me and I'll share them with the group.
To answer your questions and points:
Thanks for the heads-up on "The Beak of the Finch". I will add it to my reading list, and to the EAORC book list. I have added a link to the Andrew Huberman/Erich Jarvis discussion as a Publication Alert below.
Regarding recommended reading, I will limit myself to six relatively cheap purchasable recommendations and three free ones. I will also mention a not recommended. I'm sure others will have more to add to the lists.
The recommendations are:
FOR LANGUAGE ORIGINS: Daniel Everett (2012). *Language: the cultural tool*. Profile Books.
FOR HUMAN ORIGINS: Michael Tomasello (2019). *Becoming Human: A theory of ontogeny*. Harvard University Press.
FOR ANIMAL COGNITION (1): Nathan Emery (2016). *Bird Brain: An exploration of avian intelligence*. Ivy Press.
FOR ANIMAL COGNITION (2): Peter Godfrey-Smith (2016). *Other Minds: The octopus and the evolution of intelligent life*. William Collins.
FOR HUMAN COGNITION: David Eagleman (2015). *The Brain: The Story of You*. Canongate Books.
FOR MYTHOLOGY: Marina Warner (2014). *Once Upon a Time: A short history of fairy tale*. Oxford University Press.
And the three free books are:
Stanislas Dehaene (2014). *Consciousness and the Brain: Deciphering how the brain codes our thoughts*. Penguin. https://www.softouch.on.ca/kb/data/Consciousness%20and%20the%20Brain.pdf
Alice Roberts (2011). *Evolution: The Human Story*. Dorling Kindersley. https://www.scribd.com/document/389217256/Alice-Roberts-Evolution-The-Human-Story-DK-Publishing-2018-pdf
Iris Berent & Susan Goldin-Meadow (eds.) (2015). *Language by Mouth and by Hand*. Frontiers in Psychology. https://www.frontiersin.org/research-topics/1777/language-by-mouth-and-by-hand

The one not recommended is Martin P.J. Edwardes (2010), *The Origins of Grammar: An anthropological perspective*, Continuum. This is currently undergoing an extensive and much-needed rewrite; hopefully the second edition will be available soon as a free download, like *The Origins of Self: An anthropological perspective* (https://www.uclpress.co.uk/collections/anthropology/products/125998). Here endeth the self-promotion.
Martin P.J. Edwardes

PUBLICATION ALERT – Andrew Huberman discusses Speech, Music and Language with Dr. Erich Jarvis

"Dr. Jarvis' research spans the molecular and genetic mechanisms of vocal communication, comparative genomics of speech and language across species and the relationship between speech, language and movement. We discuss the unique ability of humans (and certain animal species) to learn and communicate using complex language, including verbal speech production and the ability to interpret both written and spoken language. We also discuss the connections between language, singing and dance and why song may have evolved before language. Dr. Jarvis also explains some of the underlying biological and genetic components of stutter/speech disorders, non-verbal communication, why it's easiest to learn a language as a child and how individuals can learn multiple languages at any age. This episode ought to be of interest to everyone interested in the origins of human speech, language, music and culture and how newer technology, such as social media and texting, change our brains."
https://hubermanlab.com/dr-erich-jarvis-the-neuroscience-of-speech-language-and-music/

ACADEMIA.EDU – Can Anatomically-Modern Humans Be Analogues for Neandertal Foraging Patterns?

In Lee G. Broderick (ed.), People with Animals: Perspectives & Studies in Ethnozooarchaeology, Oxbow Books (2016).
BENJAMIN COLLINS – Can Anatomically-Modern Humans Be Used as Analogues for Neandertal Foraging Patterns?
Within the past 25 years, ethnographic and ethnoarchaeological studies of modern foragers have been critically used to create and refine models for inferring past human foraging behaviours. These models have also been extended to interpret the foraging behaviours of other hominins. However, critical evaluations of whether ethnographic and ethnoarchaeological studies of AMH are relevant to other hominins are rare. This article assesses whether the foraging patterns of Neandertals, our closest relatives, can be accurately inferred when using models derived and refined from studies of anatomically-modern human (AMH) foragers. It is suggested that Neandertal foraging patterns can be accurately inferred when using optimal foraging models derived from behavioural ecology and refined with ethnographic and ethnoarchaeological studies of AMH. However, potentially symbolic or cultural aspects of Neandertal foraging behaviours are contended to be beyond the scope of these models, as the differences between AMH and Neandertal cognition are yet to be understood.

https://www.academia.edu/27173259/Can_anatomically_modern_humans_be_used_as_analogues_for_Neandertal_foraging_patterns

CONFERENCE ALERT – The Science of Consciousness Conference

TSC 2023 – Taormina, Sicily – May 22-28, 2023

The Science of Consciousness (TSC) conferences have been held annually since 1994, alternating yearly between Tucson, Arizona in even-numbered years, and other locations around the world in odd-numbered years. TSC locations have included Italy, Denmark, Japan, Sweden, Czech Republic, Hungary, Hong Kong, India, California, Switzerland, and Finland.
The 29th annual TSC will return to Italy, to beautiful Taormina, on the island of Sicily, May 22-28, 2023, organized by Italian professors Riccardo Manzotti (IULM U), Antonio Chella (U Palermo) and Pietro Perconti (U Palermo; Università degli Studi di Messina). TSC 2023 Taormina will be co-sponsored by the Center for Consciousness Studies, The University of Arizona, Tucson, Stuart Hameroff, Director. The first overseas TSC Conference in 1995 was on the island of Ischia, near Naples, Italy, organized by Cloe Taddei-Ferretti. We are excited to be returning to Italy.

Abstracts may be submitted for oral concurrent talks, or posters: https://app.oxfordabstracts.com/stages/4976/submitter
Abstract submissions will begin on October 15, 2022. (Deadline: Dec 5; Notifications: Dec 15-30)

TSC 2023 - Program Themes and Speakers will include:

NEUROSCIENCE & CONSCIOUSNESS: Christof Koch (Keynote); Lucia Melloni; Jay Sanguinetti; Orli Dahal
AI & CONSCIOUSNESS: David Chalmers (Keynote); Manuel & Lenore Blum; Michael Graziano; Owen Holland; Susan Schneider
CONSCIOUSNESS & HALLUCINATIONS: Alex Byrne; Riccardo Manzotti; Fiona Macpherson; Heather Logue
E-M & RESONANCE THEORIES: Johnjoe McFadden; Tam Hunt; Michael Levin; Anirban Bandyopadhyay
QUANTUM BRAIN BIOLOGY: Stuart Hameroff; Jim Al Khalili; Aristide Dogariu; Travis Craddock
INTENTIONALITY: Tim Crane; Alberto Voltolini; Uriah Kriegel
FREE WILL: Adina Roskies; Keith Frankish; Mario de Caro
NON-HUMAN CONSCIOUSNESS: Giorgio Vallortigara; Merlin Sheldrake; Dante Lauretta

Information regarding Hotels, Venue, Registration and Program Updates will be provided shortly.

Committee

Riccardo Manzotti, Philosopher, Psychologist, and AI expert, Researcher and Author, Ph.D. in Robotics, Chair of Theoretical Philosophy, IULM University, Milan.
Antonio Chella, Professor of Robotics, University of Palermo, Italy
Pietro Perconti, Professor of Philosophy, Università degli Studi di Messina; University of Palermo, Italy
Stuart R Hameroff MD, Anesthesiology, UArizona Banner Medical, Director, Center for Consciousness Studies, Anesthesiologist, Quantum Consciousness Theorist & Researcher

Center for Consciousness Studies, UArizona

The Science of Consciousness Conferences since 1994 center@email.arizona.edu www.consciousness.arizona.edu

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How to write your methods - Ensure understanding, reproducibility, and replicability
https://click.e.plos.org/?qs=9121df18e9d6180e9508c7b0c898ae5f783fbe70faa400875c039771ffea57eb6d1c2ebd9428767922acfd5139f5e625c9c21c28b4f97e3e
How to report statistics - Ensure appropriateness and rigor, avoid flexibility and above all never manipulate results
https://click.e.plos.org/?qs=9121df18e9d6180ed032a16b90c00535156538c1351900b12118dde786b63edaade9dea24d361f21c7a6ed2fc2415603414854744ec734bc
How to edit your work - Craft clear, understandable prose that gives readers the information they need to understand your study

https://click.e.plos.org/?qs=9121df18e9d6180e13ab4b78e8b857105e2502395a74c26d13031dd64b7e5316f562844bfca13d83491f76ef93800c32c2f6e5fbc490747f
Understanding the publishing process - What's happening with my paper? The publication process explained
https://click.e.plos.org/?qs=9121df18e9d6180e4db9db7b73e4d1627962cfeb3c6126f1d39804fe48140db8125211cf6db56f3ecbb663efd87f6676f5fd1f29348a5c0a
How to receive and respond to peer review feedback - A thorough approach to your revision response now can save you time in future reviews
https://click.e.plos.org/?qs=9121df18e9d6180ed4d197b021ed9485dd6cf83986169024183371da6b5c3627f743b296327e2255b6ade1a28077fc5931c636cfba47016f
How to store and manage your data - Ensure your research's future reproducibility through sound data management
https://click.e.plos.org/?qs=9121df18e9d6180ec2fc35a3c993ba5b6d5c549234d2e3685b2410cbe3d071199ae9ed6c62d3d6438734af375f7ee93de3a24c4ad038128c
How to choose your journal - Learn how to choose a journal that will help your study reach its audience
https://click.e.plos.org/?qs=9121df18e9d6180e95b3b3410f80b5450f9222db253f2317b72adabd5e58970f9cc5ca85788a247ba7ddb3ed2ea8f944ba638fe55a6abe78

NEWS

JSTOR NEWS – PREVIEW: The Accents of Our Bodies

American language educator Max Kirch suggests that adopting the nonverbal habits of another culture gives one's behavior a "foreign accent."
https://www.patreon.com/posts/preview-accents-73081860

NATURE BRIEFING – Can God be proved mathematically?

From logician Kurt Gödel's effort to use logic to prove God exists, to Pascal's wager — you might as well believe, if only to avoid a hypothetical hell — some mathematicians have tried to grapple with spiritual matters. This short history of the attempts (spoiler alert) doesn't settle things once and for all, but it has a good time trying.
https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=a4b284c880&e=1db4b9a19b

SCIENCE NEWS – Modern humans and Neanderthals may have overlapped, shared culture in W. Europe

But findings, based on a reevaluation of radiocarbon dating data, aren't swaying some experts.
https://www.science.org/content/article/modern-humans-and-neanderthals-may-have-overlapped-shared-culture-western-europe

THE CONVERSATION – Animal friendships are surprisingly like our own

Friendships are formed all across the animal kingdom and the ways in which they resemble human ones may surprise you.
https://theconversationuk.cmail19.com/t/r-l-tjgtjky-khhlilahh-s/

PUBLICATIONS

Current Biology

ARTICLES

GEOFFREY E. HILL – Evolution: The biochemistry of honest sexual signaling

The discovery of a new enzyme required for production of red carotenoid pigments in vertebrates provides insights for how shared biochemical pathways may be the key to understanding honest signaling via plumage coloration.
https://www.cell.com/current-biology/fulltext/S0960-9822(22)01404-X

PAPERS

PATRICIA L. LOCKWOOD et al – Distinct neural representations for prosocial and self-benefiting effort

Prosocial behaviors—actions that benefit others—are central to individual and societal well-being. Although the mechanisms underlying the financial and moral costs of prosocial behaviors are increasingly understood, this work has often ignored a key influence on behavior: effort. Many prosocial acts are effortful, and people are averse to the costs of exerting them. However, how the brain encodes effort costs when actions benefit others is unknown. During fMRI, participants completed a decision-making task where they chose in each trial whether to "work" and exert force (30%–70% of maximum grip strength) or "rest" (no effort) for rewards (2–10 credits). Crucially, on separate trials, they made these decisions either to benefit another person or themselves. We used a combination of multivariate representational similarity analysis and model-based univariate analysis to reveal how the costs of prosocial and self-benefiting efforts are processed. Strikingly, we identified a unique neural signature of effort in the anterior cingulate gyrus (ACCg) for prosocial acts, both when choosing to help others and when exerting force to benefit them. This pattern was absent for self-benefiting behaviors. Moreover, stronger, specific representations of prosocial effort in the ACCg were linked to higher levels of empathy and higher subsequent exerted force

to benefit others. In contrast, the ventral tegmental area and ventral insula represented value preferentially when choosing for oneself and not for prosocial acts. These findings advance our understanding of the neural mechanisms of prosocial behavior, highlighting the critical role that effort has in the brain circuits that guide helping others.
https://www.cell.com/current-biology/fulltext/S0960-9822(22)01287-8

MATTHEW B. TOOMEY et al – A mechanism for red coloration in vertebrates
Red coloration is a salient feature of the natural world. Many vertebrates produce red color by converting dietary yellow carotenoids into red ketocarotenoids via an unknown mechanism. Here, we show that two enzymes, cytochrome P450 2J19 (CYP2J19) and 3-hydroxybutyrate dehydrogenase 1-like (BDH1L), are sufficient to catalyze this conversion. In birds, both enzymes are expressed at the sites of ketocarotenoid biosynthesis (feather follicles and red cone photoreceptors), and genetic evidence implicates these enzymes in yellow/red color variation in feathers. In fish, the homologs of CYP2J19 and BDH1L are required for ketocarotenoid production, and we show that these enzymes are sufficient to produce ketocarotenoids in cell culture and when ectopically expressed in fish skin. Finally, we demonstrate that the red-cone-enriched tetratricopeptide repeat protein 39B (TTC39B) enhances ketocarotenoid production when co-expressed with CYP2J19 and BDH1L. The discovery of this mechanism of ketocarotenoid biosynthesis has major implications for understanding the evolution of color diversity in vertebrates.
https://www.cell.com/current-biology/fulltext/S0960-9822(22)01290-8

KAYA VON EUGEN et al – Avian neurons consume three times less glucose than mammalian neurons
Brains are among the most energetically costly tissues in the mammalian body. This is predominantly caused by expensive neurons with high glucose demands. Across mammals, the neuronal energy budget appears to be fixed, possibly posing an evolutionary constraint on brain growth. Compared to similarly sized mammals, birds have higher numbers of neurons, and this advantage conceivably contributes to their cognitive prowess. We set out to determine the neuronal energy budget of birds to elucidate how they can metabolically support such high numbers of neurons. We estimated glucose metabolism using positron emission tomography (PET) and 2-[18F]fluoro-2-deoxyglucose ([18F]FDG) as the radiotracer in awake and anesthetized pigeons. Combined with kinetic modeling, this is the gold standard to quantify cerebral metabolic rate of glucose consumption (CMRglc). We found that neural tissue in the pigeon consumes 27.29 ± 1.57 µmol glucose per 100 g per min in an awake state, which translates into a surprisingly low neuronal energy budget of 1.86 × 10−9 ± 0.2 × 10−9 µmol glucose per neuron per minute. This is approximately 3 times lower than the rate in the average mammalian neuron. The remarkably low neuronal energy budget explains how pigeons, and possibly other avian species, can support such high numbers of neurons without associated metabolic costs or compromising neuronal signaling. The advantage in neuronal processing of information at a higher efficiency possibly emerged during the distinct evolution of the avian brain.
https://www.cell.com/current-biology/fulltext/S0960-9822(22)01219-2

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eLife

PAPERS

YU-CHI CHEN et al – The individuality of shape asymmetries of the human cerebral cortex
Asymmetries of the cerebral cortex are found across diverse phyla and are particularly pronounced in humans, with important implications for brain function and disease. However, many prior studies have confounded asymmetries due to size with those due to shape. Here, we introduce a novel approach to characterize asymmetries of the whole cortical shape, independent of size, across different spatial frequencies using magnetic resonance imaging data in three independent datasets. We find that cortical shape asymmetry is highly individualized and robust, akin to a cortical fingerprint, and identifies individuals more accurately than size-based descriptors, such as cortical thickness and surface area, or measures of inter-regional functional coupling of brain activity. Individual identifiability is optimal at coarse spatial scales (~37 mm wavelength), and shape asymmetries show scale-specific associations with sex and cognition, but not handedness. While unihemispheric cortical shape shows significant heritability at coarse scales (~65 mm wavelength), shape asymmetries are determined primarily by subject-specific environmental effects. Thus, coarse-scale shape asymmetries are highly personalized, sexually dimorphic, linked to individual differences in cognition, and are primarily driven by stochastic environmental influences.
https://elifesciences.org/articles/75056

Evolutionary Anthropology

PAPERS

NATHALIE GONTIER & ANTON SUKHOVERKHOV – Reticulate evolution underlies synergistic trait formation in human communities
This paper investigates how reticulate evolution contributes to a better understanding of human sociocultural evolution in general, and community formation in particular. Reticulate evolution is evolution as it occurs by means of symbiosis, symbiogenesis, lateral gene transfer, infective heredity, and hybridization. From these mechanisms and processes, we mainly zoom in on symbiosis and we investigate how it underlies the rise of (1) human, plant, animal, and machine interactions typical of agriculture, animal husbandry, farming, and industrialization; (2) diet-microbiome relationships; and (3) host-

virome and other pathogen interactions that underlie human health and disease. We demonstrate that reticulate evolution necessitates an understanding of behavioral and cultural evolution at a community level, where reticulate causal processes underlie the rise of synergistic organizational traits.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21962

Frontiers in Psychology

PAPERS

DAVID J. LOBINA et al – Unsaid thoughts: Thinking in the absence of verbal logical connectives
Combining two thoughts into a compound mental representation is a central feature of our verbal and non-verbal logical abilities. We here approach this issue by focusing on the contingency that while natural languages have typically lexicalised only two of the possible 16 binary connectives from formal logic to express compound thoughts—namely, the coordinators and and or—some of the remainder appear to be entertainable in a non-verbal, conceptual representational system—a language of thought—and this suggests a theoretical split between the "lexicalisation" of the connectives and the "learnability" of invented words corresponding to unlexicalised connectives. In a visual world experiment aimed at tracking comprehension-related as well as reasoning-related aspects of the capacity to represent compound thoughts, we found that participants are capable of learning and interpreting a made-up word standing for logic's NAND operator, a result that indicates that unlexicalised logical connectives are not only conceptually available, but can also be mapped onto new function words, as in the case of coordinators, or connectives, a class of words that do not usually admit new coinages.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.962099/full

Language Sciences

PAPERS

JUAN J. COLOMINA-ALMIÑANA – A defense of a weak linguistic relativist thesis
By confronting two linguistic myths, a strong linguistic relativist thesis and the idea that communication is the only means of language, this article demonstrates that some aspects of language mold some habits of thought and that language provides different speech communities with distinct behavioral patterns to accomplish specific social actions adequately. The article, thus, argues that there is strong empirical evidence to support a reciprocally influential relationship between language, thought, and society.
https://www.sciencedirect.com/science/article/abs/pii/S0388000122000523

National Geographic

ARTICLES

YUDHIJIT BHATTACHARJEE – What are animals thinking? They feel empathy, grieve, seek joy just like us.
Rats show kindness, orcas mourn their dead, and monkeys protest injustice. Scientists are learning that other species also have complex emotions.
https://www.nationalgeographic.com/magazine/article/what-are-animals-thinking-feature

RONAN O'CONNELL – Inside the Irish 'hell caves' where Halloween was born
Go in search of the ancient royal capital that spawned our favorite night of the dead.
https://www.nationalgeographic.com/travel/article/inside-irelands-gate-to-hell-that-birthed-halloween

Nature Communications

PAPERS

EVIE KOURTIDOU et al – Specific disruption of the ventral anterior temporo-frontal network reveals key implications for language comprehension and cognition
Recent investigations have raised the question of the role of the anterior lateral temporal cortex in language processing (ventral language network). Here we present the language and overall cognitive performance of a rare male patient with chronic middle cerebral artery cerebrovascular accident with a well-documented lesion restricted to the anterior temporal cortex and its connections via the extreme capsule with the pars triangularis of the inferior frontal gyrus (i.e. Broca's region). The performance of this unique patient is compared with that of two chronic middle cerebral artery cerebrovascular accident male patients with damage to the classic dorsal posterior temporo-parietal language system. Diffusion tensor imaging is used to reconstruct the relevant white matter tracts of the three patients, which are also compared with those of 10 healthy individuals. The patient with the anterior temporo-frontal lesion presents with flawless and fluent speech, but selective impairment in accessing lexico-semantic information, in sharp contrast to the impairments in speech, sentence comprehension and repetition observed after lesions to the classic dorsal language system. The present results underline the contribution of the ventral language stream in lexico-semantic processing and higher cognitive functions, such as active selective controlled retrieval.
https://www.nature.com/articles/s42003-022-03983-9

EVA-MARIA RATHKE, ROGER MUNDRY & JULIA FISCHER – Older Barbary macaques show limited capacity for self-regulation to avoid hazardous social interactions
According to the Strength-and-Vulnerability-Integration (SAVI) model, older people are more motivated to avoid negative affect and high arousal than younger people. To explore the biological roots of this effect, we investigate communicative interactions and social information processing in Barbary macaques (Macaca sylvanus) living at 'La Forêt des Singes' in Rocamadour, France. The study combines an analysis of the production of (N = 8185 signals, 84 signallers) and responses to communicative signals (N = 3672 events, 84 receivers) with a field experiment (N = 166 trials, 45 subjects). Here we show that older monkeys are not more likely to specifically ignore negative social information or to employ avoidance strategies in stressful situations, although they are overall less sociable. We suggest that the monkeys have only a limited capacity for self-regulation within social interactions and rather rely on general avoidance strategies to decrease the risk of potentially hazardous social interactions.
https://www.nature.com/articles/s42003-022-04012-5

Nature Ecology & Evolution

OBITUARIES

LOUISE N. LEAKEY & ROBERT A. FOLEY – Kamoya Kimeu
Expert field palaeontologist who made many key discoveries about early human evolution in East Africa.
https://www.nature.com/articles/s41559-022-01900-1

Nature Reviews Psychology

PAPERS

JELENA RISTIC & FRANCESCA CAPOZZI – Mechanisms for individual, group-based and crowd-based attention to social information
Two or more interacting individuals make up a social group. In this Review, we show that human attention plays a key part in the selection, management and maintenance of social interactions between individual members of social groups of any size. Three attentional mechanisms are presented here. The individual cue-selection mechanism facilitates the selection of social cues, such as gaze, facial or head information, from individual group members. The group-based selection mechanism enables selection based on the perceived quality of social cues derived from individual group members or the emerging interactions between individual group members. Finally, the crowd-based selection mechanism enables selection based on an overall representation of the social information derived from assessing the majority of consistent cues in the crowd. The three attentional mechanisms are used flexibly, interchangeably and dynamically as a function of group size and the ability to individuate group members.
https://www.nature.com/articles/s44159-022-00118-z

Nature Scientific Reports

PAPERS

IGOR DJAKOVIC, ALASTAIR KEY & MARIE SORESSI – Optimal linear estimation models predict 1400–2900 years of overlap between Homo sapiens and Neandertals prior to their disappearance from France and northern Spain
Recent fossil discoveries suggest that Neandertals and Homo sapiens may have co-existed in Europe for as long as 5 to 6000 years. Yet, evidence for their contemporaneity at any regional scale remains highly elusive. In France and northern Spain, a region which features some of the latest directly-dated Neandertals in Europe, Protoaurignacian assemblages attributed to Homo sapiens appear to 'replace' Neandertal-associated Châtelperronian assemblages. Using the earliest and latest known occurrences as starting points, Bayesian modelling has provided indication that these occupations may in fact have been partly contemporaneous. The reality, however, is that we are unlikely to ever identify the 'first' or 'last' appearance of a species or cultural tradition in the archaeological and fossil record. Here, we use optimal linear estimation modelling to estimate the first appearance date of Homo sapiens and the extinction date of Neandertals in France and northern Spain by statistically inferring these 'missing' portions of the Protoaurignacian and Châtelperronian archaeological records. Additionally, we estimate the extinction date of Neandertals in this region using a dataset of directly-dated Neandertal fossil remains. Our total dataset consists of sixty-six modernly produced radiocarbon determinations which we recalibrated using the newest calibration curve (IntCal20) to produce updated age ranges. The results suggest that the onset of the Homo sapiens occupation of this region likely preceded the extinction of Neandertals and the Châtelperronian by up to 1400–2900 years. This reaffirms the Bayesian-derived duration of co-existence between these groups during the initial Upper Palaeolithic of this region using a novel independent method, and indicates that our understanding of the timing of these occupations may not be suffering from substantial gaps in the record. Whether or not this co-existence featured some form of direct interaction, however, remains to be resolved.
https://www.nature.com/articles/s41598-022-19162-z

KONRAD LEHMANN et al – Empathy and correct mental state inferences both promote prosociality
In a world with rapidly increasing population that competes for the earth's limited resources, cooperation is crucial. While research showed that empathizing with another individual in need enhances prosociality, it remains unclear whether

correctly inferring the other's inner, mental states on a more cognitive level (i.e., mentalizing) elicits helping behavior as well. We applied a video-based laboratory task probing empathy and a performance measure of mentalizing in adult volunteers (N = 94) and assessed to which extent they were willing to help the narrators in the videos. We replicate findings that an empathy induction leads to more prosocial decisions. Crucially, we also found that correct mentalizing increases the willingness to help. This evidence helps clarify an inconsistent picture of the relation between mentalizing and prosociality.
https://www.nature.com/articles/s41598-022-20855-8

M. FILIPPA et al – Emotional prosody recognition enhances and progressively complexifies from childhood to adolescence

Emotional prosody results from the dynamic variation of language's acoustic non-verbal aspects that allow people to convey and recognize emotions. The goal of this paper is to understand how this recognition develops from childhood to adolescence. We also aim to investigate how the ability to perceive multiple emotions in the voice matures over time. We tested 133 children and adolescents, aged between 6 and 17 years old, exposed to 4 kinds of linguistically meaningless emotional (anger, fear, happiness, and sadness) and neutral stimuli. Participants were asked to judge the type and intensity of perceived emotion on continuous scales, without a forced choice task. As predicted, a general linear mixed model analysis revealed a significant interaction effect between age and emotion. The ability to recognize emotions significantly increased with age for both emotional and neutral vocalizations. Girls recognized anger better than boys, who instead confused fear with neutral prosody more than girls. Across all ages, only marginally significant differences were found between anger, happiness, and neutral compared to sadness, which was more difficult to recognize. Finally, as age increased, participants were significantly more likely to attribute multiple emotions to emotional prosody, showing that the representation of emotional content becomes increasingly complex. The ability to identify basic emotions in prosody from linguistically meaningless stimuli develops from childhood to adolescence. Interestingly, this maturation was not only evidenced in the accuracy of emotion detection, but also in a complexification of emotion attribution in prosody.
https://www.nature.com/articles/s41598-022-21554-0

New Scientist

NEWS

Our ancestors' prenatal growth sped up after we split from chimps

Early humans evolved a faster fetal growth rate than other apes about a million years ago, suggesting it could have played a role in the evolution of our species.
https://www.newscientist.com/article/2340725-our-ancestors-prenatal-growth-sped-up-after-we-split-from-chimps/

REVIEWS

JONATHAN R. GOODMAN – Nineteen Ways of Looking at Consciousness review: Complex and engaging

Review of 'Nineteen Ways of Looking at Consciousness' by Patrick House (Wildfire, 2022).
In this informative book, Patrick House explores interpretations of consciousness through the story of a teenager who laughed during brain surgery when a surgeon artificially stimulated her neural activity.
https://www.headline.co.uk/titles/patrick-house/nineteen-ways-of-looking-at-consciousness/9781035400027/

PLoS One

PAPERS

SARA SILVESTRINI et al – Integrating ZooMS and zooarchaeology: New data from the Uluzzian levels of Uluzzo C Rock Shelter, Roccia San Sebastiano cave and Riparo del Broion

In this study we explore the potential of combining traditional zooarchaeological determination and proteomic identification of morphologically non-diagnostic bone fragments (ZooMS) collected from the Uluzzian levels of three Italian sites: Uluzzo C Rock Shelter, Roccia San Sebastiano cave, and Riparo del Broion. Moreover, we obtained glutamine deamidation ratios for all the contexts analysed during routine ZooMS screening of faunal samples, giving information on collagen preservation. We designed a selection protocol that maximizes the efficiency of the proteomics analyses by excluding particularly compromised fragments (e.g. from taphonomic processes), and that aims to identify new human fragments by favouring bones showing morphological traits more similar to Homo. ZooMS consistently provided taxonomic information in agreement with the faunal spectra outlined by traditional zooarchaeology. Our approach allows us to delineate and appreciate differences between the analysed contexts, particularly between the northern and southern sites, related to faunal, environmental, and climate composition, although no human remains were identified. We reconstructed the faunal assemblage of the different sites, giving voice to morphologically undiagnostic bone fragments. Thus, the combination of these analyses provides a more complete picture of the faunal assemblage and of the paleoenvironment during the Middle-Upper Palaeolithic transition in Italy.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0275614

GUUS KROONEN et al – Indo-European cereal terminology suggests a Northwest Pontic homeland for the core Indo-European languages
Questions on the timing and the center of the Indo-European language dispersal are central to debates on the formation of the European and Asian linguistic landscapes and are deeply intertwined with questions on the archaeology and population history of these continents. Recent palaeogenomic studies support scenarios in which the core Indo-European languages spread with the expansion of Early Bronze Age Yamnaya herders that originally inhabited the East European steppes. Questions on the Yamnaya and Pre-Yamnaya locations of the language community that ultimately gave rise to the Indo-European language family are heavily dependent on linguistic reconstruction of the subsistence of Proto-Indo-European speakers. A central question, therefore, is how important the role of agriculture was among the speakers of this protolanguage. In this study, we perform a qualitative etymological analysis of all previously postulated Proto-Indo-European terminology related to cereal cultivation and cereal processing. On the basis of the evolution of the subsistence strategies of consecutive stages of the protolanguage, we find that one or perhaps two cereal terms can be reconstructed for the basal Indo-European stage, also known as Indo-Anatolian, but that core Indo-European, here also including Tocharian, acquired a more elaborate set of terms. Thus, we linguistically document an important economic shift from a mostly non-agricultural to a mixed agro-pastoral economy between the basal and core Indo-European speech communities. It follows that the early, eastern Yamnaya of the Don-Volga steppe, with its lack of evidence for agricultural practices, does not offer a perfect archaeological proxy for the core Indo-European language community and that this stage of the language family more likely reflects a mixed subsistence as proposed for western Yamnaya groups around or to the west of the Dnieper River.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0275744

ANDREA PICIN et al with MICHAEL PETRAGLIA – Homo sapiens lithic technology and microlithization in the South Asian rainforest at Kitulgala Beli-lena (c. 45 – 8,000 years ago)
Recent archaeological investigations in Sri Lanka have reported evidence for the exploitation and settlement of tropical rainforests by Homo sapiens since c. 48,000 BP. Information on technological approaches used by human populations in rainforest habitats is restricted to two cave sites, Batadomba-lena and Fa-Hien Lena. Here, we provide detailed study of the lithic assemblages of Kitulgala Beli-lena, a recently excavated rockshelter preserving a sedimentary sequence from the Late Pleistocene to the Holocene. Our analysis indicates in situ lithic production and the recurrent use of the bipolar method for the production of microliths. Stone tool analyses demonstrate long-term technological stability from c. 45,000 to 8,000 years BP, a pattern documented in other rainforest locations. Foraging behaviour is characterised by the use of lithic bipolar by-products together with osseous projectile points for the consistent targeting of semi-arboreal/arboreal species, allowing for the widespread and recurrent settlement of the wet zone of Sri Lanka.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273450

PEIQI ZHANG et al – After the blades: The late MIS3 flake-based technology at Shuidonggou Locality 2, North China
Contrasting with the predominance of blade-based assemblages in the Eurasian Upper Paleolithic, the large-scale persistence of a core-and-flake technology remains one of the defining features of Late Pleistocene lithic technology in East Asia. In North China, Shuidonggou is an exceptional site where both technologies are documented, therefore, it is an important archaeological sequence to understand regional technological evolution during the Marine Isotopic Stage 3. Blade technology first occurred at Shuidonggou Locality 1 and 2 around 41 ka cal BP while core-and-flake assemblages were widespread in North China. However, systematic technological studies on assemblages postdating 34 ka cal BP have not been conducted to examine whether the blade technology appeared and disappeared over a short yet abrupt episode, or persists and integrates into other forms in the region. Here, we conducted qualitative and quantitative analyses to reconstruct lithic productions on the assemblages at Shuidonggou Locality 2, dated after 34 ka cal BP. Our results show that there is a total absence of laminar elements in stone artifacts dated to 34–28 ka cal BP at Shuidonggou. Instead, we observe a dominance of an expedient production of flakes in the younger assemblages, illustrating a rapid return to flake-based technology after a relatively brief episode of stone blade production. Combining archaeological, environmental, and genetic evidence, we suggest that this technological 'reversal' from blades back to core and flake technology reflect population dynamics and adaptive strategies at an ecological interface between East Asian winter and summer monsoon.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274777

PNAS

ARTICLES

BOB MCMURRAY, JOHN B. MUEGGE & KEITH APFELBAUM – Multimodal bilinguals reveal complex pathways for flexible language processing
Summary inaccessible.
https://www.pnas.org/doi/abs/10.1073/pnas.2213634119

Science Advances

PAPERS

ILARIA PRETELLI, ERIK RINGENAND & SHEINA LEW-LEVY – Foraging complexity and the evolution of childhood

Our species' long childhood is hypothesized to have evolved as a period for learning complex foraging skills. Researchers studying the development of foraging proficiency have focused on assessing this hypothesis, yet studies present inconsistent conclusions regarding the connection between foraging skill development and niche complexity. Here, we leverage published records of child and adolescent foragers from 28 societies to (i) quantify how skill-intensive different resources are and (ii) assess whether children's proficiency increases more slowly for more skill-intensive resources. We find that foraging returns increase slowly for more skill-intensive, difficult-to-extract resources (tubers and game), consistent with peak productivity attained in adulthood. Foraging returns for easier-to-extract resources (fruit and fish/shellfish) increase rapidly during childhood, with adult levels of productivity reached by adolescence. Our findings support the view that long childhoods evolved as an extended period for learning to extract complex resources characteristic of the human foraging niche.
https://www.science.org/doi/full/10.1126/sciadv.abn9889

Trends in Cognitive Sciences

PAPERS

FUMIHIRO KANO – Evolution of the uniformly white sclera in humans: critical updates

The human eye characteristically has exposed and uniformly white sclera, which is hypothesized to have evolved to enhance eye-gaze signaling for conspecific communication. Although recent studies have put this hypothesis into question, current morphological and experimental evidence supports its key premise, albeit with recommendations for critical updates.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00232-7

DAMIÁN E. BLASI et al with JOSEPH HENRICH & DAVID KEMMERER – Over-reliance on English hinders cognitive science

English is the dominant language in the study of human cognition and behavior: the individuals studied by cognitive scientists, as well as most of the scientists themselves, are frequently English speakers. However, English differs from other languages in ways that have consequences for the whole of the cognitive sciences, reaching far beyond the study of language itself. Here, we review an emerging body of evidence that highlights how the particular characteristics of English and the linguistic habits of English speakers bias the field by both warping research programs (e.g., overemphasizing features and mechanisms present in English over others) and overgeneralizing observations from English speakers' behaviors, brains, and cognition to our entire species. We propose mitigating strategies that could help avoid some of these pitfalls.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00236-4

Trends in Ecology and Evolution

PAPERS

GRACE H. DAVIS, MARGARET C. CROFOOT & DAMIEN R. FARINE – Using optimal foraging theory to infer how groups make collective decisions

Studying animal behavior as collective phenomena is a powerful tool for understanding social processes, including group coordination and decision-making. However, linking individual behavior during group decision-making to the preferences underlying those actions poses a considerable challenge. Optimal foraging theory, and specifically the marginal value theorem (MVT), can provide predictions about individual preferences, against which the behavior of groups can be compared under different models of influence. A major strength of formally linking optimal foraging theory to collective behavior is that it generates predictions that can easily be tested under field conditions. This opens the door to studying group decision-making in a range of species; a necessary step for revealing the ecological drivers and evolutionary consequences of collective decision-making.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(22)00143-4

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