EAORC BULLETIN 902 – 27 September 2020

CONTENTS

EAORC 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 – 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.
Many thanks to everyone who has responded so far. I already have enough to ensure the continued existence of the list. When I am about to purge the list, you will receive a separate email, either confirmation of your continued membership, or notification of your final issue.

EAORC MEMBER CONTRIBUTION BY, AND THANKS TO PETAR GABRIĆ

Thank you, Petar, for alerting me to the Cultural Evolution mailing list. It has been added to the EAORC sources list.

PUBLICATION ALERT – Palaeolithic toolmaking and the evolution of cognition and language

In Toma Strle & Olga Markič (eds.), Proceedings of the 21st International Multiconference INFORMATION SOCIETY - IS 2018, 12-16 (2018).

PETAR GABRIĆ, MARKO BANDA & IVOR KARAVANIĆ – Palaeolithic toolmaking and the evolution of cognition and language

This paper reviews, in short, the current research on the hypothesis of coevolution between Palaeolithic stone tool manufacture on one side, and cognition and specifically language on the other. Of particular interest are behavioral and neuroimaging studies.

https://www.researchgate.net/publication/327844086_Palaeolithic_toolmaking_and_the_evolution_of_cognition_and_language#fullTextFileContent

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ACADEMIA.EDU – The Analogical Peacock Hypothesis

Review of General Psychology, Vol. 17, No. 2 (2013).

GARY J. MCKEOWN – The Analogical Peacock Hypothesis: The Sexual Selection of Mind-Reading and Relational Cognition in Human Communication

This integrative review presents a novel hypothesis as a basis for integrating two evolutionary viewpoints on the origins of human cognition and communication, the sexual selection of human mental capacities, and the social brain hypothesis. This new account suggests that mind-reading social skills increased reproductive success and consequently became targets for sexual selection. The hypothesis proposes that human communication has three purposes: displaying mind-reading abilities, aligning and maintaining representational parity between individuals to enable displays, and the exchange of propositional information. Intelligence, creativity, language, and humor are mental fitness indicators that signal an individual's quality to potential mates, rivals, and allies. Five features central to the proposed display mechanism unify these indicators, the relational combination of concepts, large conceptual knowledge networks, processing speed, contextualization, and receiver knowledge. Sufficient between-mind alignment of conceptual networks allows displays based upon within-mind conceptual mappings. Creative displays communicate previously unnoticed relational connections and novel conceptual combinations demonstrating an ability to read a receiver's mind. Displays are costly signals of mate quality with costs incurred in the developmental production of the neural apparatus required to engage in complex displays and opportunity costs incurred through time spent acquiring cultural knowledge. Displays that are fast, novel, spontaneous, contextual, topical, and relevant are hard-to-fake for lower quality individuals. Successful displays result in elevated social status and increased mating options. The review addresses literatures on costly signaling, sexual selection, mental fitness indicators, and the social brain hypothesis; drawing implications for nonverbal and verbal communication.

https://www.academia.edu/24476480/The_Analogical_Peacock_Hypothesis_The_sexual_selection_of_mind_reading_and_relational_cognition_in_human_communication?email_work_card=view-paper

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ACADEMIA.EDU – Symposium on J.-L. Dessalles's 'Why we Talk' (OUP, 2007)

Biol Philos (2010) 25:851–901

EDOUARD MACHERY et al with JEAN-LOUIS DESSALLES – Symposium on J.-L. Dessalles's 'Why we Talk' (OUP, 2007)

Precis by Jean-Louis Dessalles, commentaries by Edouard Machery, Fiona Cowie, and Jason Alexander. Replies by Jean-Louis Dessalles.

Received: 27 October 2008 / Accepted: 23 April 2009 / Published online: 23 June 2009.

This symposium discusses J.-L. Dessalles's account of the evolution of language, which was presented in 'Why we Talk' (OUP 2007).

https://www.academia.edu/33452736/Dessalles_09061401_pdf?email_work_card=view-paper

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CONFERENCE ALERT – Karger workshop and JBJC meeting

The Karger workshop and JBJC meeting will feature exciting talks in evolutionary neuroscience on Thursday-Friday October 22-23. The 2020 virtual Karger and JBJC meetings registration is now open. This year's Karger workshop in evolutionary neuroscience is entitled "Heterochrony in Comparative Neurodevelopment" and is organized by Dr. Andrew C. Halley.

There is no registration fee to attend. However,

- you must be a current member to register.
- Please renew your membership before you register.

Please go to https://www.jbjclub.org/join-today.html. After you have joined, head over to our registration page, https://www.jbjclub.org/registration.html and click on the blue "Register" button to sign up. You will need an access code to register, which you will receive in the confirmation of your membership. The agenda and talk titles are currently listed on our website: https://www.jbjclub.org/karger-workshop.html. Please see more information on speakers, special events and schedules for the JB Johnston schedule as we get the details ironed out: https://www.accelevents.com/e/JBJohnstonClubMeetings. This is a great opportunity to attend this virtual event no matter where you are!

CONFERENCE ALERT – Online.CulturalEvolution.Sep29-Nov24 – Weekly webinars on Cultural Evolution

The Center for the Dynamics of Social Complexity (www.dysoc.org) and the National Institute for Mathematical and Biological Synthesis (nimbios.org) are happy to announce a series of free webinars on Cultural Evolution.

This series is one of the outputs of a grant "Dynamic Models for Basic Theory and Applications in Cultural Evolution" funded by the John Templeton Foundation(PIs Sergey Gavrilets and Peter J Richerson) aiming to promote the Cultural Evolution Society (https://www.culturalevolutionsociety.org/). The grant has supported the development of online teaching modules on cultural evolution. Five modules have been completed and are currently available at http://www.dysoc.org/cesmodules. The modules were selected after an international competition organized by the CES Working Group for Education and Outreach composed of Drs.Louise Barrett (University of Lethbridge), Sergey Gavrilets (UT Knoxvlle), Russel Genet (California Polytechnic State University), Patricia Izar (University of San Paolo), Luke Matthews (RAND Corporation), and Peter J. Richerson (UC Davis).

The webinar series includes live presentations by lead designers of the five completed modules, an opening lecture by the first President of the CES and the lead PI on the proposal Peter J. Richerson (UC Davis), and a lecture by CES Working Group member Patricia Izar (University of San Paolo).

There are also invited lectures by Drs.Peter Turchin (Complexity Hub Science Vienna) and Ruth Mace (University College London). Besides running their research programs, Drs. Turchin and Mace are the founding editors of two important journals in the field of cultural evolution: Cliodynamics: The Journal of Quantitative History and Cultural Evolution (https://escholarship.org/uc/irows_cliodynamics) and Evolutionary Human Sciences (https://www.cambridge.org/core/journals/evolutionary-human-sciences), respectively.

Below is the schedule. For more information see here: http://www.dysoc.org/ces_webinars.

- Sept. 29: Peter J. Richerson (UC Davis). Outreach for the Cultural Evolution Society: Everybody needs to know a little bit about cultural evolution
- Oct. 6: Paul Smaldino (UC Merced). How to Teach Modeling, or Thoughts on a Pedagogy for Cultural Evolution
- Oct. 13: Andy Whiten (University of St Andrews, UK). Animal Cultures: Core Discoveries and New Horizons
- Oct. 20: Joe Stubbersfield (Heriot-Watt University, UK). Cognitive Biases in Folklore: From Fairy Tales to Fake News
- Oct. 27: Adrian Bell (Utah). Foundations of Cultural Evolution
- Nov. 3: Bernie Koch (UCLA). Modeling the Dynamics of Cultural Diversification
- Nov.10: Peter Turchin (Complexity Science Hub Vienna). Cultural Macroevolution: Understanding the rise of large-scale complex societies in human history
- Nov.17: Ruth Mace (UCL). Behavioural ecology of religious belief and practice: two and half studies
- Nov.24: Patricia Izar (University of Sao Paulo, Brazil) The Impact of a Tradition on the Life of Capuchin Monkeys

All webinars will start at 11:45 am eastern time.
Register here: https://tennessee.zoom.us/webinar/register/WN_yBAGOoa7RxemQF7_akYOtg once for the entire series and you will receive a reminder before each webinar.

NIMBioS hosts a Q&A via Zoom for these webinars. Viewers are able to submit questions throughout the talk, which are answered at the end of the talk. You can also up vote questions.

Unable to attend the live presentation? Register to attend, and you will receive a link to the recorded webinar on our NIMBioS YouTube channel: https://www.youtube.com/user/NIMBioS

NEWS

SCIENCE NEWS – Newfound brain structure explains why some birds are smart & maybe even self-aware

Never before has “bird brain” been such a compliment: In recent years, birds have been found to make tools, understand abstract concepts, and even recognize paintings by Monet and Picasso. But their lack of a neocortex—the area of the mammalian brain where working memory, planning, and problem solving happen—has long puzzled scientists. Now, researchers have found a previously unknown arrangement of microcircuits in the avian brain that may be analogous to the mammalian neocortex. And in a separate study, other researchers have linked this same region to conscious thought.
https://www.sciencemag.org/news/2020/09/newfound-brain-structure-explains-why-some-birds-are-so-smart-and-maybe-even-self-aware?utm_campaign=news_daily_2020-09-24

SCIENCE NEWS – How Neanderthals lost their Y chromosome

Neanderthals have long been seen as uber-masculine hunks, at least compared with their lightweight human cousins, with whom they competed for food, territory, and mates. But a new study finds Homo sapiens men essentially emasculated their brawny brethren when they mated with Neanderthal women more than 100,000 years ago. Those unions caused the modern Y chromosomes to sweep through future generations of Neanderthal boys, eventually replacing the Neanderthal Y.
https://www.sciencemag.org/news/2020/09/how-neanderthals-lost-their-y-chromosome?utm_campaign=news_daily_2020-09-24&et_rid=17774313&et_cid=3496611

BREAKING SCIENCE – 120,000-Year-Old Human Footprints Found in Saudi Arabia

An international team of archaeologists and paleoanthropologists has found ancient human and animal footprints on the surface of an ancient lakebed in the Nefud Desert, Saudi Arabia. The footprints, dated to roughly 120,000 years ago, are contemporaneous with an early Homo sapiens out-of-Africa migration and represent the earliest evidence of our species in the Arabian peninsula.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/FTDWmsUJJ8U/alathar-footprints-08869.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Scientists Sequence Y Chromosome DNA of Denisovans and Neanderthals

The genomes of our closest relatives, Neanderthals and Denisovans, have been sequenced and compared with that of modern humans. However, most archaic individuals with high-quality sequences available have been female. In new research, a team of geneticists from the United States, China and Europe has sequenced the paternally inherited Y chromosomes from three Neanderthals and two Denisovans; comparisons with archaic and modern human Y chromosomes indicated that, similar to the maternally inherited mitochondrial DNA (mtDNA), the human and Neanderthal Y chromosomes were more closely related to each other compared with the Denisovan Y chromosome; this result supports the conclusion that interbreeding between early Homo sapiens and Neanderthals replaced the more ancient Denisovian-like Y chromosome and mitochondria in Neanderthals.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/A7KqGxxJQhk/denisovan-neanderthal-y-chromosome-dna-08888.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Archaeologists Find 13,000-Year-Old Engraved Mammoth Tusk in Siberia

The 13,000-year-old partial tusk of an adult mammoth found in western Siberia has four images of two-humped camels engraved on it. The engraved tusk was found in 1988 at a locality known as Parusinka in the lower reaches of the Tom River.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/dOYmr2y7mhc/engraved-mammoth-tusk-tom-river-08887.html?utm_source=feedburner&utm_medium=email

LIVESCIENCE – Prehistoric desert footprints are earliest evidence for humans on Arabian Peninsula

Humanity originated on the African continent at least 300,000 years ago. We know from fossil evidence in southern Greece and the Levant (modern-day Israel) that some early members of our species expanded beyond Africa around 200,000 years ago, and again between 120,000 to 90,000 years ago. They likely travelled through the Sinai peninsula, which formed the only land bridge connecting the continent of Africa to the rest of the world, before moving north into a landscape with a Mediterranean climate.
https://www.livescience.com/earliest-evidence-for-humans-on-arabian-peninsula-146445.html?utm_source=Selligent&utm_medium=email&utm_campaign=9160&utm_content=LVS_newsletter+&utm_term=5353134&m_i=WXNWRbRdME4vo6XOss2pmRgPQUFHZY99VA6mzw79sWouGWjP%2B6OacN4B9DVvswyZxAP4rbYFWfp1IQ0tmFbRHawq5YLb1hQ%2Bo3KW9zAWWf

SCIENCE DAILY – Your cells look young for their age, compared to a chimp's

Many humans live to see their 80s, some even reach 100. But chimpanzees rarely make it past 50, despite sharing 99% of our genetic code. While modern medicine has added years to human lifespans, a study points to a more ancient explanation why humans are the long-lived primate. Part of the secret to human longevity may lie in chemical changes to our DNA that slowed the rate of aging after human ancestors diverged from chimps.
https://www.sciencedaily.com/releases/2020/09/200921083720.htm

SCIENCE DAILY – Scientists identify new species of crystal-encrusted truffle, thanks to bonobos

Mushroom-munching bonobos in the Democratic Republic of the Congo have introduced scientists to a new species of truffle.
https://www.sciencedaily.com/releases/2020/09/200922135731.htm

SCIENCE DAILY – Y chromosomes of Neanderthals and Denisovans now sequenced

An international research team led by Martin Petr and Janet Kelso of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, has determined Y chromosome sequences of three Neandertals and two Denisovans. These Y chromosomes provide new insights into the relationships and population histories of archaic and modern humans, including new evidence for ancient gene flow from early modern humans into Neandertals.
https://www.sciencedaily.com/releases/2020/09/200924141449.htm

SCIENCE DAILY – The surprising organization of avian brains

Some birds can perform amazing cognitive feats - even though their forebrains seem to just consist of lumps of grey cells, while mammalian forebrains harbour a highly complex neocortex. A study reveals for the first time amazing similarities between the neocortex of mammals and sensory brain areas of birds: both are arranged in horizontal layers and vertical columns.
https://www.sciencedaily.com/releases/2020/09/200925113354.htm

SCIENCE DAILY – Primate brain size does not predict their intelligence

A research team has systematically investigated the cognitive abilities of lemurs, which have relatively small brains compared to other primates. Conducting systematic tests with identical methods revealed that cognitive abilities of lemurs hardly differ from those of monkeys and great apes. Instead, this study revealed that the relationship between brain size and cognitive abilities cannot be generalized and it provides new insights into the evolution of primates.
https://www.sciencedaily.com/releases/2020/09/200925113353.htm

NATURE BRIEFING – How Neanderthals lost their Y chromosome

Neanderthals' Y chromosome looks a lot like ours, despite much of their nuclear genome more closely matching a different human lineage, the Denisovans. The mystery persisted because very few complete male Neanderthal genomes have been recovered. Now researchers have used an innovative technique to probe some partial male Neanderthal genomes. The scientists found evidence that early modern human men mated with Neanderthal women more than 100,000 but less than 370,000 years ago, and their sons passed the modern Y through their offspring, replacing the Neanderthal Y.
https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=77ecf46a3b&e=1db4b9a19b

THE CONVERSATION – Prehistoric footprints are earliest evidence for Homo sapiens on Arabian Peninsula

These findings represent the earliest evidence for Homo sapiens on the Arabian Peninsula, and demonstrates the importance of Arabia for understanding human prehistory.
https://theconversationuk.cmail20.com/t/r-l-julklrn-khhlilahh-c/

PUBLICATIONS

Current Biology

PAPERS

DANIEL PREUSSGER et al – Reciprocal Fitness Feedbacks Promote the Evolution of Mutualistic Cooperation

Mutually beneficial interactions are ubiquitous in nature and have played a pivotal role for the evolution of life on earth. However, the factors facilitating their emergence remain poorly understood. Here, we address this issue both experimentally and by mathematical modeling using cocultures of auxotrophic strains of Escherichia coli, whose growth depends on a reciprocal exchange of amino acids. Coevolving auxotrophic pairs in a spatially heterogeneous environment for less than 150 generations transformed the initial interaction that was merely based on an exchange of metabolic byproducts into a costly metabolic cooperation, in which both partners increased the amounts of metabolites they produced to benefit their corresponding partner. The observed changes were afforded by the formation of multicellular clusters, within which increased cooperative investments were favored by positive fitness feedbacks among interacting genotypes. Under these conditions, non-cooperative individuals were less fit than cooperative mutants. Together, our results highlight the ease with which mutualistic cooperation can evolve, suggesting similar mechanisms likely operate in natural communities.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)30986-6

TINA C. ROESKE et al with DAVID POEPPEL – Categorical Rhythms Are Shared between Songbirds and Humans

Rhythm is a prominent feature of music. Of the infinite possible ways of organizing events in time, musical rhythms are almost always distributed categorically. Such categories can facilitate the transmission of culture—a feature that songbirds and humans share. We compared rhythms of live performances of music to rhythms of wild thrush nightingale and domestic zebra finch songs. In nightingales, but not in zebra finches, we found universal rhythm categories, with patterns that were surprisingly similar to those of music. Isochronous 1:1 rhythms were similarly common. Interestingly, a bias toward small ratios (around 1:2 to 1:3), which is highly abundant in music, was observed also in thrush nightingale songs. Within that range, however, there was no statistically significant bias toward exact integer ratios (1:2 or 1:3) in the birds. High-ratio

rhythms were abundant in the nightingale song and are structurally similar to fusion rhythms (ornaments) in music. In both species, preferred rhythms remained invariant over extended ranges of tempos, indicating natural categories. The number of rhythm categories decreased at higher tempos, with a threshold above which rhythm became highly stereotyped. In thrush nightingales, this threshold occurred at a tempo twice faster than in humans, indicating weaker structural constraints and a remarkable motor proficiency. Together, the results suggest that categorical rhythms reflect similar constraints on learning motor skills across species. The saliency of categorical rhythms across humans and thrush nightingales suggests that they promote, or emerge from, the cultural transmission of learned vocalizations.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)30924-6?dgcid=raven_jbs_etoc_email

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Frontiers in Psychology

PAPERS

ANJA STUKENBROCK – Deixis, Meta-Perceptive Gaze Practices, and the Interactional Achievement of Joint Attention
The paper investigates the use of gaze along with deictics and embodied pointing to accomplish reference and joint attention in naturally occurring social interaction. It assumes that deixis, in its primordial use in face-to-face interaction, is an embodied phenomenon that involves gestural pointing as well as visual perception, thus giving rise to recurring gaze practices of the participants. The analysis draws on a model of the interactional organization of deictic reference and joint attention that serves as a sequential framework for investigating the functions of eye gaze. The analysis focuses on two meta-perceptive practices: gaze following and gaze monitoring. It shows that the use of these practices in naturally occurring social activities is context dependent, positionally sensitive, tied to participant roles, and temporally fine-tuned to the stream of the participants' verbal and embodied conduct. The sequential analysis of these practices further documents that meta-perceptive gaze practices contribute to the constitution of joint attention as mutually known by the participants. The data for this study were recorded with two pairs of mobile eye tracking glasses and an external camera. Methodologically situated within the framework of conversation analysis and interactional linguistics where video recording is used, the study breaks new ground by employing a technology almost exclusively applied in experimental frameworks to record ordinary social activities "in the wild." In striving for ecologically valid and precise eye gaze data, it also contributes to a refinement of concepts developed in experimental paradigms by adapting them to qualitative research within the field of multimodal conversation analysis and interactional linguistics.
https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01779/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1437459_69_Psycho_20200922_arts_A

Human Nature

PAPERS

ERIC SCHNITER & TIMOTHY W. SHIELDS – Gender, Stereotypes, and Trust in Communication
Gender differences in dishonesty and mistrust have been reported across cultures and linked to stereotypes about females being more trustworthy and trusting. Here we focus on fundamental issues of trust-based communication that may be affected by gender: the decisions whether to honestly deliver private information and whether to trust that this delivered information is honest. Using laboratory experiments that model trust-based strategic communication and response, we examined the relationship between gender, gender stereotypes, and gender discriminative lies and challenges. Drawing from a student sample, we presented males and females (N = 80) with incentivized stereotype elicitation tasks that reveal their expectations of lies and challenges from each gender, followed by a series of strategic communication interactions within and between genders. Before interacting, both genders stereotyped females as more trustworthy (expected to send more honest messages) and more trusting (expected to accept and not challenge others' messages) than males, in accord with cross-cultural gender differences. In best response to these stereotypes, both genders discriminately accepted or challenged messages based on the sender's gender. However, we find no differences between males' and females' overall rates of lies and challenges. After learning the results of their strategic interactions, males and females revised their stereotypes about lies and challenges expected of each gender; these stereotype revisions resulted in greater predictive accuracy and less disparate gender discrimination. This suggests an important facultative feature of human trust-based communication and gender stereotyping: while the delivery and trust of private information is informed by gender stereotypes, these stereotypes are recalibrated with experience.
https://link.springer.com/article/10.1007/s12110-020-09376-3?utm_source=toc

IAN SKOGGARD et al – Resource Stress Predicts Changes in Religious Belief and Increases in Sharing Behavior
We examine and test alternative models for explaining the relationships between resource stress, beliefs that gods and spirits influence weather (to help or harm food supply or punish for norm violations), and customary beyond-household sharing behavior. Our model, the resource stress model, suggests that resource stress affects both sharing as well as conceptions of gods' involvement with weather, but these supernatural beliefs play no role in explaining sharing. An alternative model, the moralizing high god model, suggests that the relationship between resource stress and sharing is at least partially mediated by religious beliefs in moralizing high gods. We compared the models using a worldwide sample of 96 cultures from the Standard Cross-Cultural Sample (SCCS), newly coded data on supernatural involvement with weather, and previously coded data on food and labor sharing. We conducted three types of analysis: multilevel and society-level

regressions, and mediational path modeling using Monte Carlo simulations. Resource stress shows a robust effect on beliefs that high gods are associated with weather (and the more specific beliefs that high gods help or hurt the food supply with weather), that superior gods help the food supply through weather, and that minor spirits hurt the food supply through weather. Resource stress also predicts greater belief in moralizing high gods. However, no form of high god belief that we test significantly predicts more sharing. Mediational models suggest the religious beliefs do not significantly explain why resource stress is associated with food and labor sharing. Our findings generally accord with the view that resource stress changes religious belief and has a direct effect on sharing behavior, unmediated by high god beliefs.
https://link.springer.com/article/10.1007/s12110-020-09371-8

Nature Communications

The Nature Communications alert is now unhelpful to the point of impracticality. I will continue to try to identify relevant papers in this publication, but I am likely to miss more than I find. Currently the site is arranged around the premise that you need to know in detail what you are searching for before you search; serendipititous searching is not catered for. This is not the first occasion I have found Springer open source websites to be prey to ill-conceived and unnecessary change.

Nature Scientific Reports

PAPERS

LEE T. GETTLER et al – Sharing and caring: Testosterone, fathering, and generosity among BaYaka foragers of the Congo Basin

Humans are rare among mammals in exhibiting paternal care and the capacity for broad hyper-cooperation, which were likely critical to the evolutionary emergence of human life history. In humans and other species, testosterone is often a mediator of life history trade-offs between mating/competition and parenting. There is also evidence that lower testosterone men may often engage in greater prosocial behavior compared to higher testosterone men. Given the evolutionary importance of paternal care and heightened cooperation to human life history, human fathers' testosterone may be linked to these two behavioral domains, but they have not been studied together. We conducted research among highly egalitarian Congolese BaYaka foragers and compared them with their more hierarchical Bondongo fisher-farmer neighbors. Testing whether BaYaka men's testosterone was linked to locally-valued fathering roles, we found that fathers who were seen as better community sharers had lower testosterone than less generous men. BaYaka fathers who were better providers also tended to have lower testosterone. In both BaYaka and Bondongo communities, men in marriages with greater conflict had higher testosterone. The current findings from BaYaka fathers point to testosterone as a psychobiological correlate of cooperative behavior under ecological conditions with evolutionarily-relevant features in which mutual aid and sharing of resources help ensure survival and community health.
https://www.nature.com/articles/s41598-020-70958-3

ELISA DEMURU et al with DAN DEDIU – Foraging postures are a potential communicative signal in female bonobos

Body postures are essential in animal behavioural repertoires and their communicative role has been assessed in a wide array of taxa and contexts. Some body postures function as amplifiers, a class of signals that increase the detection likelihood of other signals. While foraging on the ground, bonobos (Pan paniscus) can adopt different crouching postures exposing more or less of their genital area. To our knowledge, their potential functional role in the sociosexual life of bonobos has not been assessed yet. Here we show, by analysing more than 2,400 foraging events in 21 captive bonobos, that mature females adopt a rear-exposing posture (forelimb-crouch) and do so significantly more often when their anogenital region is swollen than during the non-swollen phase. In contrast, mature males almost completely avoid this posture. Moreover, this strong difference results from a diverging ontogeny between males and females since immature males and females adopt the forelimb-crouch at similar frequencies. Our findings suggest that the forelimb-crouch posture may play a communicative role of amplification by enhancing the visibility of female sexual swellings, a conspicuous signal that is very attractive for both males and females. Given the high social relevance of this sexual signal, our study emphasizes that postural signalling in primates probably deserves more attention, even outside of reproductive contexts.
https://www.nature.com/articles/s41598-020-72451-3

New Scientist

NEWS

The theory of evolution is a vibrant, living entity still in its prime

THE theory of evolution is one of the greatest accomplishments of the human intellect. Some might argue that it is the greatest, although quantum theory or relativity would have their supporters too. But in the biological sciences, it stands unrivalled. It is no less than the grand unified theory of life.
Read more: https://www.newscientist.com/article/mg24733013-500-the-theory-of-evolution-is-a-vibrant-living-entity-still-in-its-prime/#ixzz6YzgVan8Y

ARTICLES

MICHAEL LE PAGE et al – Evolution is evolving: 13 ways we must rethink the theory of nature
Do species really exist? Are genes destiny? Do only the fittest survive? Can we shape or stop evolution? New insights into nature are providing surprising answers, and a glorious new picture of life's complexity
https://www.newscientist.com/article/mg24733010-800-evolution-is-evolving-13-ways-we-must-rethink-the-theory-of-nature/#ixzz6Yzh84jCL

Philosophical Transactions of the Royal Society B

PAPERS

M. KATHERINE SAYRE et al with AUDAX Z. P. MABULLA – Ageing and physical function in East African foragers and pastoralists
Human lifespans are exceptionally long compared with those of other primates. A key element in exploring the evolution of human longevity is understanding how modern humans grow older. Our current understanding of common age-related changes in human health and function stems mostly from studies in industrialized societies, where older adulthood is often associated with an increased incidence of chronic diseases. However, individuals who engage in different lifestyles across industrialized and non-industrialized contexts may display variance in age-related changes in health and function. Here, we explore aspects of physical function in a non-industrialized context using three objective measures of physical function. We assessed physical activity levels, walking endurance and muscle strength in two East African populations: Hadza hunter–gatherers in Tanzania and Pokot pastoralists in Kenya. Both Hadza and Pokot participants displayed significant age-related differences in most, but not all, functional measures. Our results suggest that some age-related differences in physical function seen in industrialized contexts could be consistently experienced by most humans, while other age-related differences may vary across populations. Studies of ageing should expand to include a broad range of populations so we can create a more comprehensive understanding of how senescence varies across different lifestyle contexts.
https://royalsocietypublishing.org/doi/abs/10.1098/rstb.2019.0608

GRAZYNA JASIENSKA – Costs of reproduction and ageing in the human female
Evolutionary theories of ageing point to reproduction as a significant factor to consider when asking why ageing occurs and why there is inter-individual variation in its progression. Reproduction in human females is costly, in terms of energy, nutrients and metabolic adjustments. Thus, it is expected that women who experienced high reproductive effort resulting from multiple reproductive events will age faster. However, the evidence for long-term negative effects of reproduction is not conclusive. The lack of understanding of whether there are trade-offs between reproduction and ageing in women is partly due to methodological challenges. The costs of reproduction are often calculated based only on parity, while other elements contributing to these costs (e.g. breastfeeding, timing of reproduction) are neglected, which may significantly underestimate the total costs and obscure the all-important inter-individual variation in such costs. Costs must be evaluated in relation to individual characteristics, including developmental conditions, nutritional status and social support that a mother receives during reproduction. Furthermore, ageing and health must be assessed based on comprehensive markers rather than arbitrarily assembled variables. Finally, longitudinal rather than cross-sectional studies and new statistical approaches are needed to reveal how much of a decline in health and progressing ageing can actually be attributed to past reproductive processes.
https://royalsocietypublishing.org/doi/abs/10.1098/rstb.2019.0615

ZARIN P. MACHANDA & ALEXANDRA G. ROSATI – Shifting sociality during primate ageing
Humans exhibit major age-related shifts in social relationships along with changes in social and emotional psychological processes that underpin these behavioural shifts. Does social ageing in non-human primates follow similar patterns, and if so, what are the ultimate evolutionary consequences of these social shifts? Here we synthesize empirical evidence for shifts in social behaviour and underlying psychological processes across species. Focusing on three elements of social behaviour and cognition that are important for humans—propensities to engage with others, the positive versus negative valence of these interactions, and capabilities to influence others, we find evidence for wide variation in the trajectories of these characteristics across primates. Based on this, we identify potential modulators of the primate social ageing process, including social organization, sex and dominance status. Finally, we discuss how comparative research can contextualize human social ageing.
https://royalsocietypublishing.org/doi/abs/10.1098/rstb.2019.0620

PLoS One

PAPERS

C. LEMORINI et al – The use of ash at Late Lower Paleolithic Qesem Cave, Israel—An integrated study of use-wear and residue analysis
Employing an integrated approach to investigate the use of Late Lower Paleolithic flint tools found at the site of Qesem Cave (Israel), we revealed a particular trace pattern related to the employment of ashes at the site. Using a designated collection of replica items and combining use-wear and residue (morphological analysis, FTIR, SEM-EDX) analyses, we revealed the

intentional use of ashes in preserving foods for delayed consumption as well as hide for delayed processing. Our interpretation, we believe is the most plausible one since we were able to delineate the specific use-wear fingerprints of the intentional use of ashes for such purposes, suggesting that our approach might be useful for the recognition of other similar functional-behavioral patterns. Lastly, in support of previous findings at Qesem Cave, our current findings present evidence for the processing of organic matters intentionally mixed with ash, leading us to suggest that the inhabitants of Qesem Cave were proficient not only in the habitual use of fire but also of its main by-product, ash. Hence, we call for a reassessment of the timeline currently assigned to hominins' utilization of ash for storing and processing vegetal foods and hide.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0237502

ELENI ASOUTI et al – The Zagros Epipalaeolithic revisited: New excavations and 14C dates from Palegawra cave in Iraqi Kurdistan
Palegawra cave, alongside its neighbouring Zarzi, has been an emblematic site of the Epipalaeolithic (Zarzian) cultural horizon in the NW Zagros of Southwest Asia ever since its first exploration in 1951 by Bruce Howe and Robert Braidwood in the context of the Iraq-Jarmo project. At the time scientific excavation, sampling and analysis methods were either under-developed or did not exist. In this paper we present the first results of new excavations at Palegawra conducted in 2016–2017 by the Eastern Fertile Crescent (EFEC) project, a research collaboration of the University of Liverpool and the Sulaymaniyah Directorate of Antiquities and Heritage. Our research has produced the first radiometric evidence pushing back the chronology of the NW Zagros Epipalaeolithic to the Last Glacial Maximum, thus fully aligning it with Epipalaeolithic facies until now known only from the Levant and the south Anatolian coast. We have also unearthed, for the first time in the Palaeolithic of the Zagros, direct archaeobotanical evidence for hitherto elusive Zarzian plant exploitation and the vegetation of the NW Zagros piedmont zone from the LGM to the end of the Late glacial (~19,600–13,000 cal BP). The new Palegawra chronology alongside our detailed studies of its material culture and faunal and botanical assemblages suggest that the prevailing Epipalaeolithic habitation pattern in the NW Zagros (centred on generalised persistent occupations of small caves and rock-shelters alongside task-oriented ephemeral open-air campsites) remained an enduring characteristic of the Zarzian horizon throughout this period. The Palegawra data clearly show that neither resource levels and climate conditions nor geographic and/or cultural isolation provide adequate explanations for the stability and longevity of Zarzian lifeways during this long timespan. More fieldwork is required, including the discovery, excavation and intensive sampling of other Zarzian sites, for reaching a data-informed understanding of the nature and evolution of the NW Zagros Epipalaeolithic.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239564

ENORA GANDON et al – Traditional craftspeople are not copycats: Potter idiosyncrasies in vessel morphogenesis
Ceramics are quintessential indicators of human culture and its evolution across generations of social learners. Cultural transmission and evolution theory frequently emphasizes apprentices' need for accurate imitation (high-fidelity copying) of their mentors' actions. However, the ensuing prediction of standardized fashioning patterns within communities of practice has not been directly addressed in handicraft traditions such as pottery throwing. To fill this gap, we analysed variation in vessel morphogenesis amongst and within traditional potters from culturally different workshops producing for the same market. We demonstrate that, for each vessel type studied, individual potters reliably followed distinctive routes through morphological space towards a much-less-variable common final shape. Our results indicate that mastering the pottery handicraft does not result from accurately reproducing a particular model behaviour specific to the community's cultural tradition. We provide evidence that, at the level of the elementary clay-deforming gestures, individual learning rather than simple imitation is required for the acquisition of a complex motor skill such as throwing pottery.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239362

PNAS

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/117/38/23202?etoc=

PAPERS

OLUMIDE A. OLULADE et al with ELISSA L. NEWPORT – The neural basis of language development: Changes in lateralization over age
We have long known that language is lateralized to the left hemisphere (LH) in most neurologically healthy adults. In contrast, findings on lateralization of function during development are more complex. As in adults, anatomical, electrophysiological, and neuroimaging studies in infants and children indicate LH lateralization for language. However, in

very young children, lesions to either hemisphere are equally likely to result in language deficits, suggesting that language is distributed symmetrically early in life. We address this apparent contradiction by examining patterns of functional MRI (fMRI) language activation in children (ages 4 through 13) and adults (ages 18 through 29). In contrast to previous studies, we focus not on lateralization per se but rather on patterns of left-hemisphere (LH) and right-hemisphere (RH) activation across individual participants over age. Our analyses show significant activation not only in the LH language network but also in their RH homologs in all of the youngest children (ages 4 through 6). The proportion of participants showing significant RH activation decreases over age, with over 60% of adults lacking any significant RH activation. A whole-brain correlation analysis revealed an age-related decrease in language activation only in the RH homolog of Broca's area. This correlation was independent of task difficulty. We conclude that, while language is left-lateralized throughout life, the RH contribution to language processing is also strong early in life and decreases through childhood. Importantly, this early RH language activation may represent a developmental mechanism for recovery following early LH injury.
{Combine this with Jerzy P. Szaflarski's work, and you have a model where LH language lateralization is a rather short-lived thing; it's just that most of the early research concentrated on the LH-lateralized age group.}
https://www.pnas.org/content/117/38/23477.abstract?etoc

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/117/38/23904.abstract?etoc

Science

ARTICLES

MIKKEL HEIDE SCHIERUP – The last pieces of a puzzling early meeting
Since the sequencing of the first Neanderthal and Denisovan genomes, genetic evidence has revealed an increasing number of admixture events between Homo sapiens and these archaic humans. However, scientists have lacked detailed information about Y chromosome sequences from our two closest relatives. Now, on page 1653 of this issue, Petr et al. report intricate DNA sequencing data for Y chromosomes from less-than-well-preserved bones of male Neanderthals and Denisovans.
https://science.sciencemag.org/content/369/6511/1565

SUZANA HERCULANO-HOUZEL – Birds do have a brain cortex—and think
The term "birdbrain" used to be derogatory. But humans, with their limited brain size, should have known better than to use the meager proportions of the bird brain as an insult. Part of the cause for derision is that the mantle, or pallium, of the bird brain lacks the obvious layering that earned the mammalian pallium its "cerebral cortex" label. However, birds, and particularly corvids (such as ravens), are as cognitively capable as monkeys and even great apes. Because their neurons are smaller, the pallium of songbirds and parrots actually comprises many more information-processing neuronal units than the equivalent-sized mammalian cortices. On page 1626 of this issue, Nieder et al. show that the bird pallium has neurons that represent what it perceives—a hallmark of consciousness. And on page 1585 of this issue, Stacho et al. establish that the bird pallium has similar organization to the mammalian cortex.
https://science.sciencemag.org/content/369/6511/1567

PAPERS

MARTIN STACHO et al – A cortex-like canonical circuit in the avian forebrain
Mammals can be very smart. They also have a brain with a cortex. It has thus often been assumed that the advanced cognitive skills of mammals are closely related to the evolution of the cerebral cortex. However, birds can also be very smart, and several bird species show amazing cognitive abilities. Although birds lack a cerebral cortex, they do have pallium, and this is considered to be analogous, if not homologous, to the cerebral cortex. An outstanding feature of the mammalian cortex is its layered architecture. In a detailed anatomical study of the bird pallium, Stacho et al. describe a similarly layered architecture. Despite the nuclear organization of the bird pallium, it has a cyto-architectonic organization that is reminiscent of the mammalian cortex.

https://science.sciencemag.org/content/369/6511/eabc5534

ANDREAS NIEDER, LYSANN WAGENER & PAUL RINNERT – A neural correlate of sensory consciousness in a corvid bird
Subjective experiences that can be consciously accessed and reported are associated with the cerebral cortex. Whether sensory consciousness can also arise from differently organized brains that lack a layered cerebral cortex, such as the bird brain, remains unknown. We show that single-neuron responses in the pallial endbrain of crows performing a visual detection task correlate with the birds' perception about stimulus presence or absence and argue that this is an empirical marker of avian consciousness. Neuronal activity follows a temporal two-stage process in which the first activity component mainly reflects physical stimulus intensity, whereas the later component predicts the crows' perceptual reports. These results suggest that the neural foundations that allow sensory consciousness arose either before the emergence of mammals or independently in at least the avian lineage and do not necessarily require a cerebral cortex.
https://science.sciencemag.org/content/369/6511/1626

MARTIN PETR et al with JANET KELSO – The evolutionary history of Neanderthal and Denisovan Y chromosomes
Ancient DNA has provided new insights into many aspects of human history. However, we lack comprehensive studies of the Y chromosomes of Denisovans and Neanderthals because the majority of specimens that have been sequenced to sufficient coverage are female. Sequencing Y chromosomes from two Denisovans and three Neanderthals shows that the Y chromosomes of Denisovans split around 700 thousand years ago from a lineage shared by Neanderthals and modern human Y chromosomes, which diverged from each other around 370 thousand years ago. The phylogenetic relationships of archaic and modern human Y chromosomes differ from the population relationships inferred from the autosomal genomes and mirror mitochondrial DNA phylogenies, indicating replacement of both the mitochondrial and Y chromosomal gene pools in late Neanderthals. This replacement is plausible if the low effective population size of Neanderthals resulted in an increased genetic load in Neanderthals relative to modern humans.
https://science.sciencemag.org/content/369/6511/1653

Trends in Cognitive Sciences

PAPERS

ROBERTO BOTTINI & CHRISTIAN F. DOELLER – Knowledge Across Reference Frames: Cognitive Maps and Image Spaces
In human and non-human animals, conceptual knowledge is partially organized according to low-dimensional geometries that rely on brain structures and computations involved in spatial representations. Recently, two separate lines of research have investigated cognitive maps, that are associated with the hippocampal formation and are similar to world-centered representations of the environment, and image spaces, that are associated with the parietal cortex and are similar to self-centered spatial relationships. We review evidence supporting cognitive maps and image spaces, and we propose a hippocampal–parietal network that can account for the organization and retrieval of knowledge across multiple reference frames. We also suggest that cognitive maps and image spaces may be two manifestations of a more general propensity of the mind to create low-dimensional internal models.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30132-7

DORA KAMPIS & VICTORIA SOUTHGATE – Altercentric Cognition: How Others Influence Our Cognitive Processing
Humans are ultrasocial, yet theories of cognition have often been occupied with the solitary mind. Over the past decade, an increasing volume of work has revealed how individual cognition is influenced by the presence of others. Not only do we rapidly identify others in our environment, but we also align our attention with their attention, which influences what we perceive, represent, and remember, even when our immediate goals do not involve coordination. Here, we refer to the human sensitivity to others and to the targets and content of their attention as 'altercentrism'; and aim to bring seemingly disparate findings together, suggesting that they are all reflections of the altercentric nature of human cognition.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30217-5?dgcid=raven_jbs_aip_email

COMMENTARIES

LUCA RINALDI & MARCO MARELLI – Maps and Space Are Entangled with Language Experience
The view that conceptual knowledge is explored through mechanisms originally deputed to navigate the physical space is theoretically fascinating and supported by an increasing body of multidisciplinary data. In their article, Bottini and Doeller proposed that spatial organizational principles of the hippocampal–parietal network can be favorably exploited to handle mental representations. The priority assigned to spatial models, however, should be carefully interpreted in the context of the deep entanglement between linguistic and spatial information: in fact, while spatial principles can help navigate conceptual knowledge, linguistic data itself can produce spatial information without relying on the computations described by Bottini and Doeller.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30195-9?dgcid=raven_jbs_aip_email

ROBERTO BOTTINI & CHRISTIAN F. DOELLER – Language Experience in Cognitive Maps and Image Spaces
In our original paper, we presented cognitive maps and image spaces as low-dimensional internal models that rely on brain structures and computations involved in spatial mapping, and that are useful for organizing conceptual knowledge, guiding goal-directed cognition, and supporting analogical processing.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30211-4?dgcid=raven_jbs_aip_email

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